

**Request for Information 3 (RFI) to support SERPENS Market Engagement**

1st September 2021

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# Notice to Reader and Disclaimer

This RFI forms part of market engagement and is NOT part of any competitive procedure. Any information you submit will be considered solely for the purposes of building a greater understanding of the marketplace, and industry’s ability to undertake the SERPENS project as part of the Land Intelligence, Surveillance, Target Acquisition and Reconnaissance (ISTAR) Programme. Should the decision be made to formally compete the SERPENS requirement, any information provided must be resubmitted as part of the formal bid process. Information specific to the Industry participant provided through this process will not be shared or distributed directly to other participants but will inform the discussions that MOD will have with Industry and may subsequently be used to inform the terms on which the formal procurement process is conducted.

The information contained in this RFI and any further information (whether written, electronic or oral) supplied by the Secretary of State and/or any of its representatives in respect of this RFI is, and will be, supplied on the condition that neither the Secretary of State, any of its representatives nor any agents, servants, officers or affiliates of the Secretary of State or its representatives whatsoever is liable for any error, omission, or inaccuracy therein nor for any loss or damage sustained by any party arising as a result of reliance on such information or any subsequent communication. This includes any error or omission or inaccuracy resulting from any negligent act or omission of any of the Secretary of State, its representatives or any other person (other than in respect of fraudulent misrepresentation). No party accepts any responsibility or gives any undertaking to provide further information, including any information required to correct any earlier inaccuracy or error.

Any participation in this industry market engagement and any response to this RFI is entirely at your cost and risk. The MOD is under no obligation to proceed with a formal procurement or in any other way proceed with the SERPENS project and shall not be liable to any participants for any costs arising from participation in this process.

# Background

The MOD is continuing its market engagement for Project SERPENS. A project for Weapon Locating Systems integrated into a vehicle plus training and support. The SERPENS project is a project within the Land ISTAR Programme. This is the third RFI shared with Industry.

## Top Messages

The SERPENS project has 4 main objectives, these are shown below:

|  |
| --- |
| 1. Replace the current suite of sensors: the SAAB Arthur radar (MAMBA), Leonardo Halo acoustic sensor (ASP), Syracuse Research Corporation Q49 radar (LCMR)) with the most suitable range of connected sensor systems to detect and track adversary indirect fire systems.

 1. Communicate with: local assets, with battlefield-wide sensors and effectors, and with strategic intelligence networks.

 1. Maintain capability throughout its full life through incremental acquisition of upgrades and technology updates.

 1. Be resilient to adversary, environmental and technical risks.
 |

##  Project Governance

The SERPENS Project is being delivered as part of the Land ISTAR Programme. The Project governance is as follows:

**Army Headquarters – Land ISTAR Programme**

* Land ISTAR Programme Sponsor – Maj Gen Jon Cole, Director Information
* Senior Responsible Officer (SRO) – Brig John Collyer.
* Programme Director – Col Alan (Jonty) Johnson.
* Programme Manager – Lt Col Hugh (Ash) Amos.

**Defence Equipment and Support – Artillery Systems Portfolio**

* Artillery Systems Team Leader/Portfolio Manager – Col Cameron Simpson.
* SERPENS Project Lead – Emily Matthews.
* SERPENS Lead Engineer – Tim Coker.

# Land ISTAR Programme

##  Vision

Commanders at all levels of the Land Environment lack situational awareness and the ability to clearly identify targets due to a paucity of Intelligence, Surveillance, Target Acquisition and Reconnaissance (ISTAR). The information collection capabilities that exist (both organic and those operated in other environments) are neither networked nor integrated into a coherent Process, Exploit and Disseminate (PED) enterprise. The Land ISTAR programme intends to achieve the following by 2025:

*“A tactically deployable networked ISTAR enterprise largely based on a mix of improved legacy and new capability but allowing interoperability and I2 sharing with wider defence and key allies in keeping with the intent of the Single Intelligence Environment. Sufficient skilled personnel operating and exploiting legacy platforms with the ability to store, retrieve and analyse data to support understanding and* decision making”.

and by 2035 it aims to achieve:

*“A fully deployable networked ISTAR enterprise, mutually supporting the Single Intelligence Environment and interoperable with CJIIM[[1]](#footnote-2) systems. Operated by skilled personnel, with persistent, layered sensors feeding a coherent and resilient processing capability; able to access and exploit all authorised sources of information to empower commanders at all levels with appropriate decision support, both in the home-base and when deployed. It will be enabled by an agile procurement process able to maintain pace with technology and the evolving threat”.*

##  Benefits

The SERPENS Project will support the delivery of the following Land ISTAR Programme benefits:

* **Range.** Project SERPENS is to deliver active and passive detection where the range and span of detection for enemy rockets, artillery and mortars is vastly increased from the current in-service equipment.
* **Mobility.** Project SERPENS is to deliver greater tactical, operational and strategic mobility of current weapon locating systems.
* **Survivability.** Project SERPENS is to provide increased vehicle protection affording greater crew survivability.
* **Sensor to Sensor.** Project SERPENS is to result in the removal of manual cross cueing and cognitive fusion burden currently placed upon operators due to lack of inter-connectivity.
* **Sensor to Effector.** Project SERPENS is to reduce the time taken for interactions between the systems in the sensor suite and the designated effectors; increase in speed of ‘sensor to sensor’ and ‘sensor to effector’ interactions.
* **Interoperability.** The Project SERPENS is to deliver a solution fully capable of operating within future UK and key multinational ISTAR and fires architectures.
* **System Delivery.** Project SERPENS is to deliver a new capability to prevent a capability gap occurring.

# SERPENS Definition

##  Single Statement of User Need (SSUN)

The User requires an organic, responsive, persistent, protected and mobile suite of networked systems optimised to detect, acquire, track and assess adversary indirect fire threats at ranges available to peer opponents. These systems must be survivable on the modern battlefield, deployable with all land forces and autonomously linked to both future ISTAR architectures and effectors, in order to support effectively the counter fires battle within the warfighting division.

## User Requirements Document (URD)

The current draft URD, which contains the Key User Requirements (KURs) can be found alongside this RFI in the AWARD documents folder and will be continually refined prior to the production of the Outline Business Case.

## Dependencies

A breakdown of the key SERPENS Project Dependencies is at Annex A.

## 4.4. Draft URD and CONEMP

For information, Suppliers can find copies of the draft URD and CONEMP, links to which will be available alongside this RFI in the Award Portal. Suppliers should note that the URD is in draft, and will be updated. Since the last issue, the URD has been updated to reflect the recommendations from the Operational Analysis (OA) paper. Note that the CONEMP has not changed but will be reviewed prior to OBC.

# Project Timeline

#  Project Concept Phase Milestones (Calendar Year Indicative)

The following project milestones are currently scheduled:

|  |  |
| --- | --- |
| * 31st August 2021
* 14 – 17th September 21
* 1st October 2021
 | RFI 3 uploadedDSEI, London RFI 3 return |

Representatives from DE&S and Army HQ will be in attendance at DSEI and available for 1-2-1 engagements by appointment only. Please contact Emily Matthews to arrange a time slot.

## Major Project Milestones – Beyond Concept Phase (Calendar Year Indicative)

|  |  |
| --- | --- |
| * Outline Business Case
* Assessment Phase start
* Planned Assumption for Service Entry
* Proposed In-Service Life
 | Q1 2022Q2 2022202630 years  |

These are planning estimates and should be considered as such.

# Market Engagement

##  Request for Information

This RFI is intended to enhance the understanding around Prime Contracting and Integration, with a particular interest in the capability of the market to integrate sensors with a 3rd party/GFE vehicle using LOSA/GVA. This information will be used to support option down selection to define the procurement strategy for the Assessment Phase (AP).

This RFI also requests ROM costs associated with this Integration, alongside approximate schedules for Design and Manufacture phases of the project.

## Changes since RFI 2

Since RFI 2 additional work, particularly OA and Military Judgement Panels, has helped shape the nature of potential solutions to the SERPENS requirement. It is intended that candidate solutions will include:

* A quantity of “Heavyweight” active weapon locating radars, broadly equivalent to the in-service MAMBA radar.
* A quantity of “Lightweight” active weapon locating radars broadly equivalent to the in-service LCMR.
* A passive weapon locating system, likely to be met by an acoustic system.

All sensors will be mounted on/integrated into a GFE vehicle and will be required to integrate both into their host platform and to C4I systems such as BCIP and FC-BISA. In addition, we intend to procure a *single*, comprehensive mission planning application that will integrate planning tools for each of the sensor types described above as well as additional facilities such as electronic mapping, RF propagation and so on.

##  Supplier Engagement Portal

The MOD has been providing a live Supplier Engagement Portal (launched in Jul 2019) into which any interested supplier can register. The SERPENS Supplier Portal holds an ever-increasing library of published material relating to the project as well as providing a digital channel for communication directly with the SERPENS Project Team in MOD Abbey Wood. Suppliers that already have access need not register again. All new suppliers interested in accessing further SERPENS information or communicating directly with the MOD’s SERPENS Team can register by following this URL: <https://award.bravosolution.co.uk/serpens/web/project/101/register>

##  Communicating with the MOD’s SERPENS Project Team

Suppliers wishing to communicate directly with those responsible for delivering the future SERPENS Capability are kindly requested to register on the Supplier Engagement Portal (AWARD) and direct all enquiries via the portal’s Communications > Clarifications > Create.

##  SERPENS Project Updates

Project updates are published monthly, with additional key information released as soon as it is appropriate to do so. All updates are available on the Supplier Engagement Portal.

# Information Request

To better understand the market capability and appetite towards SERPENS, this RFI invites Industry to provide information on their proposal, with a particular focus on Prime Contracting, Integration and programme capability.

##  Supplier Questionnaire

Suppliers interested in this project are requested to respond to the questionnaire at Annex B in no more than 10 A4 pages, not including any response to ROM costs and the SWAP Spreadsheet found alongside this RFI in AWARD.

You are requested to indicate all questions that you chose not to answer at the start of your response stating why you chose not to answer each of the questions.

You are requested to provide all marketing information/brochures separately to the SERPENS Team via the AWARD portal.

## Responding to this RFI

Suppliers wishing to respond to this RFI are requested to do so via the SERPENS Supplier Engagement Portal. This will require a single registration into the online portal as described at Para. 6.3. Suppliers already registered need not re-register. The portal supports uploading of RFI response documents, product information (e.g. videos) and ad-hoc, shorter, question and answer style communications (via Communications > Clarifications > New).

## Clarification Questions

All clarification questions regarding this RFI should be posted through the Supplier Engagement Portal. The SERPENS Team will not guarantee a response to any clarification question submitted after 20th September 2021. AWARD Clarifications have the option to be made ‘Confidential.’ If the Question you intend to submit relates to your own or partner companies commercially sensitive information, then please mark your clarification question as Confidential. Any Clarification received that is not marked as such will have the answer shared with all participating suppliers for transparency.

## Response Timelines

Suppliers are requested to respond to this RFI no later than 1st October 2021. Achieving this response date will support the MOD’s scheduled RFI response review.

# Commercial

##  MOD Commercial Notice – Subject to Contract

* This RFI is subject to contract.
* The SERPENS project is at an early stage of development and UK MOD wishes to engage with Industry to gain a better understanding of current and planned capabilities and to inform Industry of emerging requirements.
* The existence of this RFI does not imply that UK MOD will make a purchase relating to the requirements within the indicated timescale, later, or at all.
* All information provided by UK MOD during discussions with industry is provided in good faith but is indicative only and does not constitute an invitation to tender or an offer of contract.
* Information received from Industry will be treated as being in the public domain unless specifically noted at the time and in writing as ‘confidential’, in which case the confidentiality will be protected by UK MOD.

##  Supplier Commercially Sensitive/Confidential Information

Suppliers are requested to clearly and explicitly annotate all commercially sensitive/confidential information provided so that the Authority can manage the provided information correctly and meet supplier expectations. The Award Portal supports documents up to and including Official Sensitive.

Suppliers wishing to respond to this RFI with sensitive/confidential information are requested to submit a clarification question to the Authority through the SERPENS Supplier Engagement Portal and the Authority will assist with the delivery of the information.

# Annexes

1. SERPENS Critical Dependencies.
2. SERPENS Supplier Questionnaire.
3. Dictionary of Terms

# Additional Documents

The below can be found via the Supplier Engagement Portal alongside this RFI 3.

* URD
* CONEMP

**ANNEX A - SERPENS Critical Dependencies**

The current known key Dependencies for SERPENS are as follows:

|  |  |  |  |
| --- | --- | --- | --- |
| **Ser**  | **Eqpt Capability / Requirement**  | **Responsible Org / DE&S Project Team**  | **Remarks**  |
| 1.  | BCIP 5.6  | JFC / BATCIS   | BCIP 5.6 will be in-service until it is replaced by MORPHEUS from circa 2022.  |
| 2.  | MORPHEUS  | JFC / BATCIS  | MORPHEUS will replace BCIP 5.6 from circa 2022 and should achieve IOC by Q2 2025. MORPHEUS will be the communications bearer system for SERPENS when in-service. It is assumed that MORPHEUS IOC will be achieved prior to SERPENS IOC.  |
| 3.  | FC BISA v4  | JE Integ, Army HQ / Arty Sys  | FC BISA is the Fire Control System capability hosted on BCIP 5.6. FC BISA will be upgraded to v4 from 2019. It is assumed that SERPENS will require access to FC BISA v4 to support Assessment Phase activity.  |
| 4.  | FC 2025  | HoC GM, Army HQ / Arty Sys (TBC)  | FC 2025 will be the capability that replaces FC BISA for MORPHEUS. It is not yet funded. It will be Sponsored by HoC GM and delivered by Arty Sys (TBC) using an Agile methodology. It is assumed that FC 2025 will be in service prior to SERPENS IOC.  |
| 5. | ZODIAC | D Tech / Land ISTAR | The future ISTAR architecture that will allow digital connectivity and the incremental introduction of machine learning and automation to the network. It will reverse the practice of single stove-piped sensors unable to disseminate their product effectively. |

**ANNEX B - SERPENS Supplier Questionnaire**

This questionnaire is focussed uponrequests for information regarding Integration, and programme capability.

You are requested to provide information on the Serials in the Table below and limit your response to 10 pages total, including diagrams. You are requested to clearly and explicitly annotate all commercially sensitive/confidential information provided so that the Authority can manage the information correctly.

You are requested to outline any assumptions made when answering the questions, in a separate document, limited to 4 pages, referencing the related serial.

|  |  |
| --- | --- |
| **Ser.** | **Information Requested** |
| 1.  | For Suppliers that **did not** respond to RFI 1 or 2 please provide:* Where appropriate, a description of the overall philosophy of the design, its history and the assessed capability requirement behind your current/future solution.
* Where appropriate, an evidenced-based graphical overview of your current/future solution and its development roadmap, with MOD TRL milestones and any trials or demonstration activity annotated against time.
* Also provide any additional information that you believe is pertinent to Project SERPENS.

UK MOD technology readiness level (TRL) model descriptions can be found here: <https://www.aof.mod.uk/aofcontent/tactical/techman/downloads/trl_definitions.pdf>(access via the MOD Defence Gateway).  |
| 2. | **Platform Integration**We require the sensors to be integrated into a UK MOD vehicle (which will be provided as Government Furnished Equipment (GFE)).1. What is your previous experience of sensor integration into a third-party vehicle and how did you achieve this (e.g. was this done in-house, through collaboration/partnering or sub-contracted)?
2. Describe your understanding of the Land Open Systems Architecture (LOSA), the Land Data Model and Def Stan 23-009? Please rate your understanding as follows:
	* Little/no awareness – unaware of Def Stan 23-009.
	* Aware – aware of the Def Stan and understand the intent but have no practical experience.
	* Have developed concept(s), that conform to the Def Stan, up to TRL5 but no higher.
	* Have developed concept(s), that conform to the Def Stan, to at least TRL 6.
 |
| 3 | **Software Integration**We require the sensor generated data to be integrated into the Fire Control Battlefield Information System Application (FC-BISA) using the Bowman Combat Infrastructure and Platform (BCIP) to integrate SERPENS with our Effector systems.In addition, we intend to procure a single SERPENS mission planning tool and would require you to share information about your sensor in order to deliver this solution. 1. Please describe how your mission software could be integrated with FC-BISA?
2. Do your sensor control inputs and / or the sensor data outputs conform to an open standard or are they proprietary? If open please state which standards.
3. Explain how you would support a 3rd party developer/integrator of the SERPENS mission planning tool?
 |
| 4 | **Prime Contractor (whole vs partial solution)**We are assessing our procurement options and require further information from the market about Prime Contractors and their ability to deliver the SERPENS capability. Further to this, as part of our Assurance process we must provide rough costs to the scrutiny community. We are eager to gain an understanding of the costs around integration for SERPENS. Particularly the risk and complexity associated with a single Prime contractor taking on the work. 1. Based on your understanding of the SERPENS requirement described in the URD and associated documents, plus the brief system description given in paragraph 6.2 above, please explain whether or not you are able to deliver the entire integrated SERPENS capability including the mission planning tool stated above.

If you are able to deliver the entire capability, please describe your plan in outline including:* How you would select sensor types?
* How you would integrate them into the GFE platforms and any other GFE requirements?
* How much control over the detailed solution would you require?
* How your plan would support UK prosperity?
* Your plan for test and evaluation.
1. If you cannot deliver the entire integrated SERPENS capability, what aspects of the capability could you provide? For example, to supply one or more sensor types, integrate one or more platforms.
2. Please provide, as part of this response or as a separate Excel or PDF document, the following information if known:
* ROM costs or approximate Hours for integration management through the Demonstration phase.
* ROM costs or approximate Hours for integration management through the Manufacture phase.
* ROM costs or approximate Hours for the Risk mitigation work required to manage the whole suite of sensors.
* Non-recurring costs separated out by Sensor type, including the following:

Design, including any necessary risk reductionBuild of initial prototypeAcceptance testing* + Recurring costs separated out by Sensor type, including the following:

Additional parts and labour for integration.Testing* + Please do not include the cost of the sensor in your response.
	+ Please do provide any comments or planning assumptions made, particularly around the added complexity of managing multiple procurements.
 |
| 5 | **Design and Manufacture CADMID Phases**For business planning purposes we need to understand approximate schedules in the D&M phases. Currently, D&M is planned for Q1 2025 to Q4 2026.1. Assuming quantity 10 per sensor type (Light, Heavy, Passive). Where you are able to supply one or more sensor types please provide for each:
* Production capacity (units per year).
* Production lead time (PO to delivery, including shipping).
 |
| 6 | **Active Sensor Capability**For planning and analysis purposes we would like more detail on the Size, Weight and Power requirements of your candidate sensors, to do this please complete the Sensor SWAP spreadsheet attached. |

**ANNEX C – Dictionary of Terms**

The Authority have defined the following words to support your answering of the RFI. If there are any words that you are unclear of the definition and are not defined below, you should raise a clarification with the SERPENS Team through the AWARD Portal.

|  |  |
| --- | --- |
| **Word** | **Definition** |
| AI/ML | Artificial Intelligence/ Machine Learning. |
| Artillery | For this RFI the definition is limited to; a class of military weapons delivering indirect fires. |
| C4ISTAR Architecture | Command, Control, Communications, Computer, Intelligence, Surveillance, Target Acquisition, Reconnaissance Architecture. |
| CEMA | Cyber, Electro-Magnetic Activities.The synchronisation and coordination of offensive, defensive, inform and enabling activities, across the electromagnetic environment and cyberspace.  |
| CEP | Circular Error Probability - Accuracy in metres for a derived co-ordinate. |
| Communication | The transfer of data and information.  |
| CONEMP | Concept of Employment. |
| COTS/MOTS | Commercial Off the Shelf/Modified Off the Shelf.The system/sensor is currently or will be in production and will not be specifically produced for the Authority.  |
| Data | Individual units of information.  |
| Data Integrity | Maintenance and assurance of the accuracy and consistency of data over its entire life cycle. |
| Deployed | The movement of armed forces and their logistical support infrastructure anywhere around the world. |
| Detect | Discover or identify the presence or existence of.  |
| Effectors | The ability to influence the target area. |
| Electronic Counter Measures | Electrical or electronic device designed to trick or deceive radar, sonar or other detection systems. |
| Electronic Warfare | Any action involving the use of the electromagnetic spectrum (EM spectrum) or directed energy to control the spectrum. |
| ES | Equipment Support. |
| Fire Control System | A programme or tool to coordinate battlefield indirect fires.  |
| GNSS denial | A receiver cannot provide position, navigation or time because the GNSS signals are not available to the receiver due to interference, spoofing, signal blockage or constellation failure. |
| Growth Potential | The ability of a system to be continuously upgraded and support emerging technology.  |
| HFI | Human Factors Integration. |
| Information | Analysed and refined data.  |
| Interoperability  | The ability to work in conjunction with other systems.  |
| Mortars | A mortar is an artillery weapon which fires explosive shells. |
| Operate | Control the functioning of the system or sensor. |
| Organic | Owned and operated by the Land Environment.  |
| Persistent | Continuously available for operation. |
| PM | Prime Mover. |
| POI | Point of Impact. |
| POO | Point of Origin. |
| Protection | Preservation of the system, personnel and sensor. |
| RCS | Radar Cross Section. |
| Responsiveness | The speed at which the system can react and analyse data.  |
| Rockets | Guided and unguided weapon systems powered by rocket motors.  |
| SAFe | Scaled Agile Framework. |
| Security Classification | The MOD defined security level of data, information or intelligence. OFFICIAL, OFFICIAL-SENSITIVE, SECRET, TOP-SECRET.  |
| Sensor | An individual node that can detect rockets, artillery and mortars.  |
| Sustainability | The ability to maintain a capability for a given length of time. |
| URD | User Requirements Document. |

1. Combined, Joint, Intra-governmental, Inter-agency, Multinational [↑](#footnote-ref-2)