

**DEFENCE GEOGRAPHIC CENTRE (DGC) DISCOVERY, RETRIEVAL & VISUALISATION (DRV) EARLY MARKET ENGAGEMENT AND REQUEST FOR INFORMATION (RFI)**

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**Section 1 - Objectives**

1. **Objectives**
	1. The objectives of this Request for Information (RFI) are to help the Ministry of Defence (MOD) to:
		1. Understand the current marketplace for Geospatial Information Management (GIM) solutions that provide management, discovery, retrieval, visualisation and customer dissemination capabilities.
		2. Identify vendors and capabilities with suitable solutions to meet Defence Geographic Centre (DGC) GIM requirements.
		3. Identify vendors that can assist DGC in moving towards data centric geospatial information management.
2. **Acquisition**
	1. It is anticipated that the solution will be through competitive acquisition.
	2. The protective marking of the completed questionnaire must not exceed OFFICIAL-SENSITIVE COMMERCIAL. It is acknowledged that this may preclude disclosure of some projects and this should be highlighted if applicable. Please identify the classification of the completed submission where indicated at the start of the questionnaire.
3. **Participation**
	1. Participation of small to medium sized enterprises (SMEs) is encouraged.
4. **Submission of Responses**
	1. Please return the completed questionnaire to chris.stubbs101@mod.gov.uk by 11:00 hours on 31st January 2023.
5. **Conditions**
	1. This RFI does not constitute the initialisation or otherwise form part of any official procurement procedure. The MOD may, at its discretion and at any time, choose not to proceed with this procurement, but maintains the right to use any Information supplied for the purposes of future procurements.
	2. The issue of this RFI is not a commitment by the Authority to place a contract because of this RFI or at a later stage.
	3. The procurement of any goods or services described in this RFI may not necessarily take place as described or at all.
	4. All responses to this RFI will be held and remain the property of the MOD once received.
	5. The MOD shall have the right to use or have used any Information, supplied as part of this activity, for United Kingdom Governmental purposes. The aforesaid rights shall be free of payment. The MOD shall not release the identity of the supplier of Information received.
	6. The MOD will only disclose information on a confidential basis where the respondent permits this within the response to this survey. As such, except for any permissions provided in response to this questionnaire, MOD shall request consent of respondents for any further disclosure to third parties, specifically detailing the third parties, the purpose of the disclosure and any relevant conflict of interest management arrangements.
	7. The MOD reserves the right at its sole discretion to:
* seek clarification in respect of your submission;
* cancel this activity at any time or to re-invite participation on the same or any alternative basis, for any reason; and
* make whatever changes it sees fit to the timetable and process for any reason.
	1. Any expenditure, work or effort undertaken by the respondent to participate in this activity, is a matter solely for their commercial judgement. The MOD shall not be liable for any costs, expenditure, work or effort incurred by the respondent in proceeding with or participating in this activity, including if the activity is cancelled or amended by the MOD. The respondent shall bear all costs associated with participation in this activity, including but not necessarily limited to, preparing and submitting questionnaire responses, providing responses to any clarification requests raised by the MOD, demonstrating capability or to conduct any follow up engagements.
	2. Participation is entirely without prejudice to any future procurement. Failure to participate will not preclude potential vendors from responding to any invitation to tender/negotiate or such other procurement procedure as may be applicable to the programme.
	3. This Agreement and any dispute or claim arising out of or in connection with it or its subject matter or formation (including non-contractual disputes or claims) shall be governed by and construed in accordance with the laws of England and Wales.

**Section 2 – Requirements and Specifications**

**1. Questionnaire**

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| **Company Name** | Click here to enter text. |
| **Respondent Name** | Click here to enter text. |
| **Respondent Role** | Click here to enter text. |
| **Respondent Email** | Click here to enter text. |
| **Respondent Contact Number** | Click here to enter text. |
| **Security Classification of Questionnaire submission** | Click here to enter text. |

The Defence Geographic Centre (DGC) is the UK Ministry of Defence (MOD) centre for geospatial information for the Land environment. DGC owns and manages a vast quantity of geospatial data and generates metadata, which it uses to manage a global collection of geospatial information. Geospatial information is both acquired, as well as created internally, by DGC. DGC acquires, creates and disseminates geospatial products and datasets for customers both internal and external to MOD including national and international agencies. DGC’s Future Operating Model (FOM) aims to transform it into a data centric organisation in which effectively stored and managed data provides the means for automated map production, manual product creation and direct customer access via web-services.

At the heart of this vision for DGC is the management of DGC’s geospatial data. This Request for Information (RFI) is for a geospatial information management solution to provide the data centric, forward-looking capability which will form a key component of DGC’s FOM. The offering should include consultancy services to tailor the solution to DGC’s specific requirements, system integration services to integrate functionality across multiple systems and databases (potentially at different security classifications), as well as the core application service(s), which should provide the bulk of the capability. End-user training and documentation on use of the proposed solution is also required.

1. Description of **Geospatial Information Management (GIM)** functional requirements
	* The tool should be capable of manual creation of MOD Geospatial Metadata Profile Issue/Edn 2.0 (MGMP2) compliant metadata records using an intuitive, easy to use, form/stylesheet front-end, with built in validation rules against single and combinations of metadata values. Metadata records to be stored in a back-end database that is searchable.
	* The tool should be capable of automated ingest of single and bulk quantities (e.g. in folders) of geospatial information (GEOINF) and associated MGMP2 metadata and transfer to appropriate folder locations and a metadata database.
	* The tool should be able to handle and manage duplicate product (based on MGMP2 metadata elements) and Universal Unique Identifier (UUID) values in MGMP2 records
	* The tool should provide or be able to interoperate with a dedicated metadata database
	* The tool should provide a dedicated credential management feature, with single sign-on and permissions, to view, create, validate, edit and search MGMP2 metadata records
	* The tool should include the ability to carry out bulk edits of single or multiple items of metadata within a metadata repository/database via a Structured Query Language (SQL) or similar update script/query.
	* The tool should be able to ingest geospatial information and associated MGMP2 metadata from folders and sub-folders and retain original folder structures on dissemination
	* The tool should provide a means to perform a two person check on ingested or released data
	* The tool should provide a means of recording receipt of acquired data, which has not yet been ingested
	* The tool should provide both manual and automated mechanisms to archive data and associated metadata
	* The tool should provide the means to export selected/ordered product metadata in MGMP2 compliant Xtensible Mark-up Language (XML), Microsoft (MS) Excel, Comma Separated Variable (CSV) and other file formats.
	* The tool should provide a means to notify stakeholders about newly ingested geospatial information
	* The tool should be able to identify where there are differences between edition numbers in different formats for the same map sheet (softcopy & hardcopy)
2. List of **discovery** functional requirements
* The tool should be capable of pushing notifications to users for things like new versions of maps and data.
* The tool will be used to locate geographic information (i.e. maps, data and imagery) across multiple data repositories and should be capable of federating searches such that users can search multiple sources, including metadata from other enterprise databases, from a single search portal.
* Users should be able to see and select which repositories their search is conducted across.
* The search function should be simple and not require different search methods for different types of geographic information.
* Users need to be able to save searches for repeat use.
* The tool should have a simple graphical user interface which is friendly and intuitive.
* Search fields/criteria should include all available metadata fields but should allow an end-user to configure which metadata elements they wish to select for searches which should be saved for all their future search sessions.
* The search feature should also enable the inclusion or exclusion of superseded, retired, archived or duplicated geospatial information.
* The tool should also provide a more sophisticated search facility to enable complex queries and detailed interrogation of data sources (e.g. collection over different timeframes and from different producers).
* Users should be able to define spatial search areas by coordinates (including WGS84 and BNG etc), country names (area defined), place names, point, radius, rectangle, polygon (including import of shape files) or buffer.
* The tool should enable all Boolean operators to be used to refine searches across all metadata fields.
1. List of **retrieval and visualisation** functional requirements
* The tool should enable users to retrieve and export results in multiple, human readable formats
* The tool should be able to visualise and export up to 1,048,576 rows of metadata information both as tabular lists and as metadata footprints overlaid onto a base world graphic.
* The tool should be able to visualise and export metadata footprints with complex or multi-part geometries including insets and outsets.
* The tool should be able to support multiple geo metadata standards including the MOD Geospatial Metadata Profile (MGMP2) Defence Standard (DEFSTAN) 00-103 Edition 2 standard (for ingest and dissemination).
* The tool should enable the ordering of specific files within folders as well as entire folders
* The tool should retain folder structures when data is downloaded
* The tool should enable download of files without zipping/compression if required
* The tool should enable ordering and download of files from all federated repositories.
* The tool should be able to move &/or copy up to 1 Terabyte (Tb) of data in a single transaction to a specific location.
* The tool should provide a suitable background display map for search results
* The tool should enable location tagging of non-geo data
* The tool should provide thumbnails views of returned results, which can be scaled to various sizes
* The tool should provide an intuitive mechanism to view multiple results across a small area
* The tool should be capable of displaying up to 1,048,576 metadata results in a single configurable, sortable, exportable tabulated list with human readable column headings.
* The tool should be capable of visualising up to 1,048,576 search results of metadata footprints from the MGMP2 metadata elements Resource Geographic Bounding Box and Resource Bounding Polygon over a base map graphic.
* The tool should display the search criteria used when displaying search results
* Column headings for displayed search results should use human readable language not system syntax.
* For compilation products such as ASRP, CADRG, DTED, SRTM, etc. the tool should be able to retrieve/visualise both the product/International Organization for Standardization (ISO)/Compact Disc (CD)\_Digital Video Disc (DVD) level metadata and its component lineage sheet or cell level metadata.
* The tool should be able to export visualised reports for inclusion in other reports
1. Description of **dissemination/customer access** functional requirements
	* The tool should enable users to ‘cookie-cut’ partial sections from single or multiple geospatial information products (retaining data integrity) from a range of foundation geospatial information data within a dissemination database (e.g. CIB, DTED, SRTM, ASRP, CADRG, MGCP etc.)
	* The tool should provide a File Transfer Protocol (FTP)/Secure File Transfer Protocol (SFTP) share capability with suitable performance to maximise the capacity of the network bandwidth.
	* The tool should provide appropriate automatic and manual Copyright and Release (C&R) controls determined by Resource Releasability (Release Band values), Resource/Metadata Security and Legal constraints values within the MGMP2 metadata.
2. Description of **non-functional** requirements
* The tool should enable plug-ins such as export of metadata from DRV to support other metadata standards from the international community (e.g. Defence Metadata Foundation (DMF) a North Atlantic Treaty Organization (NATO) DGIWG Metadata Standard for exchange).
* The tool should be interoperable with other applications such as workflow management and provide well-defined interfaces to allow integration across vendors (e.g. Microsoft, ESRI etc.)
* The tool should provide a mechanism to create and edit codelist values to the MGMP2/metadata schema picklists
* The tool should provide a mechanism to set and manage default metadata values within the DRV metadata schema.
* The tool should provide a mechanism to edit/update the definition of a duplicate product and apply it retrospectively to the entire metadata database contents.
* The tool should provide a mechanism to configure the repositories and folders that form part of the federated search.
* Instructor led training and accompanying documentation for use of the new DRV solution should be provided.
* The system should provide error handling and not ingest geospatial information and MGMP files into databases when the MGMP2 metadata contains invalid content e.g. invalid coordinate geometries. It should also prevent ingest of duplicate products or duplicate resource Universal Unique Identifiers (UUID) across metadata records.
* The system should provide database locking mechanisms to prevent 2 or more users editing same metadata database row at the same time.

1a) Please select a descriptor that best describes your present role in delivering DGC’s DRV capability or perceived future roles associated with the DGC DRV capability. *Tick all that apply.*

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| Prime Supplier | Direct and key contact with MOD, responsible for delivery of complete system capable of meeting requirements. |[ ]
| System Integrator | Responsible for bringing together sub-systems and de-conflicting sub-systems. |[ ]
| Sub-Systems Support | Responsible for delivery of complete sub-system to integrator. |[ ]
| Component Provider | Development and production of individual components of sub-systems. |[ ]
| Support Services | Provision of support to project and delivery of requirements. |[ ]
| Technical Services/Customer Friend | Provision of technical support and non-competitive advice to MOD. |[ ]
| Software Provider | Responsible for the provision of software in relation to requirement and delivery of requirements. |[ ]

1b) Please provide an insight of your solution’s capability in relation to **Geospatial Information Management** as described above

***500 words max, or reference material may be provided***:

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1c) Please provide an insight of your solution’s capability in relation to **Geospatial Information Discovery** as described above

***500 words max, or reference material may be provided***:

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1d) Please provide an insight of your solution’s capability in relation to **Geospatial Information Retrieval and Visualisation** as described above

**500 words max, or reference material may be provided:**

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1e) Please provide an insight of your solution’s capability in relation to **Dissemination/ Customer Access** as described above:

**500 words max, or reference material may be provided:**

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1f. Please provide an insight of your solution’s capability in relation to **Non-functional Requirements** as described above:

**500 words max, or reference material may be provided:**

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**Section 3 – Engagement**

1a) Please provide a suitable lead Point of Contact and their contact details if the Authority has any clarification questions.

***300 words max***

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**Annex A –Definitions**

**Discovery**

The action of interrogating the metadata associated with items stored in an information management system to identify candidate items for retrieval and exploitation.

**Retrieval**

The action of recovering stored information. For example, the retrieval of geospatial information items stored in an information management system for internal exploitation or provision to external customers.

**Visualisation**

The action or fact of visualizing search results. For example the compilation of Graphic Indexes derived from metadata footprint geometries and other searchable generic and MGMP2 element values, to visualise the currency and coverage extents of a map series. Can also be for visualising search results as tabular list of metadata values.

**Data Ingest**

A way of working based on PICASSO ASG Increment 1 technology. Items of geospatial information and their associated MGMP2 metadata are indexed and catalogued by an information management system such that items are thereafter discoverable for retrieval and exploitation.

**Customer Access**

A technology enabling connected, authorised internal and external customers to interrogate an information management system to discover, visualise and retrieve items of geospatial information and their associated metadata. Access could be a self and/ or assisted service for connected customers.

**Non-functional Requirements**

Requirements that place constraints on the technical attributes of the solution. Non-functional requirements define the technical solution future supportability, extensibility, interoperability and levels of expected minimum performance for the capability functions being delivered. Can also include training/documentation requirements.

**Geospatial Information**

Geospatial Information (GEOINF) consists of facts about the Earth referenced by geographic position and arranged in a coherent structure (NATO and UK definition). It describes the physical environment and includes data from the aeronautical, geographic, hydrographic, oceanographic and meteorology disciplines. Assured Geospatial Information is sometimes called Foundation GEOINT and includes both analogue and digital formats. Most commonly viewed as a map or chart, Geospatial Information generally comprises very large data sets that are well defined, structured and widely re-usable. It normally conforms to set standards, rules and policies, such as requiring inclusion of appropriate metadata (data about data).

**MGMP2**

MOD Geospatial Metadata Profile 00-103 Issue 2.0. Also known as DEFSTAN 00-103, it describes the metadata that is to be provided for all Defence spatial data and products. This common approach supports the policy defined in JSP 465, allowing data to be discovered and used as an enterprise resource. Where metadata is required, all UK Defence platforms and systems should consume and emit MGMP2 metadata in accordance with this standard unless a formal exemption has been granted by the Foundation GEOINT Board. (MGMP2 scope from DEFSTAN 00-103).

MGMP2 specifies metadata elements for describing geospatial data resources such as datasets, series, and services. MGMP2 metadata elements are a subset of ISO 19115 elements but also include additional elements specifically for use with MOD geospatial data and services. Metadata conforming to MGMP2 is expected to conform to ISO 19139 which presents the XML coding of metadata elements and ensures that it can be exchanged between catalogue services based on OGC standards. (MGMP2 Abstract from DEFSTAN 00-102).

MGMP2 metadata at DGC is created by lifecycle/data managers to accompany a range of geospatial information that has either been produced by DGC or acquired via commercial purchase or partnership arrangements with other national & international organisations. It is used extensively at DGC and by parts of NCGI to manage, discover and retrieve a wide range of geospatial information within the Geospatial Data Warehouse (GDW) repository as well as for dissemination/exchange of geospatial information to aid customer interpretation/use e.g. it can provide the basis of a GeoList describing geospatial content of a hard-disk drive or to describe a web-service. It is also used by other UK Specialist Geospatial Centres e.g. UKHO, DIO, UK Met Office.

**Release Bands**

These are the values within the MGMP2 Resource Releasability metadata element. This element is used to document releasability constraints which are separate from security or legal considerations. This element is used to document UK Releasability (release bands) and NATO accessibility. Release bands are a list of values relating to communities of customers that are permitted to receive the geospatial information supplied by a UK Specialist Geospatial Centre. NATO Releasability is documented as a single value whilst UK Releasability may be documented as multiple values e.g. ukDef (UK Defence), ukGov (UK Government) etc.

**Annex B – List of Acronyms**

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| **Acronym** | **Description** |
| ASG | Allied System for Geospatial Intelligence (Increment 1 UK capability delivered under the PICASSO capability programme) |
| ASRP | ARC Standard Raster Product |
| BNG | British National Grid – Planar coordinate reference system for Great Britain and Ireland |
| CADRG | Compressed ARC Digitized Raster Graphics format |
| CD | Compact Disc |
| CIB | Controlled Imagery Base |
| CSV | Comma Separated Variable |
| DEFSTAN | Defence Standard |
| DMF | DGIWG Metadata Foundation – A general Defence Metadata Implementation Profile developed by DGIWG. |
| DGIWG | Defence Geospatial Information Working Group – multi-national body providing standardisation guidance for geospatial data, products, and services for use within Defence across member nations. |
| DIO | Defence Infrastructure Organisation |
| DGC | Defence Geographic Centre |
| DRV | Discovery, Retrieval & Visualisation |
| DTED | Digital Terrain Elevation Data |
| DVD | Digital Video Disc |
| FTP/SFTP | File Transfer Protocol/Secure FTP |
| GDW | Geospatial Data Warehouse |
| GEOINT | Geospatial Intelligence |
| GEOINF | Geospatial Information |
| ISO | International Organisation for Standardization |
| JSP 465 | Joint Services Publication 465 - Defence Geospatial Intelligence Policy |
| MGCP | Multi-National Geospatial Co-Production Programme |
| MGMP2 | MOD Geospatial Metadata Profile Issue/Edn 2.0 |
| (MS) Excel | Microsoft Excel |
| NATO | North Atlantic Treaty Organisation |
| NCGI | National Centre for Geospatial Intelligence |
| OGC | Open Geospatial Consortium |
| PICASSO | Defence programme that delivers and sustains UK’s national GEOINT capabilities |
| RFI | Request For Information |
| SRTM | Shuttle RADAR Topography Mission – Provided global high resolution Digital Elevation Models. |
| WGS84 | World Geodetic System 1984 (Geographic datum/spheroidal coordinate reference system) |
| UKHO | UK Hydrographic Office |
| UUID | Universal Unique Identifier |
|  XML | Xtensible Mark-up Language |