



Ministry  
of Defence

**RFI0013**  
**REQUEST FOR INFORMATION**  
**TECHNOLOGY USING ANIMAL BIOMECHANICS AND**  
**BEHAVIOURS FOR UUV AND USV PROPULSION**

**RFI Title: Technology using Animal Biomechanics and Behaviours for UUV and USV Propulsion**

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## 1. Introduction

This RFI is not a bidding opportunity but a means by which industry can provide information. Any resulting procurement activity will be conducted competitively.

**Please note:**

**This RFI is an information gathering exercise, no further discussions with industry are planned at this stage however any future procurement activity will be advertised in line with public procurement regulations on the Defence Sourcing Portal and Contracts Finder.**

## 2. Background

The Royal Navy is interested in progressing its use in uncrewed surface and underwater vehicles which have a unique propulsion system and/or design based on physical animal behaviours. Evolutionary biomechanics move away from using a traditional thruster, to those inspired by the flapping fins of swimming animals such as rays, penguins and turtles. Examples of this may include, but not be limited to how a dolphin manoeuvres underwater, or how a sea snake swims on the surface.

This Request for Further Information (RFI) therefore aims to understand the technology that already exists in the commercial sector as a view for potential future investment.

## 3. RFI intended outcomes

This RFI aims to achieve 4 outcomes:

- 1) Detailed understanding of current and potential technology as informed by evolutionary biomechanics.
- 2) Detailed understanding of industry use cases of this technology.
- 3) Align the MOD requirement with industry capability and processes for procurement of the required solution.
- 4) Generate a procurement/development strategy that will maximise capability development within this innovative area.

## 4. RFI Procedure

Responses to this RFI will be reviewed by subject matter experts from different functional areas within Navy Command Headquarters.

If upon review of your submission any clarifications or additional information is required, you will be contacted using the details provided in your RFI response.

Any details provided in response to this RFI will be used for information purposes only and will not be used to determine the potential Suppliers who will be invited to bid, should the Authority proceed to tender.

The results and analysis of this RFI shall not constitute any form of pre-qualification exercise.

Any formal procurement process will be undertaken in accordance with the relevant Procurement Law.

Nothing in this RFI, or any other engagements with Industry prior to a formal procurement process, shall be construed as a representation as to the Authority's ultimate decision in relation to the future requirement.

## 5. How to submit responses to this RFI

Respondents should provide responses in accordance with the format provided in **Annex A** (Calibri font size 12) quoting the RFI reference on all documentation and emails.

**Please do not submit additional documents such as company overviews, the purpose of the RFI is to collect information related to the technical solution, any additional documents will not be included in the review process.**

Any responses received after the deadline will be passed to the subject matter experts for information, however they may not be included in the RFI review meetings which are to be held immediately following the deadline.

Once completed, please return electronically to the e-mail address(es) shown below in section 8, no later than **12:00pm, Friday 24<sup>th</sup> September 2021**.

Responses will be acknowledged electronically by return e-mail.

## 6. Confidentiality & Proprietary Information

No information included in your response, or in discussions connected to it, will be disclosed to any other third party.

Proprietary information, where included, should be kept to minimum and must be clearly marked.

**For the purposes of this RFI, any documentation submitted should be classification OFFICIAL.**

## 7. Costs of preparing your RFI response

Any costs relating to the preparation and submission of a response to this RFI are the sole responsibility of the respondent.

## 8. Contact

Quoting the RFI reference, please submit

- i) any requests for clarification
- ii) all responses to this RFI and
- iii) any questions regarding Classification of document(s) intended for submission, to:

[NAVYCOMRCL-RFI@mod.gov.uk](mailto:NAVYCOMRCL-RFI@mod.gov.uk)

## 9. Annex A

### RFI0013 REQUEST FOR INFORMATION

#### TECHNOLOGY USING ANIMAL BIOMECHANICS AND BEHAVIOURS FOR UUV AND USV PROPULSION

Question	Answer
Company Name	
Company Address	
Is the company a Small - Medium Enterprise (less than 250 employees)?	
Name of Company representative completing the RFI	
Contact details (e-mail and telephone number)	
Company web site address	
Main products/services/line of business	
Main market sector	
Number of years in this market sector	
<b><u>QUESTIONS</u></b>	
1. What is the best technical solution currently available? Please include any known specifications including, but not limited to size, weight, payloads, comms, anti-collision, robustness, environmental limitations, manoeuvrability, propulsive efficiency, noise	

2. What technical solution might be available in 12-24 months and in 5 years? Consider noise level, payloads, impact to the environment plus others.

3. How adaptable is your current and future technology? For example, would it be easy to change power supply, payload(s) or communication methods?



4. What are the operational constraints of your current and future technology? For example, range based on power and comms, method of launch and recovery, operational depth range, number of personnel required to maintain and operate.

5. If we were to provide an opportunity for a live demonstration in Nov 2021, in a maritime environment, what would you be able to show?

6. What would you be able to do with an investment of £200 to develop your product?

7. Is there anything else of note which you think is important?

**Innovative solutions are most welcome, even if they do not meet all of the requirements above, we would welcome the opportunity to consider the positives and negatives.**