CIVIL~MILITARY INNOVATION INSTITUTE

WHITE PAPER

Title: Lethality Proving Grounds (LPG)

Submitted to:
Close Combat Lethality Task Force (CCLTF)
Under Secretary of Defense for Personnel and Readiness (USD P&R)

Submitted by: Civil-Military Innovation Institute, Inc.
CAGE Code: 751K1
EIN: 35-2506985

Date Submitted: July 16, 2019

Administrative POC: Dr. Zenovy S. Wowczuk, SME
Civil-Military Innovation Institute, Inc.
3592 Collins Ferry Road, Suite 200, Morgantown, WV 26505
E: zwowczuk@cmi2.org
T: 304.685.2402

Technical POC: Paul DiTuro, Director
Civil-Military Innovation Institute, Inc.
3592 Collins Ferry Road, Suite 200, Morgantown, WV 26505
E: pdituro@cmi2.org
T: 732.439.4147

CMI²

1. Executive Summary

The effort proposed through this white paper would assist the Close-Combat Lethality Task Force (CCLTF), Under Secretary of Defense for Personnel and Readiness (USD R&R) to develop a Lethality Proving Grounds (LPG) capability that, in accordance with FY20 House Appropriations Full Committee Report, will prioritize and filter human performance optimization [HPO] research efforts that will benefit service members and increase soldier lethality.

DoD has recognized the need to modernize acquisition with entities such as the Defense Innovation Unit, the Rapid Capabilities Office, and Army Futures Command. This restructuring concentrates on an accelerated approach to technological innovation but has neglected the most important weapon on the battlefield – the warfighter. The current approach to Warfighter Performance and Resilience Research and Development is still trapped in Cold War era process; stretching limited resources across slow turn efforts that fail to be driven by warfighter requirements. Minimal input from the combat community, a lack of emphasis on rigorous scientific vetting, and a protracted R&D cycle has created a system unable to provide effective performance innovation. Current programs spend time and resources on exploratory investigation to define the needs of Close Combat Troops through exercises and probing monitors. This method focuses on *research*, not *results*. Further, the performance industry is flooded with gadgets on which the DoD has spent millions, but these heavily marketed devices have no proven contribution to Close Combat lethality. The DoD needs a fast-moving entity with disciplined practices, deeply integrated with the operational community to implement and validate Human Performance and Material solutions at the tactical level. In order to increase lethality for Close Combat units DoD needs a modern line of attack to ensure our troops have human overmatch, not just a technological one.

The Lethality Proving Ground (LPG) will rapidly experiment, test and evaluate warfighter equipment successful in Special Operations Forces for transition to the General-Purpose Forces. It will incorporate the complex nature of Close Combat and use that environment as its primary testing grounds. The LPG federates emerging sciences and technologies from the Joint Forces, universities, research firms, medical communities, and professional sports to accelerate innovation and implementation. Unlike the current HPO model that concentrates on research to better understand warfighter needs, the unique structure of the LPG will focus on material, practice, and policy solutions for problems provided via direct input from frontline troops. This ensures immediate impact and proven solutions for implementation into the general-purpose forces.

1. Technical Discussion

The Lethality Proving Ground (LPG) will provide rapid, tangible solutions to critical demands direct from combat. A collaboration of combat veterans and distinguished scientists will use targeted contracting, and a robust network of world class experts to meet battlefield-generated requirements with rapid, results-oriented sprints. In order to prioritize true warfighter requirements, the CCLTF can leverage those assets most experienced with, and most exposed to, the demands of close combat – JSOC. While the Armed Forces are in constant preparation and stand ready to defend the Nation, the nature of recent conflict has kept the JSOC community actively engaged in close combat. With a direct line to the SOF community, LPG will collect prioritized requirements from battlefield troops; and LPG produced solutions will inject back into combat for validation, ensuring immediate and significant impact. Warfighter involvement in requirement, ideation, experimentation, and validation makes LPG unique in R&D; drastically decreasing the time to get warfighters the

tools they need and increasing the operational application of these breakthroughs. This real-world evaluation will empower the DoD to provide proven solutions to the General-Purpose Force, rather than investigate potential problems; saving money, manpower, and time while creating a more lethal Close Combat Force.

The initial structure of the LPG is designed to be flexible, agile and consist of a federated team charged with rapidly transitioning proven SOF and experimental innovations to the DoD close combat formations. This team will leverage, and continue to build, a community of elite performers within industry, academia and the government to identify, proof and transition capabilities throughout the DoD at a pace drastically accelerated from the normal acquisitions process. The LPG will action world class talent and specialists in a variety of fields into mission-specific teams to rapidly solve problems and to quickly iterate to successful solutions. An initial set of projects the LPG will undertake include:

- **Tactical Data Teams** - Task organized teams of top tier computer scientists that deploy to Garrisons or Combat Zones in order to tailor Artificial Intelligence, information management and intelligence understanding to the environment.
- **Ketone Esters** - Ketones provide an alternative fuel source American and International SOF are already using to increase endurance, cognition, and recovery. USMC Experimentation venues are an ideal test-bed for increased nutrition aspects that will impact resilience, effectiveness, endurance and will.
- **XPT** - A program featuring a team of world class athletes and scientists that have developed a protocol to promote physical, cognitive, and emotional strength while enhancing recovery
- **Southern Corridor Research w/ROTC** – Developing a standing cadre and relationship with University ROTC programs that offer complete data collection on baseline groups over long term to understand long term trends in close combat formations.

3.0   Government Support

To deliver optimized results from this proposed activity, the Contractor would require access to CCLTF and MIL personnel – including advisors and soldiers – and electronic government furnished information (GFI) or government furnished data (GFD) related to existing operational equipment and environments to support laboratory and bench-scale design, testing and validation activities, as well as access to government furnished equipment (GFE) for integration of developed technologies into existing MIL solutions and operational equipment.

4.0   Key Personnel

Key CMI2 personnel and a summary of experience are featured in the attached Addendum. In addition, CMI2 will rely on its team of employees and consultants, as well as researchers from the R1 Doctoral Universities and small/nimble companies that are focused on delivering a theater-ready capability to the warfighter.

5.0   Level of Effort/Deliverables

Level of Effort – An investment of $14.3M for FY20 and $50M over FY21-FY23 puts this unique resource into operation by October 2019:

1. Secure targeted contracting to source short sprint hires of cutting-edge scientists who would be otherwise out of reach to DoD

CMI²

    a. **Current Research centers have fixed staffs that are limited** by their organic expertise – they have a solution and look for a problem that fits their field.

    b. **LPG will utilize short term contracting to secure the top experts in the field** required by the warfighter's need – start with the problem and get the best people to work the solution.

2. Conduct rapid, result-oriented field and lab studies at multiple locations.

    a. **Current Research centers spend enormous time and money finding populations to test**, often failing to get enough numbers or an appropriate test population.

    b. **LPG will save millions in research dollars** by utilizing JSOC elements, as well as ROTC cadets from universities such as West Point, the Citadel, and the University of South Carolina because the test populations are organic and a match for military studies.

3. Become a Directing Partner in what will become the Nation's Human Performance Center of Excellence in San Antonio, TX.

    a. **Current DoD Human Performance Center at USUHs is out of touch** with cutting edge innovation and warfighter needs; and is medical rather than performance focused

    b. **LPG will save millions** by collaborating with top performers from professional sports, research, and health. For a very small investment, DoD will have access to the most current and effective HPO research, utilizing the funding and work of others to benefit the DoD.

4. Provide physical tools and techniques to enhance the Lethality of troops deployed in 2019 and beyond

Funding Summary	FY20	FY21	FY22	FY23	TOTAL
Total Program Requirements	14.3	15.7	17.1	17.5	65
Requested	14.3	15.7	17.1	17.5	65

Deliverables – This proposed project contemplates a 4-year period of performance with multiple deliverables, including: (1) monthly status reports with funding forecasts, (2) final technical reports for individual projects run through the LPG, (3) a yearly, program technical report, and (4) multiple discrete deliverables during each year of activity. Discrete deliverables would include:

    ✓ Secure an innovative staff - best in class, Sports Physicians, Dietitians, and Medical Professionals.

    ✓ A federation of emerging sciences and technologies from the Joint Forces, universities, research firms, medical communities, professional sports, and technology companies to accelerate innovation and implementation.

    ✓ Provide tools and techniques to enhance the Lethality of troops deployed in CY 2019 and beyond.

Biographical sketches of the CMI2 key personnel for this effort are provided below.

Paul DiTuro, Director – Paul DiTuro, Director at CMI2, is a creative problem solver applying a decade of operational experience (13 years in Special Operations, deployed to every major combat zone) and deep technical knowledge in physics, human performance, and technology to attack the most difficult problems facing National security. By cultivating and helping direct relationships with NASA, DARPA, Academia, and Professional Sports, Paul helps drive more impactful national level research for the warfighter. Prior to military service, Paul was selected to be part of an advanced particle physics research team at the Fermi National Accelerator Laboratory, while playing professional rugby.

During his military career Paul, a Special Forces Medical Sergeant, made significant changes to tactical combat care, rewriting parts of SOCOM's medical protocols and introducing whole blood back to the battlefield for the first time since WW2. During his time at a Special Mission Unit, Paul directed Human Performance Research and Development, and lead several Artificial Intelligence, Machine Learning, and Drone programs that had immediate impact on the battlefield.

Dr. Zenovy S. Wowczuk, Subject Matter Expert (SME) – Zenovy Wowczuk, SME at CMI2, brings technology development and the ability to rapidly get solutions into the warfighters hands experiences to his role as Subject Matter Expert (SME). Prior to joining the CMI2, Dr. Wowczuk served as Chief Technology Officer for a university-affiliated research organization of West Virginia University – the West Virginia University Innovation Corporation (WVUIC). In addition, he served as a Director of Engineering for a civil-military aviation technology company with over $250 million in research programs.

During his career, Dr. Wowczuk has been the co-inventor of multiple patented and protected civil-military technologies, including aerospace systems, automated payload systems, and biometric technologies. Dr. Wowczuk is also a co-creator of a serviced-based, training organization providing Adaptive Threat Force (ATF) capabilities to the US Military. Dr. Wowczuk earned his B.S, M.S and Ph.D. in Engineering from West Virginia University.

Major General (R) Buford (Buff) Blount III, Chairman – MG Blount, Chairman at CMI2, retired from the Army in Jan 2005, from his position as the Army's Deputy G-3 (Plans and Operations) in the Pentagon. As the Army's Deputy G-3, he managed the requirements, budget and training for the Army. This required frequent interaction with Congress as they resourced the war in Iraq and Afghanistan.

Previously he was the Commanding General, 3d Infantry Division (Mechanized), Fort Stewart, GA. MG Blount gave up command of the 3 ID after bringing them home from Iraq, where they were the lead force for the Army in defeating the Iraqi army and capturing Baghdad. As the vanguard for coalition operations, the Division moved 8,000 vehicles, 100 aircraft and 22,000 soldiers 750 kilometers in 21 days, 500 in the first three days. This was the fastest and longest offensive attack, accomplished in the shortest period of time, in the history of the Army. The 3rd Infantry Division engaged in 21 continuous days of fighting from the time the Division crossed the berm until Baghdad fell, April 9. After occupying Baghdad, General Blount quickly transitioned his troops from combat to humanitarian assistance as he began setting the conditions for the Iraqis

CMI²

to begin rebuilding their country.

MG Blount has a 33-year history of outstanding leadership and service in the Army. From 1997 to 2001, General Blount served as the Program Manager for a Saudi Arabian military modernization program, serving as special military advisor to Crown Prince/King Abdullah. MG Blount also has experience in other Middle Eastern Countries and Europe. He has served in a variety of leadership and staff positions around the world. His numerous Military awards include the Silver Star, for actions in Iraq, and two Distinguished Service Medals.