XTECHINTERNATIONAL

The Office of the United States Assistant Secretary of the Army for Acquisition, Logistics, and Technology (ASA(ALT)), U.S. Army Futures Command (AFC), U.S. Army Combat Capabilities Development Command (DEVCOM), U.S. Army Corps of Engineers, Engineer Research and Development Center (ERDC), U.S. Office of Naval Research Global (ONR-G), and the U.S. Air Force Research Laboratory's AFWERX

SUBMIT NOW

Total Money Offered: $480,000

Challenge Topic: Energy, Water, Synthetic Biology

Partner Agency: The Office of the United States Assistant Secretary of the Army for Acquisition, Logistics, and Technology (ASA(ALT)), U.S. Army Futures Command (AFC), U.S. Army Combat Capabilities Development Command (DEVCOM), U.S. Army Corps of Engineers, Engineer Research and Development Center (ERDC), U.S. Office of Naval Research Global (ONR-G), and the U.S. Air Force Research Laboratory's AFWERX

Submission Dates: March 2, 2022 — April 15, 2022

Winner Announced: July 17, 2022

Who Can Submit: Internationally-based companies or organizations

DESCRIPTION

The U.S. Army invites interested entities to participate in the xTechInternational Competition, a forum for eligible international small businesses to engage with the Army, earn prize money and investigate funding opportunities to tackle Army challenges across three key technology areas: Energy; Water; and Synthetic Biology.

The U.S. Army Futures Command (AFC), Combat Capabilities Development Command (DEVCOM), U.S. Army Corps of Engineers, Engineer Research and Development Center (ERDC), and the U.S. Office of Naval Research Global (ONR-G) partnered with Assistant Secretary of the Army (Acquisition, Logistics, and Technology) (ASA(ALT)), to deliver the xTechInternational competition. The Army recognizes that the U.S. Department of Defense (DoD) must enhance engagements with eligible international small businesses, by: (1) understanding the spectrum of 'world-class' technologies being developed commercially that may benefit the DoD; (2) integrating the sector of non-traditional innovators into the DoD Science and Technology (S&T) ecosystem; and (3) providing mentorship and expertise to accelerate, mature, and transition technologies of interest to the DoD.

Problem Statements:

Topic 1: Electric Power and Energy Technologies

Challenge: As new and future Army systems are planned for expeditionary operations; developers are focusing on electric power to decrease the reliance on fossil fuels and to alleviate supply line issues. The DoD is seeking technologies to facilitate future electric systems that can operate in varied conditions. Of particular interest are the following energy technologies for expeditionary operations:

- Critical Infrastructure energy technologies to support high demand for electric power on the battlefield, such as tactical battlefield recharging capability for onboard vehicle batteries.
- High Energy Battery Technology, greater than 400Wh/kg, to keep up with the demand for high density energy storage with long life cycle and fast charging capabilities (>=4C rate with limited degradation), across a wide operational temperature range (-46 to +71 Celsius, per MIL-PRF-32565).

- Technologies for Improving Battery Safety that can reduce safety risks posed by thermal runaway of high energy density battery systems.
- Open-Source Lithium ion 6T Battery Management System (BMS) & Case design that meets Army standards, which the Army can then provide to battery manufacturers, to reduce battery manufacturers' challenges to developing Army compliant lithium-ion 6T batteries. This also enables the Army to swiftly adopt of new and emerging battery cell technologies in the Lithium-ion 6T space.

Topic 2: Water Technologies

Challenge: Expeditionary forces are operating in locations where local water sources may contain microbial, chemical, or heavy metal contamination and supply lines are unreliable to deliver timely supplies. The DoD is seeking technologies to produce potable water in real-time using a scalable solution with minimal logistical requirements, in order to support enduring operations. Of particular interest are the following water technologies for expeditionary operations:

- Technologies for the extraction of water from atmosphere or non-traditional water sources.
- Removal of microbiological, chemical, and heavy metals on an individual scale.
- Real time water sensors to support individual Soldier field purification efforts by ensuring the efficacy of the water purification device in real time and identifying contaminants in indigenous water sources.

Topic 3: SynBio Technologies

Challenge: Synthetic biology is enabling us to better harness nature to produce leap-ahead materials that we cannot make efficiently in any other way. Cell culture methods that have been the workhorse for industrial use often require very controlled process conditions and can have various limitations on the types/complexity of product produced. We want to harness biosynthesis methods beyond that paradigm to realize more efficient on-demand production of biochemicals/biomaterials anywhere in the world or fabrication of multifunctional protective materials (e.g., self-cleaning armor with integrated sensing, eye protection, tunable RF antenna and camouflage properties), and we are interested in any advancements that have been made in characterizing novel organism capabilities and steps towards engineering them. Such novel organisms could include, but not be limited to: extremophiles or typical eukaryotes (e.g., microalgae/diatoms, insect cells). Examples of potential interest areas include:

- Extremophile novel biochemical pathways tuned for selective synthesis, recovery, separation, and/or remediation of high value elements/materials (e.g., production of novel energetic materials; remediation of energetics; recovery and separation/processing of rare earth and other high-value elements).
- Open cultures (instead of expensive sterile systems) that support using non-sterile nutrients by non-experts in minimal protective gear.
- Expanding the breadth of elements that organisms can utilize to make novel materials or precursor materials that can be converted into novel materials (e.g., as is done in polymer-derived ceramics).
- Synthesis of biohybrid/multifunctional materials, toward next generation military-grade materials/coatings that cannot be affordably/feasibly fabricated in any other way [e.g., eye and sensor protection, camouflaging or concealing materials, complex multifunctional fiber materials (integrated strength/sensing/RF emission/decontamination/optical properties)]; novel energetic material production with micro/nanopackaging; structural or adhesive materials; or reinforced materials with enhanced degradation/erosion characteristics.
- Human performance applications such as living sensors for harsh environments, encapsulated skin-biotics for UV/nuclear radiation protection, responsive textile-attached antimicrobials

SCHEDULES AND PRIZES

PART 1: CONCEPT WHITE PAPER

March 2 – April 15, 2022   **Up to ten (10) semifinalists per topic**   **Invitation to Part 2: Technology Pitches**

All eligible entities shall submit a short 3-page concept white paper and an optional accompanying 3-minute video outlining their potential impact/revolutionary for DoD, the technology and concept viability and commercialization and potential. Each concept white paper and accompanying video, if included, will be reviewed by DoD and international stakeholders including user, program acquisition, and research and development subject matter experts.

PART 2: VIRTUAL TECHNOLOGY PITCHES

Early June 2022   **Up to six (6) finalists per topic**   **$10,000/each**

In Part 2, the semifinalists will conduct a virtual pitch to a panel of DoD and international subject matter experts tentatively scheduled in June 2022 (dates will be finalized with participants) and are subject to change. Participants will pitch their technology concept and team ability to a panel of technical experts across the Army and international eco-system. Each participant will have 15 minutes to pitch, followed by 10 minutes for questions and answers (Q&A) with the judges' panel.

Detailed instructions and evaluation criteria will be provided to the semifinalists selected for Part 2. Up to six (6) participants will be selected per topic by the panel and awarded a prize of $10 000 each and an invitation to participate in the Part 3 Finals

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The semifinalists will also have an opportunity to participate in an exclusive xTech Accelerator Program including educational programming, mentoring and strategic exposure.

PART 3: FINALS

Early July 2022

Up to two (2) winners per topic

1st Place: $60,000 each

2nd Place: $40,000 each

In Part 3, the finalists will have an opportunity to conduct a pitch, in-person or virtual, to a panel of experts across the DoD and foreign governments to include experts from the United Kingdom, Canada, and Austrialia. The finals event will occur in July 2022 and will consist of a 20-minute pitch followed by a 10-minute Q&A session with the panel of judges.

Detailed instructions and evaluation criteria will be provided to the finalists selected for the finals. Up to two (2) participants per topic will be selected by the panel of judges and awarded an additional prize of 1st Place: $60,000 each and 2nd Place: $40,000 each.

The exact location and final dates of the event are still to be determined and will be provided to the finalists closer to the event. Date is subject to change.

Detailed feedback from each phase of the competition from panels of judges will be provided to the participants. The purpose of providing this feedback is to help accelerate transition of the technology to a U.S. military end-user by providing insight on best applications for the technology within the U.S. military, suggestions for product improvement for military use, and recommended next steps for development. However, the Government will not respond to questions or inquiries regarding this feedback.

RULES

Eligibility Requirements:

The entities allowed to participate in this competition must be international SME businesses. SME businesses are defined as those with <250 staff headcount, and within turn-over thresholds per the European Commission (EC) definition of SME. Participating entities must have or be able to obtain a CAGE code if selected to advance in the competition. Instructions on how to obtain a CAGE code can be found on the xTechInternational registration page. U.S. entities are eligible to participate **only if** they are partnering with an international business and the international business is the lead, identified as the point of contact and submitter.

Each eligible entity

- Shall be incorporated in, and maintain, a primary place of business in a foreign country.
- May not be a U.S. Federal or foreign government entity or employ a U.S. Federal employee acting within the scope of their employment.
- Must be able to obtain a CAGE code to process payments.

HOW TO ENTER

The xTechInternational competition is voluntary and open to all entities that meet the eligibility requirements. **There may be only one submission per eligible entity, per topic area and all submissions must be submitted in English.** The registration information and upload submission must be received by **13:00 GMT on 15 April 2022**. Submissions received after the deadline will not be considered.

All xTechInternational competition submissions are treated as privileged information and contents are disclosed to U.S. and International defense civilian and military employees who are part of their host-nation's Ministry/Department of Defense (MOD/DOD) or designated support contractors only for the purpose of evaluation and program support.

All concept white papers and videos must adhere to the following requirements:

- All concept white papers must be submitted using the template found on the registration page, "2022 *xTechInternational Competition _WhitePaper_Template.doc*". **Any proposals submitted in a format other than that provided by the template will not be reviewed.**
- Please list your company name, and proposal title EXACTLY how you would like them to appear on any contest marketing materials. Use clear and concise proposal titles to give readers and potential stakeholders an understanding of how your technology would benefit the Army.
- For the optional video, provide **a URL** on the contest registration page to a video supporting your application, it's preferred that videos are submitted using Vimeo. Production value does not matter and the video can be used to explain the concept white paper or to otherwise demonstrate the technology concept proposed. **MAXIMUM** of 3-minutes for the videos length.

DISCLAIMERS

Registered participants shall be required to assume any and all risks and waive claims against the Federal Government and its related entities, except in the case of willful misconduct, for any injury, death, damage, or loss of property, revenue, or profits, whether direct, indirect, or consequential, arising from their participation in this prize competition, whether the injury, death, damage, or loss arises through negligence or otherwise.

CONTACT

The xTech Program Office

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