



Call for Expressions of Interest to join the 'Operating in Chemical, Biological, Radiological and Nuclear Environments' STaR Shot Community Advisory Group

Introduction

The threat of Chemical, Biological, Radiological and Nuclear (CBRN) attacks against military forces and civilian populations is growing. State and non-state actors are increasingly willing to use these indiscriminate methods, and knowledge of CBR agent manufacturing processes is proliferating. The ADF has the ability to survive the surprise created by CBRN weapons and improvised CBR devices, but there is a need to do more.

Our forces must be able to respond faster and more flexibly to CBRN events; achieve enhanced situational awareness; and manoeuvre safely, effectively and unimpeded in complex contaminated environments for prolonged periods of time. For this reason, a new ten-year Science, Technology and Research (STaR) program has been initiated by the Australian Department of Defence: the Operating in CBRN Environments (OCE) STaR Shot.

To meet its ambitious innovation targets, the OCE STaR Shot intends to create a Community Advisory Group that will be engaged in activities relating to the development, implementation and quality assurance of the STaR Shot research and innovation program.

This call for Expressions of Interest invites Australian universities, Australian research organisations and industry to partner with Defence and form a Community Advisory Group that will support and assist the development, implementation and quality assurance of activities under the OCE STaR Shot. The Advisory Group will assist the OCE STaR Shot leadership in the ongoing development of the OCE STaR Shot program; talent and activity identification; selection of implementation approaches; evaluation of STaR Shot products; and setting the direction of future research.

The Community Advisory Group will be distinct from the OCE STaR Shot Community of Practice, which is designed to provide members with a safe environment for collaboration. All entities across the national science and technology community with an interest in this STaR Shot will be able to join the Community of Practice, however only a selected team of domestic experts will make up the Community Advisory Group.

Participation in the Community Advisory Board does not disqualify the participating organisation from involvement in other STaR Shot activities.

Background

Operating in chemical, biological, radiological and nuclear (CBRN) threat environments is arguably the hardest assignment that warfighters have. Not only do they have to perform strenuous tasks such as keeping adversaries at bay or supporting civilians in the aftermath of a disaster, they have to do these tasks in the presence of dangerous and invisible threats that spread rapidly and widely if uncontained.



Unfortunately, there are two major concerning trends. Firstly, it has become more likely that some state actors and non-state actors are willing to use CBRN agents despite the various international bans on the proliferation and use of weapons of mass destruction. Secondly, it is becoming increasingly easier to manufacture these threats.

These concerning developments are the reason why the Operating in CBRN Environments (OCE) STaR Shot has been created.

The OCE STaR Shot is a research and innovation program that aims to develop, integrate and demonstrate technologies that will enable the Australian Defence Force to operate in environments in which CBRN threats may be deployed by our adversaries.

Given this aim, activities which the STaR Shot seeks to stimulate and sponsor within the Australian science, technology and innovation community cover a broad range of problem domains all of which will benefit from advancements in research and technology.

Inter alia, progress is needed in the following priority research areas:

- low-cost, robust sensors (including wearable) that detect and identify in near real-time advanced threats (especially chemical agents that are designed to be undetectable or virulent pathogens) and how much of them there are present;
- CBRN threat detection, identification and monitoring from a safe distance or without putting humans at risk. This includes detection of pathogens before they affect humans or before infected humans become contagious and spread a disease;
- new capabilities that predict where threats go and which, reliably and on time, push warning signals out to humans in danger, both military and civilian personnel. This warning system needs to be able to interoperate with Australian battle management systems, coalition systems and civilian communications systems;
- novel protection technologies and systems that safeguard mental, physical and physiological strength and allow humans to keep operating for extended periods of time. This protective gear cannot reduce significantly Australian warfighters' freedom of manoeuvre;
- automation and autonomy technologies that reduce the risk of exposure to CBRN threats or may lead to new ways of operating in these environments;
- innovations that make military vehicles, ships and aircraft impenetrable to CBRN threats or, if chemicals or pathogens do penetrate, technologies that help characterise accurately which parts of the equipment are affected, contain the contamination or neutralise it effectively and efficiently;
- new ways of decontaminating infrastructure, sensitive equipment and people quickly and cost effectively. This includes technologies that allow for the assessment of the decontamination actions' effectiveness; and
- technologies that facilitate movement between contaminated areas and clean areas without spreading the threat. This is particularly important when the ADF has to manage injured people, wounded people or sick people.



Australian Government
Department of Defence

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This call for Expressions of Interest is seeking Australian research partners to contribute as advisors to the co-design, implementation and quality assurance of the OCE STaR Shot's research and innovation program.



Call for Partners

Defence is seeking to build, through partnership with Australian universities, research organisations and industry, an expanded Community Advisory Group to assist with the ongoing development, implementation and quality assurance of the research and innovation activities for the OCE STaR Shot.

The Defence Science and Technology Group (DSTG) is proposing to engage with the partners through an ongoing advisory arrangement comprising a group of suitably qualified and driven partners. The preferred outcome is a multi-party approach to contribute in the areas of program co-design, generation of white papers, and to assist with the development, quality assurance and evaluation of complementary programs and activities. It is expected that Community Advisory Group partners have strong capabilities and existing research programs that could support innovation efforts in one or more of the following OCE areas:

- Fast, accurate and early detection, identification, source localisation and monitoring of low concentrations of chemical agents and/or biological pathogens at long stand-off distances and over large expanses of complex terrain;
- Near real-time integrated and multi-domain CBRN threat prediction, warning and reporting, including novel threat and environmental data collection methods in support of such knowledge management systems;
- Effective CBRN protection for individuals, groups, sensitive equipment, infrastructure and supply chains that does not impede, or only minimally impedes, ADF taskforce operations and freedom of manoeuvre.
- Fast and effective containment or neutralisation of CBRN threats.
- Rapid and efficient decontamination of affected people, sensitive equipment, platforms and infrastructure.
- Significantly enhanced human resilience to CBR agent exposure, physical and cognitive exhaustion.

It is expected that the Community Advisory Group will be able to identify activities which would lead to longer term mutual benefits.

Partnering Opportunities

This call for Expressions of Interest is a unique partnering opportunity being offered by DST Group that aims to develop a Community Advisory Group to co-design capability specifically in relation to the OCE STaR Shot.

DST Group will:

- commit to a Multi-Party Collaborative Agreement where the parties are named as part of the Community Advisory Group for this STaR Shot.
- provide access to data, information and other materials, to be used as inputs to develop outcomes sought by the STaR Shot.
- provide guidance and supervision where appropriate.



Essential Requirements

- Demonstrated capability and experience in one or more of the described priority research areas; and
- Capacity to work with Defence and other partners to co-design activities aligned with a provided mission such as: 'to enable the joint taskforce to operate safely and effectively in CBRN threat environments'.

Desirable Requirements

DST Group is interested in fostering and building an enduring relationship with an appropriate partner. As such, the following will be considered desirable when assessing Expression of Interest submissions.

- Multi-Party submissions including stakeholders from across the Innovation system.
- Genuine interest to develop and grow a sovereign research capability within their organisation in a related field, and promote an ongoing partnership with Defence;
- Clear vision for the development of an ongoing capability;
- Capacity to:
 - appoint an academic chair (or equivalent) to provide program oversight and set the foundation for an enduring capability driven partnership, and
 - appoint a part-time postdoctoral fellow (or equivalent); and
- Support of their organisation(s) to undertake activities supporting the Community Advisory Group.

How to Apply

DSTG is inviting Expressions of Interest from Australian universities, research organisations and industry including SME's. Submissions should be no longer than four (4) pages outlining a relevant experience and interest in the program addressing the following:

- A model of engagement which includes capacity and capability to establish and maintain partnering capability; and
- An appreciation of OCE STaR Shot related research and innovation challenges addressing one or more of the research priorities outlined above, including proposed expertise that they can provide to the Community Advisory Group.

Submissions should be in pdf format and sent via email to STaRShot_CBRN@dst.defence.gov.au by 24 February 2021. Submissions will be assessed by a panel from DST Group. Selected submissions will then be invited for discussions to further develop the Community Advisory Group.

All submissions will be handled in confidence.



Engagement Model

Multi-Party agreements under the Defence Science Partnering Deed for universities, or via the appropriate MOU instrument where the partners are from research organisations or industry.

Contacts

Technical Information and Requirements

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