

# Special Notice: Man-portable Small Unmanned Aerial System (SUAS) of the Future

## **Challenge Owner: Director Army Aviation, Army Headquarters**

## **Challenge Statement**

It's hard for field-deployed soldiers to safely perform reconnaissance and gather battlespace intelligence, given the challenge of operating existing unmanned aerial vehicles and their related performance capabilities.

## **Closing Date**

All solution submissions must be received by 5pm 7 August 2017 via the Innovation Portal.

## \*\* Update \*\*

Subsequent to the publishing of this Special Notice, clarifying questions have been submitted by prospective respondents. The issues raised are answered in a series of short videos from the SUAS Capability Manager, along with some additional content. To ensure all respondents are provided the opportunity to take the video content into consideration, the closing date for this Special Notice has been extended to 5pm, 7th August 2017.

## **Overview**

## Why should you apply to solve this challenge?

The Director Army Aviation has a role to support the Chief of Army in the sustainment of in service helicopters and unmanned aerial systems (UAS). This Special Notice is seeking to identify innovative SUAS concepts that may be explored and potentially developed in collaboration with the Director Army Aviation and industry respondents, in order to provide improved capability for the Army.

The immediate opportunity for Industry Respondents is to apply for funded exploration of suitable SUAS concepts with Army Aviation. Director Army Aviation is seeking submissions from Industry and will select one or more eligible Solutions/Respondents that meet assessment criteria to participate in the exploration and development of solutions to the challenge.

The selected Respondents should be in a position to provide an organisational capability demonstration of detailed growth and development plans for their SUAS by December 2018.

## Why it is important that this challenge be solved?

Defence tactical land units have an enduring need to be able to detect, observe and classify potential threats, hazards and obstacles as they move through terrain. An effective SUAS is an important tool for soldiers operating in forward environments, and can enable improved tactical understanding and more effective mission planning





and execution.

For example, one scenario is the requirement for a patrol commander to have tactical awareness of the location of the enemy in order to engage or avoid.

Solving the challenge is important to provide soldiers with tools that underpin battlefield effectiveness and force protection. A solution to this challenge will improve ADF capability and support it in its mission to defend Australia and its interests.

## **Other Opportunities**

A successful solution will provide improved capability to a range of ADF users and potentially to Coalition Partners.

## **Challenge Context**

## The Problem Owner - field-deployed Army soldiers

Field-deployed Army soldiers have a variety of missions that require clear understanding of the dynamic tactical environment that allows them to reduce the threat against them. Small units (eg, four to six soldiers, on foot) often operate independently and forward of large units, often with little support available, and often with a requirement to operate covertly.

These small units carry on foot, all the things that are vital to their mission, often without the benefit of vehicular support.

In this context, soldiers are at risk of exposure that can compromise mission outcomes. For example: detection by adversaries, requirement to leave protective cover and risk injury, or simply making tactical decisions with incomplete information or based on assumption.

The ability to have improved information can enhance the tactical decision making and situational awareness to the patrol commander, directly leading to improved mission performance and effectiveness.

## How the challenge is currently solved

Currently, patrols rely upon SUAS observation to gain tactical understanding of the battlespace and make tactical decisions.

Some patrols are able to make use of UAS to aid in the task of information gathering and decision making, however there are limitations of existing UAS. For example, current UAS systems in use are characterised by:

- Requirement for physical exposure of operator to launch
- Requirement for a clear area to launch the SUAS
- Size and weight that allows portability in field-deployment
- Limited range and conditions of operation
- Challenge of recovery of the UAV craft without damage in the process, and hence re-use
- Limited sensor payload capacity and sensor performance capability

New technology is enabling new capabilities in SUAS platforms, their launch and operation from cover, and in sensor payloads and performance. These capabilities can in turn provide improved capability and performance for Australia's field-deployed soldiers.

SUAS systems currently in use by small units have the following characteristics:

- comprise a Ground Control System, Air Vehicles, and ancillaries
- are carried by one or two people (as a system)
- are robust enough to be stored and carried within a backpack without impact on useability
- are able to be used in monsoon like and high humidity conditions
- are able to be used in support of amphibious operations from the sea/waterways onto land





• provide simulation for training and mission planning

The Air Vehicles deliver the following capabilities:

- flight for at least 50 minutes with a minimum Electronic Line of Sight range of 5 kilometres
- weigh no more than 1.3 Kilograms (including payload and power source)
- operate autonomously following a pre-planned flight path without operator input
- operate with operator input
- operate in wind speeds up to 30 knots
- cruise at speeds between 20 40 knots
- operate at altitudes up to 12500 feet Above Mean Sea Level
- operate in temperatures ranging from -20 to +49 degrees centigrade
- maintain terrain separation
- land on unprepared surfaces within a 20 metre x 20 metre area

The Air Vehicle payloads are currently able to:

- provide still imagery
- provide Near Real Time video imagery
- provide imagery meta-data
- provide imagery by both day and night
- be controlled by the Ground Control Station

The Ground Control Stations are capable of operating all ADF UAS and:

- display Near Real Time video from the Air Vehicle payload
- allow the operator to capture screen images, store and playback data for target assessment
- allow the retransmission of video and meta-data
- allow the pre-planning of the Air Vehicle flight path
- allow the operator to alter the pre-planned Air Vehicle flight path when in flight

## **Benefits Sought & Constraints**

Solutions will aim to provide (and ultimately demonstrate) a range of benefits. Some of these benefits may not be deliverable today, but all would be expected to be part of a comprehensive, viable and mature solution procurable in 2020.

Responses to the Special Notice should refer to these specific Benefits Sought and Constraints, noting the current state and development plan for capabilities of solutions.

Director Army Aviation intends to collaborate, through exploration of concepts, with Respondents to explore appropriate solutions which have a viable growth path.

## **Benefits sought**

At a minimum, solutions must reasonably be expected to be able to – by 2020 – meet or exceed the capabilities of existing solutions currently used by the ADF.

## Constraints

- Robust and suitable for operation by Land forces in the deployed environment
- Be a man-portable system by one or two soldiers

## **Assessment Criteria**

Each submission in response to the Special Notice will be assessed against the following criteria, not in any order of importance:





**Suitability** - The extent to which the proposed innovation could further the effectiveness of a Defence capability, enterprise, or technology challenge

Defence will consider the following elements in making an assessment against this criterion:

- the extent to which the respondent's submission clearly articulates and explains the proposed innovation; and
- the extent to which the proposed innovation is unique, and would provide a new or enhanced capability, or improves Defence's effectiveness and efficiency through innovation.

**Feasibility** - The extent to which the proposed innovation will be able to be developed and adopted with relevant defence systems, from a technology perspective

Defence will consider, in making an assessment against this criterion, the current technology readiness level of the proposed innovation, and the relevance and credibility of any claims made by the respondent relating to the feasibility of the proposed innovation.

**Timeliness** - The anticipated timeframe that the proposed innovation would require to realise a positive impact on Defence capability

Defence will consider, in making an assessment against this criterion, the extent to which the proposed timeline and duration of the proposed innovation aligns with timelines for any Defence capability requirements or related activities undertaken by Defence.

**Contribution to Australia's defence industry capability** - *The extent to which the proposed innovation has the potential to improve or contribute to Australia's defence Industry capability and capacity* 

## **Additional Information**

## **Defence Innovation Hub**

The Defence Innovation Hub (Hub), an initiative of the Australian Government's Department of Defence (Defence) has been established as a 10 year program to help Australian and New Zealand companies, businesses, and academic and research organisations, to assess whether innovative technologies that those companies, businesses and organisations are developing have a Defence application.

Where a technology is identified as having an appropriate Defence application, Defence is able to work with the company, business or organisation through the Hub, and provide a level of funding, so that the technology can be matured in a collaborative way.

The Hub facilitates innovation activities from initial concept, through to prototyping and integrated testing. The activities that will be procured through the Hub will fall into four distinct phases depending upon the current maturity level of your innovation.

For more information on the Hub, visit the <u>Defence Innovation Portal</u>.

## What is a Special Notice?

A Special Notice allows a Defence Business Unit that has a specific problem or technical challenge to utilise the Defence Innovation Portal as a platform for engaging industry to solve that problem.

A Special Notice aims to:

 provide a vehicle to allow Defence business units to define a problem to the market to be addressed under a tailored approach to market





- allow industry to provide innovative solutions to capability challenges that would otherwise go unnoticed.
- leverage the innovative capacity of a wide spectrum of Australian business to solve the problem rather than only established Defence centric businesses.

## Intellectual Property and Contracting

The Defence Innovation Hub seeks to engage and collaborate with the Australian Defence Industry to solve problems for Defence. The Hub has a clear IP Strategy that recognises the critical role that IP plays in fostering and encouraging innovation and delivering vital capability to Defence, and sets out IP Principles that seek to achieve an appropriate balance between the interests of Defence and industry.

The Hub also provides a simplified and streamlined contracting process to make it less costly for Australian industry organisations to support Defence, including small-to-medium organisations.

You can download the Contract Template and IP Strategy at the <u>Defence Innovation Portal</u>.

## How to propose a solution to this Special Notice

You make a submission against this Special Notice using the Special Notice <u>Call for Submissions Smart Form</u>. A submission can be made any time before the close date shown above.

## Who can you talk to once you make your submission?

If you wish to ask a question once you have lodged your submission, you can do so by submitting an online enquiry form via the Innovation Hub Dashboard. The Innovation Hub Dashboard will also allow you to track the progress of your submission.

Be aware that your questions, and the answers provided by Defence, may be published without disclosing your identity or any details in your proposal, where this would be of benefit to other entities considering making a submission.

## What happens after you make a submission?

Shortly after you lodge your smart form, you will receive an automated email confirming that your submission has been successfully loaded and giving you a reference number. You should use that reference number in further communications with Defence.

If you have not received a confirmation email shortly after submitting, you can confirm the status of your proposal via the Innovation Hub Dashboard. If the proposal status remains as Draft, you should re-submit the proposal. If the proposal status displays Initial Proposal Assessment, your proposal has been received and will be assessed. Defence will assess your submission in accordance with the attached Terms, which includes the assessment criteria and assessment process.

Following the assessment of submissions, Defence will determine whether a submission is:

• **successful** – i.e. will be progressed, in which case, Defence will invite you to participate in a Request for Proposal process, which will be subject to its own terms; or

• unsuccessful – i.e. will not be progressed

Defence will endeavour to tell you about the outcome of the assessment of your proposal as soon as practicable. You can withdraw a submission at any time by submitting an online enquiry form via the Innovation Hub Dashboard.

