**MINISTRY OF DEFENCE**
**GOVERNMENT OF INDIA**

# REQUEST FOR INFORMATION

**BY**

**DIRECTORATE GENERAL OF INFORMATION SYSTEM**

**ARMY INTEGRATED DECISION SUPPORT SYSTEM**

The documents contains **57** pages including cover page and Appendices

**REGISTERED BY POST/BY HAND**

Tele:

Project Management Organisation
Director General of Information System
Integrated HQ of MoD (Army)
DGIS Enclave, Rao Tula Ram Marg
New Delhi -110 010

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To,

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_____
_____
(Vendor concerned)

**REQUEST FOR INFORMATION (RFI) FOR ARMY INTEGRATED DECISION SUPPORT SYSTEM (AIDSS)**

Sir,

1. The Ministry of Defence, Government of India, intends to design, develop and manufacture AIDSS application as a situational awareness and Decision Support System (DSS) software to be deployed pan Indian Army (IA) from Battalion (Bn) to Corps level to provide common operational, intelligence and logistic picture to the commanders in chain and also to assist in decision making process.

2. This RFI for the AIDSS application software consist of three parts as given below:-

(a) **Part I**. This part gives out the background to AIDSS application software, the current working system (existing solution available in IA) and the operational requirements, characteristic and features that should be met by the software. Important technical requirements that the software should fulfil are also mentioned within this part.

(b) **Part II**. The second part of the RFI states the methodology of seeking response from the vendors. Submission of incomplete response will lead to rejection and non-consideration of the same.

(c) **Part III**. This part lays down the guidelines for Framing Criteria for Vendor Selection/ Pre-Qualification in Buy Indian (IDDM), Buy (Indian) and Buy and Make (Indian) Cases.

3. **Liabilities of IA**

(a) This RFI is only a request for information about potential products/ services and no contractual obligation on behalf of Indian Army whatsoever shall arise from the RFI process.

(b) This RFI, on discretion of PMO Command Information and Decision Support System (CIDSS), will be used for pre-qualification of suppliers for further issuing of Request for Proposal (RFP).

(c) **RFI Ownership**. All responses to the RFI will become the property of Indian Army and will not be returned.

(d) This RFI is issued as a means of technical discovery and information gathering.

(e) This RFI is for planning purposes only and should not be construed as a solicitation nor should it be construed as an obligation on the part of PMO CIDSS to make any purchases.

(f) The Indian Army may utilize the results of this RFI in drafting a competitive solicitation (RFP) for the subject services/ products/ equipment.

(g) Any future contract that may be awarded must comply with PMO CIDSS procurement requirements.

(h) This RFI is being issued with no financial commitment and the Buyer reserves the right to change or vary any part thereof at any stage.

(j) This RFI does not commit the Indian Army to pay any cost incurred in the preparation or submission of any response to the RFI.

(k) Participation in this RFI is voluntary and the Indian Army will not pay for the preparation of any information submitted by a respondent or for the Indian Army's use of that information.

(l) Buyer also reserves the right to withdraw the RFI, should it become necessary at any stage.

(m) Proposer of solution may be called to give a presentation to show his expertise in developing the solution.

4. **RFI Schedule**. RFI key dates are as given below:-

| **Start (In Days)** | **End (In Days)** | **No of Weeks** | **Event** |
|---|---|---|---|
| N Day | - | - | Approved RFI hosted on website of MoD & SHQ through ADG SC |
| N+ 01 | N+14 | 02 | Vendor interaction at Line Directorate (DGIS) with reps of ADB, DG CD & MGS Branch in presence |
| N+15 | N+71 | 08 | Vendor interaction and final RFI responses from Vendors |
| N+72 | N+100 | 04 | Preparation of RFI Response Matrix and Comparative Analysis of Specifications |

## PART – I

### Intended Use of AIDSS Application Software

5. **Background**.

(a) **Network Centric Warfare** capability has proved to be an essential component of any nation's war fighting ability in the present day battlefield milieu. Future wars will require accurate situation awareness, collaborative planning capability and immediate shooter responses for effective battle management. For a field commander, compressing the **Observe-Orient-Decide and Act (OODA)** cycle in terms of time and space is the most important desirable and can only be effected by a **Decision Support System** (**DSS**) working in tandem with sensors and shooters through a robust and fail proof communication network.

(b) Project **Army Integrated Decision Support System (AIDSS)** will be a software application, providing a comprehensive battlefield picture to the commanders in the chain of command on aspects of **Operations (Ops)**, **Intelligence Surveillance and Reconnaissance (ISR)** and **Operational Logistics (OL)** and enable them to take informed decisions. It is planned to cover the complete spectrum of operations and administration from a unit to Corps Headquarters with aggregated and processed data visualisation.

6. **System Concept**.

(a) Project AIDSS has been conceived as a major driver for **net-centricity** and assisted **DSS** in the India Army. With its implementation, the dividends likely to be accrued by Indian Army are – **Process Automation**, **Digitisation**, easy **Data handling**, real time **Ingestion**, **Collection**, **Collation**, **Corroboration**, **Processing**, **Visualisation, Display and Dissemination** of data and based on the above, the system will provide commanders in chain with necessary comprehensive and common picture on aspects of ops, ISR & OL to enable them to make informed decisions.

(b) The project is proposed to be developed as a **hardware agnostic**, **web based software application** hosted in **Central Data Centers (CDCs)** and **Regional Data Centers (RDCs)** through the **Army Data Network (ADN)**. The system is designed to **automate processes** of Indian Army units and formations starting from **regiment level** up to **Corps Headquarters**. The application will assist the commanders and staff in chain of command to arrive at informed decisions based on **data visualizations** provided by the system. The processed data available for visualization will be based on available inputs; staff check process and collation/ aggregation of data both in tabular and graphical form, using an **Open Geospatial Consortium (OGC)** compliant **Geo-Information System (GIS)** platform.

(c) Project AIDSS is proposed to be designed and developed as a web based, hardware agnostic application, capable of providing the commanders with visualisation, analysis and assist decision support. Further it will allow corresponding staff officers to collect, collate, ingest, store, retrieve, classify, process, analyse display and disseminate information to and from various hierarchal chains, other sister services and other Government agencies. The application will be able to function for day to day operations of units, formations and other establishments deployed in peace/ No War No Peace (NWNP) scenarios, Counter

Insurgency (CI)/ Counter Terrorism (CT) operations, Humanitarian Aid and Disaster Relief (HADR) missions and war like situation/ active hostilities.

7. **System Design and Architecture**

(a) The software application is designed to integrate the Operational Information System (OIS) and Management Information System (MIS) data sets, thereby giving the commanders and staff in chain a comprehensive and common picture as regards the operations, intelligence, ISR and OL aspects including the capability to carry out data processing in terms of staff checks, query management, utilization of business intelligence and visualization to arrive at courses of actions and also assist to rule out the less viable options. As the system is being planned keeping in mind the automation requirements of the Indian Army in the next decade, the system will be made open to exploitation by Artificial Intelligent (AI) and Machine Learning (ML) aspects in future.

(b) The software application is planned to be web based, capable of running on current, legacy as well as future hardware. The system design will allow development in **modular** and **incremental** manner addressing aspects of process automation such that sub systems/ modules can be strapped together to form the consolidated software. Further, **Agile Methodology** of software development is proposed to be employed in development of the same. The application is designed to be based on **Centralised Architecture**, being hosted on **ADN** utilizing the envisaged infrastructure of **CDCs and RDCs**. Lastly, the system will be designed to handle classified data using **Software Encryption** utilising secure network and other connected protocols.

8. **System Deliverables**

(a) **Commanders in Chain**.

(i) The commanders at various hierarchal levels will be provided with **decluttered visualisation** of the data in **graphical**, **tabular** and **spatial** form, both on the **map** as well as the **GIS platform**.

(ii) The commanders will be provided with outputs of **Operational Preparedness** (**Op Prep**), **Common Operations Picture** (**COP**), **Common Intelligence Picture** (**CIP**) including **ISR** and **Common Operational Logistic Picture** (**COLP**).

(iii) Commanders will be able to **monitor** progress of operations and control next phase of operations by modifying the plan.

(iv) The **analytics** produced and displayed by the system will be customisable and be available to compare with other data sets based on different well defined parameters and past/ historical events.

(v) The system is planned only to assist the commanders to arrive at probable **Courses of Action (CoA)** based on information available, analytics and staff check tools without generation/ suggestion of the same by the software application.

(b) **Staff Channel**. The system will allow the staff channels to work behind the scene and process the available data into outputs as desired by the commanders.

(i) The staff channels will be able to **collect, ingest, collate, store, retrieve, classify, process, analyse, display** and **disseminate information** to and from **various hierarchical channels**, other **sister services** and other **Government agencies** not only for the **day-to-day functions**, (routine, operations and No War No Peace (NWNP) scenarios), **specific operations** (such as Counter Insurgency (CI)/ Counter Terrorism (CT) and Humanitarian Aid and Disaster Recovery (HADR) missions) and **special operations** (war like situation and active hostilities).

(ii) The staff will be able to carry out limited staff checks required for Decision Support System (DSS) by the commanders, also the system will have capability for **storage**, **retrieval**, **comparison** and **display** of **time stamped chronological data** in terms of **images**, **maps**, **tables** etc.

(iii) The staff at appropriate level will be able to **change/ set parameters**, **add/ delete and modify activities of certain pre-defined data sets** as deemed necessary due to changed **terrain**/ **operation**/ **organisations**/ **tactical**/ **strategic**/ **doctrinal** and other changes.

(iv) The system will assist in **process** and **office automation** and thus result in collection of data to enable exploitation by AI and ML in future.

9. **System Study**.

(a) The Developing Agency (DA) shall carry out a **system study** at PMO CIDSS of various OIS and MIS applications to be integrated.

(b) The existing networking and data centre infrastructure available in the Army for hosting of the centralized application in order to provide optimal service assurance to the end users.

(c) As a pre cursor to the above, the DA shall interact with the users of the existing OIS and MIS applications and then conduct an analysis for integration of these into the AIDSS software.

**Important Technical Parameters**

10. **Scope**. The qualified DA shall be **solely responsible for designing, development, integration, facilitating the testing and acceptance** of a user friendly, fully functional AIDSS application software. The software should facilitate display and exchange of GIS based information over Army Data Network. It should facilitate day to day functioning of ops, ISR, OL staff at various headquarters and also facilitate commanders in decision making by incorporating appropriate inputs from OIS and MIS application. The scope of this project shall include the following:-

(a) **Ingestion/ Collection of Data**. The application software should be able to ingest data as inputs from the source OIS and MIS application databases through API based integration/ offline integration (in case of legacy software/ incompatible format etc). Further the software application should be flexible to ingest data through manual feeding for data sets for which either data does not exist in MIS/ OIS source software or newly defined data sets. The ingestion of this manual data

will take place thorough independent modules to be designed and developed as part of the AIDSS application.

(b) **Storage/ Population of Database**. The data received from various source application software should be populated in database only after time stamping the data for future conflict resolution in case of multiple instances of same / similar data. The database design should allow for addition, deletion and modification of new data sets, attributes and meta data fields in future. Any tampering pertaining to time stamp of data populated in the database has to be kept controlled and mitigated.

(c) **Collation and Corroboration of Data**. The database populated should be collated and corroborated based on information received from various sources. Information/ data sets for same and similar information/ data should be tagged and conflict resolution should carried out to populate updated information only. The manual override facility to accept cluttered / conflicted information should exist within the system.

(d) **Retrieval of data Query Management**. The data stored in the database should have meta data as per the laid down norms of Meta Data and Data Dictionary Standards for IA promulgated vide DGIS letter No B/05146/Ops/Info Sys dated 08 Feb 2021. The database should be based on commercially available/ open source database with perpetual licenses and AMC. The database should cater for future migration to prescribed DBMS as per Indian Army/ Defense forces/ Government of India requirements. The query management should cater for spatial, temporal, keyword and attributes based queries. The system should support both structured as well as unstructured queries.

(e) **Visualisation**. The inputs from various OIS, MIS source software applications and manually entered data should be visible on OGC complaint GIS platform utilising Google base layers, DSM maps and satellite imagery to output 2D and 3D rendering of the same. The output should confirm to user interface which will be shared later.

(f) **Analytics**.

(i) The data in the database should provide for discovering interpreting and communication significant patterns in data it should help the user see insights and meaningful data that the user might not detect otherwise. The data should be available for exploitation by AI and ML for the purposes of pattern identification and pattern prediction and based on the same should cater for the generation of options at a later stage.

(ii) The data and modules available for exploitation by AI and ML in future have to be clearly earmarked and should not leave the system vulnerable to top AI / ML security threat like system manipulation, data corruption and poisoning, transfer learning attacks or data privacy breach.

(g) **Dissemination**. The user should able to disseminate the data, queried or otherwise to lower or higher headquarters through the backbone network that is the Army Data Network (ADN) or through the Army Messaging Application - ASGIMA.

11. Following are the Terms of Reference (ToR): -

(a) Maximum use of Open Source Frameworks with assured support.

(b) Web Browser independence (if applicable).

(c) Google Material Design Document/ industry standard UI design document will be guiding documents for developing user interface and interactions.

(d) Maximum use of predefined data fields (dropdown menus, checkboxes etc) for input of data by users. Minimum data entry by users.

(e) Completely modular architecture such that any module can be replaced upgraded / added without affecting the functionality of other modules.

(f) Creation of BI based output for Commanders at all levels.

(g) Application wide comprehensive “natural language” based search facility.

12. A browser based solution is proposed to be developed. The solution should run on native browser with additional plug-ins that should be freely downloadable and should support Army Cyber Group (ACG)/ Indian Army prescribed browsers. The capability to accept necessary upgrades has to be catered in the application for addressing compatibility issues with latest release of browsers. Additional plug-ins for running application on browsers have to be specified and have to be updated and vetted prior to implementation in the software.

13. The application should be **accessible on Windows/ Linux/ Android** based machine and should accommodate for multiple levels of organization structure along with multiple layers of data processing capabilities including historical data.

**Major Software Components and Connected Requirements**.

14. **Database Management System**. Best available RDBMS based database with under mentioned facilities:-

(a) **Type of Database**. RDBMS/ NO SQL, a combination thereof or any other database may be used.

(b) **Masters Data**. The management of Master data should be done by the identified SSOT/ concerned owner of that data in order to ensure its integrity and correctness at all times.

(c) **Facilities on Database**.

(i) Creation of tables and relations and customization of tables.

(ii) Attribute tagging to spatial entities and spatial queries.

(iii) Creation of forms associated with tables.

(iv) Facility of create and customize views.

(v) Image integration with database as well as user created tables.

(vi) Facility to integrate video data in database attributes both in user created and present database tables.

(vii) Updation of Grid Reference based on Indian Military Grid Reference Systems (IMGRS) fields in the database tables to be done automatically when updating data for map related entities and symbols. The Integration of GIS platform and database has to be implemented in secure manner in order to prevent unauthorized access to geospatial info and metadata.

(viii) It should be possible to view the result of query in a separate window that can be resized and its transparency can be varied so as not to obstruct the view area of the map or top bar bottom bar of the display window.

(ix) It should be possible to view the result in graphical form ie query result should get displayed in form of appropriate symbols on the map.

(x) System should facilitate automatic updation of gird reference fields corresponding to symbols used for map annotation.

(xi) **Text to Graphic conversion**.

(aa) System should facilitate updation of database from user defined report formats.

(ab) System should facilitate automatic map annotation with appropriate symbols corresponding to database entries.

(xii) Facility to take printouts of the transactions carried out in the database at the end of the day so as to validate the data entered.

(xiii) Menu driven utilization of full SQL commands based on user profile and rights.

(xiv) Automatic update of database and tables from predefined user formats of situation reports, intelligence reports etc. Automatic updation of maps/ selected overlays based on the data from these reports.

(xv) Transfer of database tables on the network to other nodes, should be confirmed by flashing of message.

(xvi) Wherever applicable, strict relationship constraints, and a balance between normalization & performance to be implemented. Spatial as well as flat database.

(d) **Queries (Spatial/ Temporal/ Attribute/ Predefined Words/ Structured/ Unstructured)**.

(i) Database query for retrieval of data through forms for user selectable fields.

(ii) Facility to save and print results of queries for further analysis or viewing.

(iii) Proximity query to highlight the entities within a user defined radius of a given point on the map display.

(iv) User should be able to create buffer zones and generate queries based on the same.

(v) Facility to generate and view distributed query.

(vi) Facility to incorporate and save user created queries.

(vii) User should have an option to get the result of query highlighted on the map/ mosaic of maps.

(viii) It should be possible to carryout statical analysis based on time period, events or area and generate graphical outputs like graphs/ pie charts etc.

(e) **Data Exchange.**

(i) The solution should support **export and import of data** from different legacy systems/ other systems/ databases in different file formats (Text, Excel, MS-Word, XML, PDF etc) & on specified time intervals. The GIS/ Satellite imagery formats used should be compatible with DSM and its map framework including IMGRS.

(ii) Strict file format configuration should be undertaken for any upload, download, import or export of data exchange features while integrating various applications.

(f) **Data Entry**.

(i) **Validation**. The vendor shall identify the data elements which require validation during the development process and incorporate appropriate validation procedures in the code. The user should then validate the data elements. All critical data inputs should be provided with data validation.

(ii) Data Entry personnel should not be allowed validation and authorization rights. It should be governed by role based access control rights.

(g) **Database Management**.

(i) Queries (Distributed, Local, Flat, Spatial, Temporal, Attribute, Predefined Words, Structured and Unstructured Query on Database.

(ii) Replication of database.

(iii) Database security.

(iv) Database visualization.

(v) Database tables transfer on the network.

(vi) Database administration functions:-

(aa) **User Management**. User creation, deletion, modification, creation/ granting of roles and privileges.

(ab) **Table Management**. Creation of table, deletion of table, modification of table (flat/ spatial).

(ac) **Access Rights**. Facility to manage access rights should be provided down to field of tables.

(vii) Linking of Map entities or symbols to existing tables or user credited tables.

(viii) Addition, deletion and modification of constraints in existing spatial or user created tables.

(ix) Developer should design user defined distributed relation database scheme.

(x) The access to database information to be controlled as per the defined role of the user. A management tool to be provided to create and define these roles.

(xi) Common GUI for entering data in related tables.

(xii) Facility to backup database and upload data into database from secondary storage devices.

(xiii) A field should be provided in each table to indicate validation status of data entered. User with appropriate rights should be able to validate data and tick this field. Whenever data is retrieved, there should be a method of indicating status (validated/ not validated) data.

(h) **Data Migration**. The envisaged application should cater for data migration from other agencies/applications and build a fresh, authentic and clean database with logical separation of existing data. Necessary data cleaning of various fields is required to be carried out during migration of data. Necessary logic for addressing data migration with changed data structures/design in new database shall be addressed.

(j) **Data Dictionary**. The vendor with assistance of PMO CIDSS will compile a data dictionary of all data types used in the application and the same will be submitted both in hard and soft form to PMO CIDSS as part of project deliverables.

15. **Data Security**. Adequate security measures will be ensured by the vendor **as per the latest guidelines/ policies of Army Cyber Group (ACG)** will be shared at appropriate time. Key security highlights are mentioned below:-

(a) Multiple levels of security should be incorporated, including object level security of repository, web level security of presentation catalogue, data level granular row/ column level access security, query limit security and user level security.

(b) **Multi Factor Authentication**. In order to ensure security and integrity of data, any transaction committed in the system should require multi-factor authentication as specified at the time of Supply Order

(c) Procedures and mechanisms will be developed by DA to prevent unauthorized access to the queries, reports and dashboards.

(d) The application security to be developed closely with the database security to ensure that all users having adequate application security can also have the access to the data in the database, i.e. application security and the database security to be mapped to each other for different profiles of users.

(e) Security authorization granted to the application users should be withdrawn once the access process is over.

(f) Access control methods to be implemented for the application.

(g) The application should undergo and **pass the security testing by appropriate authority pre as well as post deployment.** All existing security guidelines shall be implemented during the execution of project.

(h) The vendor will be responsible for fixing the observations raised by Army Cyber Group during the cyber vetting process in order to obtain security clearance. **Any design change proposed by ACG** at that time, due to detection of some previously unforeseeable vulnerability will be fixed by DA.

(j) **Yearly Vulnerability Assessment, penetration test and necessary security upgrades** are to be catered by DA during the Support (Warranty and AMC/ ATS) period.

(k) Intrusion Protection System (IPS) and Intrusion Detection System (IDS). The IPS and IDS (Hardware/ Software) should be catered for in the security solution of AIDSS application software.

(l) The following **security measures** should be incorporated: -

(i) Watermarking on all screens and printouts/ downloadable reports with details of user credentials and log in time.

(ii) Disabling Right click/ copy functionality.

(iii) Session Handling.

(iv) Disabling storage of Web pages at client end for office viewing.

(v) Audit records of all access, print, download etc. activities.

(vi) All inputs feeds have to be sanitized for use of special characters, unauthorised queries and symbols.

(m) Database Security like AES encryption for data at rest, secured backup, strict authentication and authorization mechanisms should be adopted.

16. **Suggested Security Aspects**. A few suggested security aspects to be implemented during various stages of software application development are given below:-

(a) **Design and Architecture**.

(i) The proposed software application should preferably be based on web based architecture wherein the client is able to access all functionalities of the system through the browser.

(ii) The application being developed should be based on the open standard and architecture.

(iii) Open Website Application Security Project (OWASP) cyber security vulnerabilities associated with website based application should be addressed.

(b) **Authentication and Authorization**

(i) Login only with a valid username and password.

(ii) Implementation of role based access control system.

(iii) Logging of all user activities and maintenance of audit trail with time stamping.

(c) **Session Management**.

(i) Once logged in, user session to be maintained as long as user is active.

(ii) Session timeout be defined in case of inactivity.

(iii) Server side state management techniques be used to ensure data entry.

(iv) Uniqueness of user session to be maintained throughout the system.

(d) **Input Validation**

(i) Validation of all user end data entry/ update to be implemented.

(ii) Use of data staging should be restored to for ensuring that users cannot address the main data base directly

(e) **Database Management**.

(i) **Database Design**. The database used within the application should be designed in a manner wherein it is able to cater to the maximum number of transactions envisaged within the application design

(ii) **Data Base Administrative (DBA)**. Techniques and methods for enabling DBA functionality should be incorporated within the application.

(iii) **Normalisation**. Databases deployed within the application should conform to BCNF Third Normal Form

(f) **Code Construction**. The coding language should be based on open standard and best practices for secure coding should be incorporated.

(g) **Data Encryption**. The security of data through all its stage i.e creation, transit, storage and destruction must be planned and implemented. Use of SAG approved encryption algorithms must be resorted to for fulfilling this task. Commercial/ industrial grade encryption like AES 256 bit may be considered for data encryption in initial phase and SAG graded encryption may be sought in subsequent phase.

(h) **Communication Security**. The security of data during transit must be ensured. All communication between the client (browser) and the server must be through an encrypted channel (HTTPS). Implementation of TLS 1.2 or higher is 'R'.

(j) **Error Handling and Logging**. All error/ exception be handled and logged for audit and analysis subsequently. Details of when and where the error occurred must be captured. Internal errors should not be displayed to the end user and generic error pages generated by the application should be used instead.

(k) **Website Security**. Threats like SQL inj, XSS, session hijacking, parameter manipulation, path disclosure need to be handled by implementation the relevant security features of the selected technologies.

(l) **Output Encoding**. To prevent Cross Site Scripting (XSS), all data used to render HTML or used for Java Script must be sanitized. CSRF mitigation should be enabled within the designed webpages.

(m) **Server Configuration**. The website server should be configured for the required security settings to ensure application pooling trust level, timeouts, SSl authentication. Default open ports must be blocked by restricting the associated services.

(n) **Security of Authentication Data**. Authentication/ user credentials stored within all database should be in an encrypted form. Users must be forced (through software design) to change default passwords at the time of initial login. Any default account existing within the database for housekeeping/ testing should be deleted/blocked explicitly.

(o) **Development Testing**. Individual modules of the application must be tested and followed by overall testing of the application must be carried with maximum load using test data to check the functionality and efficiency of the application.

(p) **Use of Business Intelligence (BI) Tools**. The access to BI data should be restricted to authorised users only and this access should be protected with use of dual factor authentication (compliance through IAM solution of AHCC/ DG Signals).

(q) **Bandwidth/ Network Integration**. The Bandwidth requirement during exchange of data and integration within the ADN in the form of IP address, DNS registration, time synchronous etc should be done in consultation with DG Signals. Application should be designed in a manner wherein it is frugal in the use of scarce bandwidth resources.

(r) With the increase in data from open source as well as insider threats, it is imperative to incorporate a Threat Intelligence Platform and Extended Detection and Response (XDR) in the network architecture.

(s) **Cyber Security Vetting**. Post functionality testing by sponsor unit the software application alongwith the source code be forwarded to Army Cyber Group for undertaking detail cyber security vetting.

17. **GIS**.

(a) The OGC compliant GIS should be compatible with DSM and its map framework including IMGRS.

(b) It should be possible to upgrade/ integrate/ change the OGC compliant GIS of AIDSS application software to Integrated GIS for Tri-services (IGIST) being developed by Headquarters Integrated Defence Staff (HQ IDS)/ Centre for Artificial Intelligence and Robotics (CAIR).

(c) Facility with a feature to transport the user created/ upgraded overlays onto the OGC compliant GIS should exist. The option of which overlay to retain/ discard should be with the user.

(d) The GIS should compatible with Enhanced Compression Wavelet (ECW) for transferring of raster data/ maps on the ADN.

(e) **Storage of Map Data**. Map data should be stored in loss less compressed mode.

(f) **Map Database Management**. Map conversion utility should have following functions:-

(i) Create entries for availability of maps in database and look-up tables.

(ii) Generate entities boundaries for various units/ formations (i.e. Battalion, Brigade, Division, Corps etc) in form of overlays.

(iii) Error message display if map not converted indicating the nature of error.

(iv) Automatic updation of grid look-up tables during the process of map conversion.

(v) Theatre wise storage of maps with a facility to identify and retrieve maps belonging to trans-border sector of that theatre.

18. **Map Retrieval and Display**.

(a) **Retrieval**. Initially a map of India and its neighboring countries should be displayed. Million/1 : 250000/ 1: 50000 map number sheet should be highlighted with move of cursor on the displayed map. Selection of a map should be based on mouse click. In addition under mentioned facilities should also be available:-

(i) Selection and retrieval of map sheets of desired scale based on under mentioned options:-

(aa) Place name.

(ab) Topographical sheet number.

(ac) Latitude – longitude.

(ad) Grid references in a Grid Zone without referring to map sheet Numbers.

(ii) Retrieval of maps based on user defined (default) map number and zone number for map of India

(b) **Map Composition**.

(i) System defined default selection of entities for composition of map.

(ii) Facility for the user to manipulate the composition by selection/deselection of entities without redrawing the displayed map/maps.

(iii) Facility for the user to define and save his own default composition of map.

(iv) Option to highlight a specific entity out of the ones displayed.

(v) Capability to create international borders, line of control, line of actual control, actual ground position line, military formations boundaries, states, districts and lower boundaries.

(vi) Capability to create, delete and modify standard military symbols.

(vii) Should provide facility to the user to filter (switch off/ on) entities of same group.

(viii) Facility to compose thematic maps i.e shade maps as per relief and attach data to thematic map.

(ix) Drawing tool bar should be the main tool bar.

(c) **Display of Maps**. Should include following:-

(i) Seamless display of any user defined number of maps i.e it should be possible to create a work space and save a mosaic of any number of maps and user layers in the work space for subsequent retrieval.

(ii) Map navigation to adjoining maps of the same scale.

(iii) Scale up/ scale down facility to different scale maps for the same location.

(iv) Facility to open multiple windows of application software and view more than one map at the same time by resizing the windows.

(v) Facility for display of data attached with entities. Entities should get selected with move of cursor and data attached with any selected entity should be retrieved with click of mouse button.

(vi) Highlighting and sub grouping of entities.

(vii) Button based facility for retrieving stored satellite images corresponding to the map being displayed should be provided. Retrieved satellite image should be displayed with map entities draped on it and should have the same format with map entities draped for easy viewing.

(d) **Map Manipulation**. It should have following features:-

(i) Icon/ menu based facility.

(ii) Zoom in/ out of user selected map portion.

(iii) Facility for the user to alter size and font of the entity names and other minor details.

(iv) Grouping of map entities for display.

(v) Zooming with information enhancement with each zoom should be a standard feature.

(vi) Zooming of full map to full canvas size.

(vii) It should be possible to scroll and pan at all zoom levels.

(viii) Area symbols should enhance to corresponding size with each zoom.

(e) **Print**. Should be able to provide following facilities:-

(i) Should print displayed screen including user layers.

(ii) Give complete map print out with entities selected by user.

(iii) Print user layers.

(iv) Print query reports.

(f) **Display System**. System should give an option to distribute the image as given below:-

(i) Map on one display.

(ii) Enlargement of user selected area on second display.

(iii) Data attached to entities selected by the user with move of mouse on enlargement/map displayed on third display.

(g) Facility for transfer of terrain database from one scale of map to other scale.

(h) **Analysis on Displayed Map**. Under mentioned facilities should be available on single map as well as on mosaic of maps:-

(i) Line of Sight (LOS)/ linear distance between points selected.

(ii) Traversal distance computation.

(iii) Dynamic reading of correct values of Easting and Northing (Grid References) including letter prefix with user electable 4/6/8/10 figure grid reference display.

(iv) Dynamic display of latitude-longitude values.

(v) Dynamic display of height of any point on displayed map indicated by cursor/mouse.

(vi) Calculation of area and perimeter and maximum and minimum height within the area designated by user-defined polygon on the displayed map.

(vii) Find and display shortest path and alternate path on user configurable constraints.

(viii) Highlight chosen intermediate map entities on the displayed path.

(ix) Slope analysis facility should also be incorporated.

(x) Find intermediate/intervening obstructing height in Line of Sight (LOS) / visibility and shade areas of inter visibility from a point. Facility to vary viewer and target heights in LOS/visibility analysis.

(xi) Network analysis on maps including mosaic of maps.

(xii) Sectional profile of selected route on map/mosaic of maps.

19. **Map Annotation (User Layer)**.

(a) **Creation and Manipulation of User Layers**.

(i) Creation and saving of unlimited number of user layers.

(ii) Grouping of created user layers.

(iii) Process of creation of user layers to be made very user friendly i.e the drawing and formatting tools to be made akin to MS Power Point.

(iv) Advanced graphics drawing facilities to include manipulation of graphics and symbols (Save, Copy, Erase, Rotate, Resize, Delete etc).

(v) Advanced text annotation on map with bold, underline and italic in different colour, size and fonts.

(vi) Facility to use a symbol library including user defined symbols, placing them in user created group and relating these symbols to tables. Symbol libraries should be replaceable. Symbols to be preferably compressed, be transportable in lossless (utilizing lower bandwidth) format.

(vii) The user should be able to pick frequently used military symbols and place them on a separate tool bar for further use.

(viii) Undo and redo facility for minimum four steps should be available.

(ix) Facility for creation and storing of templates should be available.

(x) Facility to create military symbols from textual equivalent of the military symbol.

(xi) Creation of working view of the desired military symbols from the library.

(xii) Viewing symbols with a facility to make them scale dependent/independent.

(xiii) Placement of selected military symbol or user created symbol on the displayed map though explicit grid reference given by the user or on mouse click.

(b) **Display**. Should have:-

(i) Selection/ De-selection of user layers for display on the selected maps.

(ii) Simultaneous display of user layers on corresponding maps in case multiple map display.

(iii) Conversion of overlays marked on one scale map automatically to other scale and vice versa.

(iv) Scaling up/down of user layers with each zoom.

(v) Facility to transfer overlays over the network should be provided.

(vi) Merger of two or more layers and save them as one.

(c) **Overlays Transmission Management**. Any overlays created (with/ without attribute data) should be approved by an authorised user prior to its transmission over the ADN. A field on the overlay should display status of file in terms of draft/approved. A facility for management of overlays (stores/transmitted) should be available. Whenever approved overlay is transmitted, the time & date should be stored in file automatically.

(d) **Overlays Database**. All overlays (created/ approved/ transmitted/ received) should automatically be maintained in a database by the system with facility for user to manipulate the database as per his rights.

(e) **Access to Data Attached to Overlays**. Data attached to 0overlays should be accessible to users as per their rights.

(f) **Compression of Overlays**. Facility for automatic compression (loss less) of overlays and data attached to overlays prior to storage transmission should be provided. Automatic decompression of overlays should take place at the receiving end.

(g) **Decluttering Tool**. A tool for decluttering of overlays should be provided. User should be able to select the area in which to apply decluttering tool and should result in cluttered symbols moving away in form of call outs.

(h) **Highlighting of Entities**. User should be able to select entities, objects and highlight them with desired colour. Similarly user should be able to manipulate the font of colour of annotated text such as city name.

20. **Map Edit**.

(a) **Manipulation of Vectors**. Should have:-

(i) Breaking of vectors i.e Insert node.

(ii) Joining of vectors i.e Join node.

(iii) Addition on an entity vector i.e Insert vector.

(iv) Deletion of an entity vector i.e Delete vector.

(v) Change position of a vector.

(vi) Change class of vector from lower to upper.

(vii) Change default grouping of vectors as per user requirements.

(viii) All above facility available on a zoomed map

21. **Customizable Business Logic**. Indian Army has disparate terms and conditions for its personnel based on rank, arm/service, trades, geographical location etc. In addition, there are large number of policies and orders/ instructions issued by various branches of IHQ of MoD (Army) from time to time on each subject. The terms, conditions, various policies and orders/instructions are subject to changes. The system should be so designed that these changes are seamlessly integrated without hampering the current processes or affecting past transactions. Also, the business logic used for each transaction must be recorded against the same and should be reflected if needed. This frequent customization of business logic shall require a facility to be given to the appropriate users to easily induce changes in the system. These changes should be approved and logged at all times. Designing and development/ integration of an appropriate rules engine should also be developed.

22. **Application Administration**. The application design shall incorporate an enterprise level system administrator and a number of **administrators at various local levels** in the system. They will administrate the application in delegate and decentralized manner.

23. **Rights & Role Based Access**. Management of roles and rights should be through the software-frontend. Access to data and rights of transaction will be role based and any access to data shall be suitably logged for audit purposes. The system should allow a role based access rights mechanism.

24. **Users**. Army personnel in the individual capacity as well as in the capacity of the appointment tenanted by them will be the users of the application.

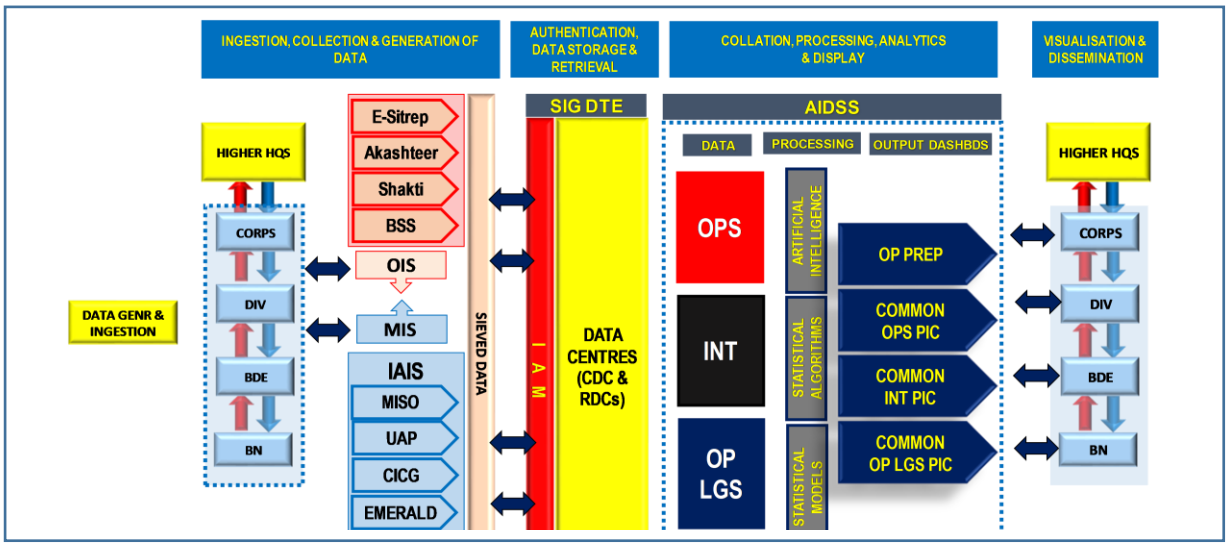
25. **Application Software Features**. The proposed AIDSS software should have the following distinct features:-

(a) The **front end** of the software will be made using such a development platform that permits use of software in online as well as in offline mode. It should permit proactive synchronization between the OIS and MIS applications operated in offline mode, due to operational constraints, with the central database without loss of data integrity at both ends for detached and remote units of IA.

(b) The software should automate the inputs from OIS and MIS applications. Existing applications may be studied for reference.

(c) The application should meet both internal as well as external agencies need of **exchanging data/ reports seamlessly/ electronically in XML/ JSON format or via APIs**. User friendly Interfaces for importing as well as exporting these data would be provided wherever required.

(d) Though the SRS will be finalized before commencement of development, all changes including changes in the report formats or new reports in the package would be carried out free of cost during entire life cycle of the project. A bird’s eye view of the application architecture is depicted in figure 1.




(e) The application should have a modular design for ease of maintenance and up gradation.

(f) Application should be capable of vertical and horizontal scaling.

(g) Avoidance of use of proprietary libraries/frameworks to prevent vendor dependency and licensing issues.

(h) Training material should form an integral part of the application. It will include Online Help, Context Sensitive Help, Discussion Forums, Ticket Management and Tool Tips.

(j) The application software should cater for integration with relevant existing applications as well as should have capability to integrate with upcoming / future applications.

26. **Software Package**. The solution is to be installed/ hosted at Army Headquarter Computer Centre (AHCC) with Regional/Central Datacentre as the access points.

(a) Handle data relating to aspects of Ops, Int, ISR and OL in relation to activities undertaken by IA and ingestion/ interaction with other sources.

(b) Hosted on ADN using planned CDC/ RDCs infrastructure.

(c) API based integration with two way transaction of data with all present and proposed OIS applications in future through CDC/ RDCs.

(d) API based integration in one way reception of data from all present and proposed MIS applications in future.

(e) Receive, process and disseminate inputs within IA and with other services, HQ IDS and other Govt agencies.

(f) Cater for integration/ providing data/ inputs to any Tri-Services/ Joint Services application in future.

(g) Handle all aspects of Ops, Int, ISR and OL Functionalities as laid down in **'Annexure I'** to this paper.

(h) Work on Software based encryption for transaction and storage of data at rest and while in transit.

(j) Provide visualisation of data ingested by the sys on DSM, GIS platform and in tabular, graphical and document form.

(k) Preferably, make use of open source GIS platform, database management Software which will support structured and unstructured queries and support migration to an approved OGC compliant GIS platform in future.

27. **Digital Signatures**. The system should have inherent capability for digitally signing any documents/reports/data produced as output. Only personnel authorized for specific function should be allowed to digitally sign the documents/reports. The system should maintain record of all such signing along with the signed documents.

28. **Audit Trail**. All operations, procedures and events in the system should be traceable as chronological set of records in order to giving out sequence of activities performed to achieve specific state of the database.

29. **Integration.**

(a) Integration methodology with other applications would be using **JSON/ XML through Web API or any other latest and matured industry standard.**

(b) The application to have method of creating new API using front end only.

(c) The application software should cater for envisaged integration with OIS and MIS applications and any other application specified at the time of supply order

30. **Visualisation Dashboards**. The system should provide a dashboard to each user based on his appointment. The dashboard should be so designed as to provide easily comprehensible information through graphical representations etc. The dashboards should be customizable by appropriate administrator in order to provide additional information when available or change the format of information presentation if required. The system once online will provide the commanders and staff officers in chain of command with the under mentioned deliverables:-

(a) **Cdrs at all Levels (Bn/ Regt to Corps)**. The commanders will be provided with '**Visualisation Dashboard**' which will provide real time or near real time sit on the u/m aspects:-

(i) **Op Preparedness Pic (Op Prep)**. The dashboard will provide the following info:-

(aaa) Display of **Ops** & **ISR sit** on Digital Maps & GIS Platform.

(aab) **Manpower State** - Authorised/ Hard Scale/ Held/ Surplus/ Deficiency/ fighting strength/ Op employment.

(aac) **Weapons**/ **Equipment**/ **Vehicles State** - For all Arms/ Combat Support Arms & Services details of Authorised/ Held/ Critical Items/ Surplus/ Under Repair/ BER/ BLR/ Loans etc.

(aad) **Logistics Sustenance** during peace times & during various types of ops, ie FOL/ Supply/ Ammunition/ Mines/ Stocking levels/ Repair and recovery plan etc.

(aae) **Defence works** & **Obstruct** data for the particular HQ in terms of Authorised/ Held/ Proposed & present Maintenance State.

(aaf) Op Training State including Collective/ Individual and Joint training states.

(aag) Dashboard will provide for the u/m:-

(ai) Geo tagged data.

(aii) Provisions for comparison of historical data with predefined and user defined time intervals.

(aiii) Aggregated data visibility of all defined assets.

(ii) **Common Ops Pic (COP)**. The dashboards will provide the following information:-

(aa) **Op Deployment** of all predefined **sub-units**, **units**, **independents units/ sub units** & **HQ** and **aggregated** the same for all **Arms**, **Combat Support Arms** & **Services.**

(ab) Provide **visualisation** for **Plans** and means to **Monitor Progress** of ops, **Control** of ops & **Executive** of Ops in **Peace time/ CI/ CT/ HADR/ war like sits** and **active hostilities**.

(ac) Generate **e-SITREP**, **incident reporting** and other **reports** & **returns** related with GS functioning.

(ad) The dashboard will provide:-

(aaa) GIS based **Spatial** & **Temporal visualisation** & query generate facility for analytics.

(aab) **Geo tagging** of all predefined and user defined resources.

(aac) Provide means to share overlays over the network.

(aad) Provide means to carry out comparison of **historical data** by pre-defined and user defined time intervals.

(iii) **Common Int Picture (CIP incl ISR Picture).** The dashboard will provide the following:-

(aa) **Combat Intelligent** including enemy ORBAT/ deployed/ disposition/ weapon/ equipment/ known Doc/ Strat/ Tactical, char of weapons & equipment with details of origin, special requirements and historical evolution.

(ab) **Ingestion** and **visualization** of all enemy activities, provide graphical outputs to including enemy targets / activities on **Intelligence Map**, enabling the Intelligence Staff Officers to carry out assessment.

(ac) Generate/ updation & dissemination of Intelligence collection Plan (ICP) and other reports & returns.

(ad) **Multi Source Data Fusion (MSDF)**. Capability to ingest and process structured/ unstructured data collected/ ingested within service/ sister service and other Govt agencies/ Ministries.

(ae) The dashboard will provide:-

(aaa) GIS based **Spatial** & **Temporal visualisation** & query generate facility for analytics.

(aab) Common symbology for marking GIS layer of Intelligence logs.

(aac) Sharing of info over network for dissemination within & Tri services.

(aad) Maintenance of archival database & comparison of **historical data** by pre-defined and user defined time intervals.

(iv) **Common Op Logistics Picture (COLP)**. The dashboard will provide the following:-

(aa) Spatial, Tabular and Graphical visibility of all supply/ FOL/ weapons/ ammunition/ equipment & vehicles.

(ab) Vis of Logistics sustenance based on time/ op/ terrain & intensity parameters.

(ac) Generate automatic reports & returns.

(ad) The dashboard will provide:-

(aaa) GIS based **Spatial** & **Temporal visualisation** & query generate facility for analytics.

(aab) **Geo tagging** of all predefined and user defined resources.

(aac) Sharing of info over network for dissemination within & between services.

(aad) Maintenance of archival database & comparison of **historical data** by pre-defined and user defined time intervals.

(v) **Staff Offrs at all Levels (Battalion/ Regiment to Corps HQ)**. The staff officers at all levels will be provided with “Staff Officers Modules” to help ingest, collect, collate, store, retrieve, classify, process, analyse, display and disseminate info.

31. **Offline/ Lightweight Module**. There are a number of units/subunits which are likely to be disconnected from Army Data Network (temporarily or due to bandwidth constraints) due to various operational/administrative/ other reasons. There is a need to develop a mechanism to ensure that these units are also able to carry out their functions in offline mode through a lightweight and portable module of the system. This module should be able to synchronize with the system on connection to ADN. Alternatively, a mechanism should also be built to export the synchronized data from lightweight module and transfer it manually in the system connected on ADN.

32. **Support of Software Products**. The DA will provide all necessary support to the licensed software products like compatibility with OS, middleware, antivirus etc. by regular updates/upgrades to the system as applicable and carry out necessary co-ordination with the OEM for support as desired from time to time. Further, entire support to open source software wherever used, if any, will be provided by the DA to include upgrade and update to address vulnerabilities and new functionalities. Strict version control with a record of change history and status to be exercised. Upgrades and updates provided by any third party agency will be required to be duly sanitised prior to deployment.

**Development and Testing**

33. Software will preferably be **developed at user location however, if the same needs to be developed within vendor premises, Non Disclosure Agreement (NDA) and other connected security protocols should be adhered to**. Hardware and software for the same will be provided by the vendor. Resources for carrying out this testing (viz. manpower for data entry, computers etc) shall be provided by the vendor. The software may also be tested (including Code Review) at any independent software testing agencies to confirm technical requirements including performance, security and reliability. Testing with respect to cyber aspects of all modules will be done by ACG to confirm implementation of security requirements. Acceptance after testing of each phase/module will be given by PMO CIDSS.

34. Testing shall also include ease of installation, user friendliness, management and security and coding methodology besides adherence to the functional requirements in the SRS. **Vendor shall be responsible for documentation of testing**.

35. **Getting the developed software tested will be the responsibility of the vendor as per the SRS**. It will be tested by Independent third party software tester. The cost of testing will be borne by the vendor.

36. No remote testing of software under development will be done on internet.

37. **Establishment of System Integration Test Facility (SITF)**. The DA will establish a fully functional SITF in the PMO CIDSS premises. SITF will have a prototype Test Bed which will be used for system simulation, development, testing of software configuration controls, information security measures, facilitate evaluation of cost and benefit of technology insertion based on user feedback.

38. **Hosting of AIDSS Application Software**.

(a) The AIDSS software is envisaged to be used by 3000 concurrent users pan Indian Army. The software is proposed to be installed as instances at Central Data Centres (CDCs) and Regional Data Centres (RDCs) with instances occurring at Corps Headquarter level.

(b) The data hosted at RDCs will be replicated and synchronized at CDCs with each server at CDC will have a disaster recovery site.

(c) Based on the above information the developing agency should calculate/ compute the requirements with respect to storage, computation power and bandwidth to cater for the application software based on OGC compliant GIS platform utilizing Defence Series Map (DSM), Satellite Imagery (2D/ 3D rendering). These requirements should be intimated as a part of response to this RFI.

39. **Training**.

(a) Vendors should provide training to persons of units/formations at designated locations in addition to Delhi, after delivery of each phase deliverables. Sufficient technical hands who understand the package should be formed into adequate number of training teams which can simultaneously execute this task at desired locations.

(b) A separate training mode functioning will be provided at any level irrespective of Normal Mode.

**Maintenance and Support**

40. **Maintenance**. Suitable tools shall be developed, in consultation with PMO CIDSS, to provide dash boarding facilities to important functionaries, for data import/export, data synchronization, data conversion and disaster recovery to facilitate the integration process

41. **Help and Support**. The DA shall be responsible to provide support to the end users after the rollout of the application. This shall include registration of tickets as both online and offline mode (telephone/ email).

42. The DA should provide support for the developed application by the means of warranty/ATS. The desired details are as given in succeeding paragraphs.

43. **Warranty**. The vendor will provide free maintenance and warranty support from the date of final acceptance and shall be deemed to have expired only after successful negotiation of maintenance support package is concluded between **PMO CIDSS** representative and the DA. The date of issuing the final acceptance certificate would be deemed to be the date on which the warranty will commence. All issues arising from application will be addressed by the DA at no additional cost. In case the issue noticed within the warranty period persists beyond end of warranty period, the same will be addressed by the DA in ATS period without any additional cost. Further, **support during warranty period** will include: -

(a) Analysis and bug fixing when notified.

(b) The database maintenance.

(c) **Enhancement**, if required by the user within the scope of the SRS and also any additional major/minor process change/enhancement, if required so as address any policy change.

(d) **System training support** along with requisite training artefacts and user support materials, fully updated to reflect any changes carried out in the software, to cater for roll-over of personnel on a quarterly basis at **PMO CIDSS**.

(e) Provisioning **regular monthly/quarterly patches** on physical media as a clean single step executable and uploading of the same on the ADN for the user environment.

(f) **Regular presence / availability within reasonable time**, of software engineers of the vendor for solving any problem

(g) **Periodical data base management/maintenance.**

(h) **Yearly Vulnerability Assessment, penetration test and necessary security upgrades.**

(j) **Periodic security clearance/ clearance after any change in the package from ACG.**

44. **Post Warranty Annual Tech Support (ATS)**. Depending upon the relevance of the technology used in development and exploitation of the application after three year warranty period, a new contract under **PAC for ATS of AIDSS** software will be initiated at the discretion of PMO CIDSS. All the warranty clauses, bug fixing and modifications required during ATS after expiration of warranty would be catered for free during ATS along with any additional changes needed during ATS period due to policy change/ user feedbacks. However, vendors can quote their rates for ATS as part of their commercial offer as per **Appendix D.**

45. **Proprietary Rights**.

(a) The DA will be required to give an undertaking that the proposed development and customization would in no manner be a violation of Intellectual Property Rights (IPR) of any software and that the Indian Army would not be responsible towards any legal fallout at a later stage. The customized software developed including subsequent versions would become a proprietary item of the Indian Army after final acceptance of the software after testing. Indian Army reserves the right to prepare any number of copies for distribution, use/ modify the code in any other project. Similar terms apply to the documentation, User manual and training materials including presentations, which will be used by the vendor during the training phase.

(b) The following will be the requirements for incorporating IPR provisions:-

| Ser No | Artefact | Associated IPR | Remarks |
|---|---|---|---|
| (i) | System Design | System Patent | System in entirety |
| (ii) | Functional features | Methods Patent | Number and listing of functions performed by software |
| (iii) | External appearance | Registration of design | GUI menus |
| (iv) | Input domain | Registration of design, Patent | Data type, format, source |
| (v) | Processing Algorithm | Method Patent | Algorithms |
| (vi) | Compilation script | Copyright | Code specific to OS and compiler |
| (vii) | Source Code | Copyright | Code in a programming language |
| (viii) | Libraries/DLLs/ Executables | Copyright/ Licenses | The artefact sharing for re-use |

| | | | |
|---|---|---|---|
| (ix) | Logos/Images/Audio files | Copyright/ Licenses | All audio files, images developed for buyer |

46. **Supply of Source Code**. The entire source code of the software will be provided after each iteration. The final source code for the software will be provided with proper documentation (Software Product Specifications design document etc) explaining the functions of each module/ routine etc. Necessary instructions for incorporating any modification/changes in the software and its compilation into executable/installable product will be explained clearly in the documentation itself. All source code will become a proprietary item of the Indian Army. It must be understood that the software will be developed for the Army as a dedicated project. Entire software and other details will be made available to the Army and it cannot be utilized for any other purpose without specific clearance from the Indian Army (PMO CIDSS).

47. **Certifications**. The vendor should have Capability Maturity Model Integration (CMMi) level 5/ ISO 9001 and 27001/ 20000/12207 certifications. Any other relevant certification may be mentioned by the vendor.

48. **Software Development Center**. The company has to have a software development center in and around Delhi. If they do not have a software development center it should be willing to have one after allotment of the contract.

49. **Project References**. The vendor should at least list three previous projects achieved providing the following: -

(a) Name of client including contact information.

(b) Size of organization.

(c) Size of supported units.

(d) BI functionality used

50. The vendors are required to follow the procedure for response as explained in **Appendix 'A'** of this document. In addition, the vendors are required to furnish details as per Performa at **Appendix 'B'** (refer Annexure II of Appendix A of Chapter II of DAP 2020). The vendor must furnish answers to the Questionnaire as given at **Appendix 'C'**.

51. Vendors should confirm that the following conditions are acceptable: -

(a) The solicitation of offers will be as per 'Single Stage-Two Bid System'. It would imply that a 'Request for Proposal' would be issued soliciting the technical and commercial offers together, but in two separate sealed envelopes. The validity of commercial offers would be at least 18 months from the last date of submission of offers.

(b) The technical offers would be evaluated by a Technical Evaluation Committee (TEC) to check its compliance with the RFP.

(c) The AIDSS application software of all TEC cleared vendors would be put through a trial evaluation in India on a 'No Cost No Commitment' basis. A staff evaluation would be carried out by SHQ to analyse the result of field evaluation and shortlist the AIDSS application software for introduction into service.

(d) Amongst the vendors cleared by staff evaluation, a Contract Negotiations Committee (CNC) would decide the lowest cost bidder (L1) and conclude the appropriate contract.

(e) The vendor would be bound to provide product support for the time period specified in the RFP, which includes spares and maintenance tools, jigs and fixtures for field and component level repairs.

(f) The vendor would be required to accept the general conditions of contract given in the Standard Contract Document at Chapter VI of DAP 2020.

(g) **Offset (if applicable)**. Not applicable.

(h) **Integrity Pact**. An integrity pact alongwith appropriate IPBG is a mandatory requirement in the instant case (**Refer Annexure I to Appendix M of Schedule I of DAP 2020**).

(j) **Performance-cum-Warranty Bond**. Performance-cum Warranty Bond both equal to 3% value of the contract inclusive of taxes and duties is required to be submitted after signing of contract.

(k) **Non Disclosure Agreement (NDA)**. This RFI and its questionnaire is sensitive in nature. The vendor is required to sign a NDA for the same. The format for the NDA is given at **Appendix 'E'**.

52. **Indigenous Content (IC)**.

(a) It is pertinent that maximum development of the software should be with indigenous software (certification by the Statutory Auditor of the Bidder that the software has been developed within India) driving the desired applications while the backend software i.e. Operating Systems continues to be OEM defined. The self certification by the Bidder and certification by the statutory auditor of the Bidder shall certify that the software has been developed within India. If an Indian Bidder acquires the sole ownership of a proprietary software by way of acquisition/one-time buy-out or any similar means and becomes the sole owner of Intellectual Property Rights (IPRs), such software can be considered as indigenous to the extent of the value of its utilization in the current contract, provided an undertaking is given that the Seller shall maintain the ownership of the software throughout the contract period.

(b) The indigenous content should be as per Para 21 of Chapter I of DAP 2020.

## PART II

## Procedure for Response

53. Vendors must fill the form of response as given in **Appendix 'A' (refers to Annexure I of Appendix A of Chapter II of DAP 2020)**. Apart from filling details about the company, details about the exact product meeting other generic technical specifications should also be carefully filled. Additional literature on the product can also be attached with the form.

54. The filled form alongwith softcopy in a CD should be dispatched to the address given at **Para 3 of Appendix 'A'**.

55. Last date of acceptance of filled form is_____. The vendors short listed for issue of RFP would be intimated.

56. The Government of India invites responses to this request only from Original Equipment Manufactures (OEM), Authorised Vendors or Government Sponsored Export Agencies (applicable in the case of countries where domestic laws do not permit direct export by OEMs). The end user of the equipment is the Indian Armed Forces (IA). A copy of the response is also to be shared with Department of Defence Production (DDP) by the firms for updating the competency map of the firm held with DDP.

57. This information is being issued with no financial commitment and the Ministry of Defence reserves the right to change or vary any part thereof at any stage. The Government of India also reserves the right to withdraw it should it be so necessary at any stage. The acquisition process would be carried out under the provisions of DAP 2020.

## PART III

## GUIDELINES FOR FRAMING CRITERIA FOR VENDOR SELECTION/ PREQUALIFICATION IN 'BUY (INDIAN-IDDM)' 'BUY (INDIAN)' AND 'BUY AND MAKE (INDIAN)' CASES (REFER ANNEXURE IV OF APPENDIX A OF CHAPTER II OF DAP 2020)

58. The guidelines prescribed for short-listing/ pre-qualification of Indian vendors in Buy (Indian-IDDM), Buy (Indian) and Buy and Make (Indian) cases are enumerated in the succeeding paragraphs. **Paragraph 59** deals with the parameters that may be considered for short-listing of vendors, whereas **Paragraph 60** amplifies the process for applying selection parameters to the process of Vendor Short listing.

59. **Parameters**.

(a) **General Parameters**

(i) Applicant Entity should be an Indian Vendor as defined at Paragraph 20 of Chapter I of DAP 2020.

(ii) Business dealing with applicant Entity or any of its allied entities should not have been suspended or banned, by MoD/ SHQ or any Government Department or organization (as defined in Guidelines for Penalties in Business Dealings with Entities issued vide Ministry of Defence, D (Vigilance) MoD ID No 31013/I/2006-D(Vig) Vol II dated 21 Nov 2016). None of the Promoters and Directors of applicant entity should be a willful defaulter.

(iii) "Entities" will include companies, with whom the Ministry of Defence has entered into, or intends to enter into, or could enter into contracts or agreements.

(iv) "Applicant entity" may be a company, subsidiary, an associate company (as defined in the Companies Act, 2013) a consortium or a Joint Venture (JV).

(b) **Technical Parameters**

(i) Vendor shall be a software developing entity or a software integrator of defence equipment and not a trading company, except in cases where the OEM participates only through its authorized Vendors.

(ii) Minimum two years' experience in broad areas of software development/ integration of software applications in the instant procurement case. If not, then cumulative experience of at least three years in above areas, resulting in gaining of competence for manufacturing the proposed application software.

(iii) Where product involves integration, previous experience of not less than one year/ one project in integration of software/ applications shall be required.

(iv) **Turnkey Projects**. Experience of successful completion of one Turnkey project of similar nature within last five years with value of at least 20% of AoN cost or currently executing a contract of similar nature with value of at least 30% of the AoN cost. In case of no experience in Turnkey projects, the vendor for main component of the Turnkey project may be selected if it has experience as per **Paragraph 59 (b) (ii)** above and experience of installation or integration of similar equipment/ system or system of systems.

(v) **ICT Cases**.

(aa) Certification to be included if linked to scope of work – Gartner Quadrant/ ISO 9001/ CMMi 5 or more (specifying development/ service/ acquisition models)/ ISO 27001. For Information Security and large value projects preferably CMMi 5 may be specified.

(ab) Compliance with IEEE/ ITU standards depending upon nature/type of project or solution required.

(c) **Financial Parameters**

(i) **Average Annual Turnover**. Minimum average annual turnover for last three financial years, ending 31st March of the previous financial year i.e 31 Mar 2022 may please be informed.

(ii) **Net Worth**. Net worth of entities, ending 31st March of the previous financial year i.e 31 March 2022 may please be informed.

(iii) **Insolvency**. The entity should not be under insolvency resolution as per Indian Bankruptcy Code at any stage of procurement process from the issuing of RFP to the signing of contract.

(iv) **Credit Rating (Desirable Financial Parameter)**. Long term credit rating equivalent to CRISIL rating on Corporate Credit Scale as CCR-BBB or better, and SME-04 or better for SMEs issued by credit rating agencies recognized by SEBI. Credit rating should be as on 31st March of the previous financial year i.e 31 March 2022.

(d) **Other Parameters**

(i) **Industrial License (IL)**. Details of valid defence industrial license with a copy to be enclosed by the vendor.

(ii) **Registration**. Details of registration.

60. **Stipulations for Applying Parameters**

(a) Areas like software development/ development of APIs/ Software integration etc.

(b) In case the Applicant Entity is unable to meet the Financial Parameters by itself, it may rely on its Holding Company (as defined in the Companies Act, 2013 and amendments thereof) ("Companies Act") for fulfilment of the Financial

Parameters, in which case reliance must be placed on the Holding Company towards fulfilment of ALL the Financial Parameters.

(c) In case the Applicate Entity is unable to meet one or more of the Technical Parameters by itself, it may rely on a Group Company (ies) for fulfilment of the Technical Parameters. A Group Company in relation to the Applicant entity may be:-

(i) A company of which the Applicant Entity it is an Associate Company. Such company should have ownership, directly or indirectly, of at least 26% of the voting shares of the Applicant Entity.

(ii) A company which is an Associate Company of the Applicant Entity. The Applicant Entity should have ownership directly or indirectly, of at least 26% of the voting shares of such Associate Company.

(iii) A company with whom the Applicant Entity is commonly owned, directly or indirectly, for at least 26% of the voting shares by another company. For example: An Applicant Company A is an Associate Company for Company B, in which B holds at least 26%. Further, C is also an Associate Company of B, in which B holds at least 26%. In this case the Applicant Company may use the credentials of C as well.

(iv) The Holding Company and Subsidiary Companies (as defined under the Companies Act) of the Applicant Entity.

(d) The Applicant entity may be a single entity or a group of entities (the "Consortium"), coming together to implement the project. In such case:-

(i) The credentials of only those members or their related entities may be counted, who have at least 26% equity stake in the Consortium.

(ii) Each Consortium should have a designated Lead Member.

(iii) For Technical Parameters, any of the Consortium members or their Group Companies may meet the criteria.

(iv) For financial Parameters; the Turnover and Net Worth of the Consortium Member shall be reckoned proportionate to Consortium Member's equity stake in the Consortium, and each Consortium member should meet the other criteria pertaining to Insolvency and Credit Rating. In case the Consortium Member relies on its Holding Company for any one of the above-mentioned Financial Parameters, then reliance must be placed on the Holding Company for meeting all the financial parameters.

(e) Vendors should provide all necessary self-authenticated documentation in support of their achievement of criteria. Such documentation should inter-alia include:-

(i) Details of projects/ supply orders successfully executed in the last two years.

(ii) Annual reports for three years of applicant entity, parent and associate companies, consortium and JV partners.

(iii) Details of shareholders, promoters, associated, allied and JV companies.

(iv) Details of vigilance action, viz. ongoing investigation and suspension/debarment/blacklisting actions against the applicant entity or any of its allied entities, parent company or consortium and JV partners, if any by any Department/agency of Central Government.

(v) A certificate from CA/ CS indicating the financial parameters for the last three years as per **Paragraph 59 (c)**.

(f) Any vendor furnishing false information will be liable for action as per existing guidelines

**Appendix A**
(Ref to Para 50 of Part I of RFI)

## REQUEST FOR INFORMATION: PROCEDURE FOR RESPONSE

### General

1. The Indian Army is planning to design and develop AIDSS application software. With the view to identify probable vendors who can undertake the said project, OEMs and Authorised Vendors are requested to forward information on the product which they can offer. The parameters and broad specifications of the item are mentioned in the questionnaire attached as per **Appendix 'C'**. In addition, the vendors are required to furnish details as per Performa at **Appendix 'B' (refer Annexure II of Appendix A of Chapter II of DAP 2020)**.

2. Apart from the information sought in the Appendices, the vendors may also forward technical details, product brochures and literature etc pertaining to the item in question.

3. The required information/ details may please be forwarded to the following address by **09 Dec 2022**.

(a) Project Management Organisation, Directorate General of Information System, DGIS Enclave, Rao Tula Ram Marg, New Delhi - 110010, Email: cidss.dgis@gov.in

(b) Directorate General of Capability Development (CD-9) General Staff Branch Room No – 411, A Wing, Sena Bhawan, Integrated HQ of MoD (Army), DHQ PO, New Delhi-110011, Fax No: 011-23793274.

(c) Army Design Bureau (GSQR Cell), General Staff Branch, Room No 16, C wing, Sena Bhawan, Integrated HQ of MoD (Army), DHQ PO New Delhi – 110011.

(d) ADG Acquisition Technical (M&S) Room No 28, D-II Wing Sena Bhawan, MoD, New Delhi – 110011, Fax No 011-23792414.

(e) Directorate General of Capability Development (RFP Cell) General Staff Branch, Room No 436, A Wing, Sena Bhawan, Integrated HQ of MoD (Army), DHQ PO, New Delhi -110011.

**Appendix B**
(Ref to Para 50 of Part I of RFI)

## VENDOR INFORMATION PROFORMA

1. **Name of the Vendor/ Company/ Firm**. (Company profile including Share Holding pattern, in brief, to be attached).

2. **Type (Tick the Relevant Category)**.

| | |
|---|---|
| Original Equipment Manufacturer (OEM) | Yes / No |
| Authorised Vendor of foreign Firm | Yes / No (attach details, if Yes) Others (give specific details) |

3. **Contact Details**.

(a) Postal Address :
(b) Building No :
(c) City :
(d) State :
(e) Pin Code :
(f) Tele :
(g) Fax :
(h) URL / web Site :
(j) Email :

4. **Local Branch / Liaison Office / Agent (if any)**

(a) Name :
(b) Postal Address :
(c) Building No :
(d) City :
(e) State :
(f) Pin Code :
(g) Tele :
(h) Fax :
(j) URL / web Site :
(k) Email :

5. **Financial Details**. Category of Industry (Large / Medium / Small Scale):
_____

6. **Certification by Quality Assurance Organisation**.

| Ser No | Agency | Certification | Applicable from (Date and Year) | Valid Till (Date and Year) |
|---|---|---|---|---|
| (a) | | | | |
| | | | | |

7. **Details of Registration**

| Agency | Registration No | Validity (Date) | Equipment |
|---|---|---|---|
| GeM | | | |
| DGQA/ DGAQA/ DGNAI | | | |
| OFB | | | |
| DRDO | | | |
| Any other Govt Agency | | | |

8. **Membership of FICCI/ ASSOCHAM/ CII or other Industrial Associations**

| Ser No | Name of Organisation | Membership Number |
|---|---|---|
| (a) | | |
| (b) | | |
| (c) | | |
| (d) | | |

9. **Equipment/ Product Profile (to be submitted for each product separately)**

(a) Name of Product:
(IDDM Capability be indicated against the product) (should be given category wise for e.g all products under night vision devices to be mentioned together).

(b) Description (attach technical literature) :

(c) Whether OEM or Integrator :

(d) Name and address of Foreign collaborator (if any) :

(e) Industrial License Number :

(f) Indigenous component of the product (in percentage) :

(g) Status (in service / design and development stage) :

(h) Production capacity per annum :

(j) Countries / agencies where equipment supplied earlier (give details of quantity supplied) :

(k) Estimated price of the equipment :

(l) Alternatives for meeting the objectives of the equipment set forth in the RFI.

(m) Any other relevant information :

10. **Declaration**. It is certified that the above information is true and any changes will be intimated at the earliest.

(Authorised Signatory)

**Appendix C**
(Ref to Para 50 of Part I of RFI)

## REQUEST FOR INFORMATION: QUESTIONNAIRE

1. **Vendor Information**. The vendor will provide the following information:-

(a) Name of person responsible for the information contained in this RFI.

(b) Telephone Number, Fax Number, Email address, Web page.

(c) When was company established.

(d) Have your implemented your system in Army for any operational role? If so, please provide reference information.

(e) Development center. Location (s) of the nearest company location and its distance to Delhi as well as the hours of operation and support.

(f) A sample implementation schedule for a solution implemented in government/ public sector organization.

(g) Describe any third party alliances, relationships, or dependencies.

(h) Please provide information on your implementation methodology.

(j) What documentation is provided with the software/ system and in what format.

(k) Was your software written by your organization or acquired from a third party.

**Operational Parameters**

2. **System Concept (Ref Para 6 (a)of Part I of RFI)**. The background, system concept, system design, architecture, deliverables and the proposed service employment of AIDSS application software and its utilization have been covered in detail. **The vendor is required to clearly indicate suitability and validate the design and architecture of the AIDSS application software**.

3. **System Concept (Ref Para 6 (a), (b) & (c) of Part I of RFI)**. The AIDSS application is to be designed and developed as web based hardware agnostic software and the hosting, automation and data visualisation alongwith OGC complaint GIS platform is required. **The vendor is required to clearly indicate suitability and validate the same**.

4. **System Design and Architecture (Ref Para 7 (a) & (b) of Part I of RFI**. The vendor is required to validate the integration of the AIDSS application with OIS & MIS data sets. The vendor would also be required to respond to the development of AIDSS software as modular/ incremental model and the methodology/ approach to achieve this.

5. **System Study (Ref Para 9 (a) of Part I of RFI**. As mentioned in the referred Para the vendor will list out the requirements pertaining to the knowledge/ information required of existing OIS & MIS applications including various technical parameters like existing networking protocols, data centre infrastructure, storage, bandwidth availability, databases be used, various formats being used to generate output and any other related technical/ nontechnical information.

**Important Technical Parameters**.

6. **Ingestion/ collection of Data (Refer Para 10 (a) of Part I of RFI**.

(a) The vendor will list out the requirements for ingestion of data into the AIDSS application software including aspects like software, databases, protocols and any other aspect required for designing an API.

(b) Since, the ingestion of data is to be kept flexible (i.e. API offline ingestion or manual feeding) and will take place through independent modules, the vendor will list out the proposed methodology to achieve the same and the metadata/ attributes required for integration.

(c) The proposed mechanism of offline integration should be clearly brought out by the vendor.

7. **Storage/ Population of Database (Ref Para 10 (b) of Part I of RFI**.

(a) In future the ingestion of large quantities of unstructured data in text, video, images and audio format is likely to pose a major problem, how this issue can be addressed with the use of AI, ML and Deep Learning (DL).

(b) How will the storage of primary, transactional data and the output data take place in database. Measures taken to prevent any conflict arising due to multiple instances of same/ similar data. What means does the vendor propose for modification of datasets, attributes and metadata field in future to enable use of AI and ML.

(c) The means proposed to be adopted to check and mitigate the time stamping of data in the database should be clearly brought out by the vendor.

8. **Collection and Corroboration of Data (Ref Para 10 (c) of Part I of RFI)**. The methodology to be followed for conflict resolution while storing similar datasets and the manual override feature to be incorporated should be responded to.

9. **Retrieval of Data Query Management (Ref Para 10 (d) of Part I of RFI)**. The process of unstructured query management to be followed should be listed out alongwith the response times (in milliseconds) achievable for the queries.

10. **Visualization (Ref Para 10 (e) of Part I of RFI)**. The OGC compliant GIS platform should be compatible with DSM and its map framework including Indian Military Grid Reference System (IMGRS). The questions/ queries pertaining to IMGRS may be listed for better understanding and ease of development of the AIDSS application software. The file formats for DSM, Google base layer, Satellite imagery 2D & 3D outputs should be listed out. The compatibility and convertibility of these formats to other similar formats should also be commented upon.

11. **Analytics (Ref Para 10 (f) of Part I of RFI)** . How will the advance analytics and predictive analysis using AI, ML and BI be incorporated. The vendor should give examples of possible/ existing use cases of these analytics of existing projects in industry.

12. **Dissemination (Ref Para 10 (g) of Part I of RFI)**. The application will have admins at different levels from Corps to the Battalion. There may be a situation wherein another admin would be required to be created at the apex level due to organizational requirements. The means to modify/ add admins and its feasibility should be commented upon.

13. **Terms of Reference (Ref Para 11 of Part I of RFI)** .

(a) Which open source frameworks are proposed to be used.

(b) Is the web browser independent of the application possible? If yes, will the application to be run universally in all browsers or only specific browser. The list of compatible browser be given.

(c) How will the user interface be created using Google Material Document. What and how open source models will be used to design the UI.

(d) Comment on how will you achieve modular architecture and the plug and play structure for modules.

(e) Will the BI tools for commander be customizable and how will you achieve it.

(f) How will Natural Language Processing (NLP) be used.

14. **Refer Para 12 of Part I of RFI**.

(a) What type of plug-ins are proposed to be used. How will the plug-ins management be done. Will the plug-ins form a part of the software update and how do you proposed to push down the software updates. The frequency of software updates and the update management should commented upon.

(b) Which additional plug-ins for running the AIDSS application on browsers are proposed to be utilized.

15. **Refer Para 13 of Part I of RFI**. The minimum specification of hardware and software (like RAM, CPU, OS, platform, browser versions, plugins etc) on which the application is required to be run has to be clearly brought out as the application has to be integrated with OIS, MIS, GIS platforms and other complex software.

**Major Software Components and Connected Requirements**.

16. **Database Management System (Ref Para 14 of Part I of RFI)**.

(a) What type of database (with justification) will cater for future. scalability issues including horizontal and vertical scalability aspects.

(b) What is the proposed methodology for data migration from existing OIS & MIS applications.

(c) What interfaces will be used for data exchange.

(d) What all data formats will be used in the database, will they be compatible with other data formats and will the conversion of a particular data format to other format be possible.

(e) How will the data dictionary be created.

(f) What is the level of normalization of data being proposed.

(g) What methodology will be followed for data import and export.

(h) What data validation and linking methods are proposed to be used.

(j) How will you ensure the integrity and time stamping of master data from SSOT at all times.

(k) What all graphical forms will be utilized to show the output result of a query.

(l) How do you plan to implement database security like AES encryption for data at rest, secure backup, authentication and authorization of users.

(m) How do you plan to Integrate GIS platform and database securely (as the GIS platform will use IMGRS) to prevent unauthorized access to geospatial info and metadata).

17. **Text to Graphic Conversion**.

(a) How do you plan to update the database from various user defined report formats and what all formats of reports will be utilized for updation of the database.

(b) How do you plan to facilitate automatic map annotation with appropriate symbols corresponding to database entry.

18. How do you plan to implement strict relationship constraints in the database and how will you achieve balance between normalization and performance.

19. **Queries**.

(a) How do you plant to execute spatial, temporal, attribute, predefined words, structured and unstructured.

(b) The response time of the AIDSS application software to various queries should be as low as possible. However, the vendor is required to list out the approximate response times for various queries as under:-

| Ser No | Type of Query and Data Transfer | Time in s/ ms | |
|---|---|---|---|
| | | Local | Remote |
| (i) | Spatial, Temporal, Attribute, Predefined Words, Structured and Unstructured Query on Database | - | - |
| (ii) | Query on Database | - | - |
| (iii) | Transfer of Map Overlay | - | - |
| (iv) | Transfer of Map Frame | - | - |
| (v) | Message Transfer (1000 Words) | - | - |
| Interactive Conversation Facility | | | |
| (vi) | Establishment Time | - | - |
| (vii) | Response Time | - | - |

(c) How do you propose to carryout statical analysis based on time period, events or area and generate graphical outputs like graphs/ pie chart etc.

20. **Data Exchange**. The vendor is required to list out different file formats for exchange of data with legacy systems, other systems and databases. The additional file formats proposed for GIS, satellite imagery for ingestion, storage, collation, retrieval, visualization, analytics and dissemination of data should also be listed out.

21. **Data Entry**.

(a) What validation procedures/ process does the vendor proposed to identify the data/ critical data elements which require validation during the development process.

(b) How does the vendor propose to achieve the validation through role based access control for various data entry personal.

22. **Database Management**.

(a) How does the vendor proposed to replicate the database to prevent loss of data due to any reason.

(b) What procedures (software or other) does the vendor propose to ensure security of the database.

(c) What technique will the vendor utilized for data visualization and transfer of data on the network.

23. **Database Administration**.

(a) How does the vendor propose to achieve change of super admin, admin and user creation, deletion, modification and grant of role based access.

(b) How does the vendor propose to execute table management in the database and manage access rights in tables.

24. What procedure/ technique will the vendor use to enable the user for creation of new entities and symbols in the database.

25. **Data Migration**. What techniques/ procedures do you propose to facilitate data migration from other agencies/ applications and build a fresh, authentic and clean database with logical separation of existing data.

26. **Data Dictionary**. How does the vendor propose to create/ compile a data dictionary of all types of data and enable the user to also create a new data dictionary entry through a UI or any other technique.

27. **Data Security**. The vendor is required to give out a comprehensive security solution for the security of data at rest and while in transit. The proposed solution should align with the latest guidelines/ policies of ACG. The Virtual Desktop Infrastructure (VDI) provided for vetting should have source code in debug mode and role wise authentication details with password to ease out the vetting process. The vendor should respond to all security aspects as mentioned at **Para 15 of Part I of RFI**. The vendor should also include any other aspects related to security which he plans to include for a comprehensive security solution for AIDSS application software.

28. **Suggested Security Aspects**.

(a) **Designed and Architecture**. What are the latest technological solutions available for design of an application software like AIDSS. Will the proposed web based architecture be a sufficient solution for the Indian Army. The security aspects related to web based architecture and the client server model should be included in the response.

(b) **Authentication and Authorisation**. What procedure/ techniques do you propose for implementation of authentication, authorization and role based access control for users. Is latest procedures/ techniques to implement this should be included in the response.

(c) **Session Management**. How does the vendor plan to manage the session and maintain the uniqueness of the session. The server side state management techniques should also be included in the response.

(d) **Data Encryption**. How does the vendor propose to provide security of data through all its stages i.e creation, transit, storage and destruction. Will the vendor be able to use SAG approved encryption algorithms for data encryption. If yes, kindly inform the detailed methodology.

(e) **Code Construction**.

(i) What type of coding language is proposed to be used.

(ii) Software coding standards being complied may please be given out.

(f) **Communication Security**. How does the vendor propose to implement security of data during transit.

(g) **Error Handling and Logging**. The technique/ procedure for handling of errors and logging the same should be included in the response.

(h) **Website Security**. How does the vendor propose to website security.

(j) **Server Configuration**. The vendor should clearly bring out the required security settings to ensure application pooling trust level, time outs, SSI authentication and other sever configuration related security issues and their solutions.

(k) **Development Testing**. Will the vendor be able to get the individual modules of the application tested with maximum load using test data to check functionality and efficiency of the application.

(l) **Use of BI Tools**. Which tools does the vendor propose to use for BI and how will help in the analytics should be clearly brought out by the vendors. The best technology available today and the approach proposed for BI and analytics should be the listed out.

29. **Application Administration**. How does the vendor propose to provide an enterprise level administrator system and other administrators at various level. How will the administrators work in delegate and decentralized manner.

30. **Rights and Role Base Access**. How does the vendor propose the management of roles and rights through software frontend.

31. **Vertical and Horizontal Scaling**. How does the vendor propose to achieve vertical and horizontal scaling of the AIDSS application software through the hierarchy of IA.

32. **Digital Signatures**. How does the vendor propose to implement digital signing of documents, reports and data produced as output and maintain a record of the same. The digital signature should be enable/ disable as per the role based access control.

33. **Audit Trail**. The application software should have the capability of self test and diagnose the problems if any. The audit must be enabled to be initiated by admin/ super admin besides a periodic audit and the report should be generated. How does the vendor propose to achieve this.

34. **Offline/ Lightweight Module**. The AIDSS application software should be able to function in reduced/ low bandwidth environment as given in **Para 31 of RFI.** The Synchronization post restoration of bandwidth should take place. How does the vendor proposed to achieve this.

35. **Support of Software Products**.

(a) The vendor should provide details of life cycle support, version management and builds of AIDSS application software. The time period/ frequency of patches/ updates and the ways and means to push the updates should be listed out as response to this RFI.

(b) The mechanism of pushing the updates till end user has to be brought out clearly.

36. **Development and Testing**. Is the software application design, development, coding, testing and implementation an iterative process. Can the same be achieved by fixed GSQRs. Are regular interactions with user/ planner necessary. How much effort do you envisaged to be involved in minor/ major tweaking and course correction (if required) of the AIDSS application software.

37. **Establishment of SITF**. The vendor should clearly respond to the requirement for establishing a SITF for testing of AIDSS application software. The proposed testing criteria/ methodology should also form a part of the response.

38. **Training**. The vendor will indicate the ability and willingness to offer following:-

(a) Training to persons of units/ formations at designated location in addition to Delhi after delivery of the product.

(b) The vendor will indicate the facilities available at OEM/ Vendor premises to conduct training. He will also give out how he can assist in carrying out training of user and maintenance personnel.

(c) Recommended training period for users and maintenance will given out by the vendor.

(d) Training aggregates for conduct of training like projection systems Technical Literature, Brochures and Computer Based Training (CBT) packages.

(e) Availability and willingness of the vendor to provide soft and hard copies of user handbook, technical manuals alongwith the CBT for training should be indicated.

(f) How does the vendor plan to provide a separate training mode functioning will be provided at any level irrespective of Normal Mode.

**Maintenance and Support**

39. The vendor will details provide details of the following:-

(a) Guarantee/ warranty.

(b) AMC.

(c) Monthly/ Quarterly Patches.

(d) Periodic database management maintenance.

40. **Post Warranty ATS**

(a) ATS philosophy of the OEM.

(b) What the level of ATS envisaged for minimizing downtime.

(c) Will special tools be provided for carrying out error correction and detection.

(d) **Cost per year**. Is it the same for all subsequent years. If not then rate of change per year may clearly be given out.

41. **Mean Time between Failure (MTBF) and Mean Time to Repair (MTTR)**. MTBF and MTTR of the application software will be indicated by the vendor.

**Manufacturing and Production Aspects**

42. **Experience**. The vendor will indicate the number of years of experience. Details of any similar project executed by the vendor to supply such equipment to any entity in India and abroad may be provided.

43. **Research, Development and Manufacturing Facilities**. The vendor will provide details of all R&D manufacturing infrastructure in India and abroad.

44. **Indigenisation**. The vendor will give out his ability and willingness to supply the product to meet the requirements of Buy Indian (IDDM) and/ or Buy Indian to meet the aim of Indigenisation as per provision and spirit of the DAP 2020.

45. **Infrastructure Requirements**. The vendor will give details of the following:-

(a) Minimum requirements of hardware and software.

(b) Recommended requirements of hardware and software.

(c) Requirements for future scaling.

(d) The OS on which the software will be able to run.

(e) Development environment proposed to be used.

46. **Software Capability & Requirements**. The vendor will give details of the following:-

(a) Will the AIDSS application software integrate with active directory.

(b) Will the AIDSS application software facilitate the setting of thresholds and provide alerts to users.

(c) Can user easily create these thresholds and alerts.

(d) How are these alerts communicated to the end user.

(e) Name all browsers that your system will be compatible with.

47. **Quality Control**. The vendor will give details of the following:-

(a) CMMi level certification.

(b) IEEE certification.

(c) ISO certification.

(d) Security certification.

(e) Any other certification.

(f) Quality control and software testing fools and methods used during development.

(g) Third party testing.

48. **Integration**. The vendor will give details of the following:-

(a) Number of data sources that can be simultaneously accessed.

(b) Type of data sources supported

(c) Name all third party products required to meet the criteria described in this RFI.

(d) Does your system provide APIs.

49. **Actions Before Software Development**. The vendor will give details of the following:-

(a) Analysis and details of applications to be integrated and connected requirements.

(b) Method of integration of modules.

(c) Software Requirement Specification (SRS) and vision documents.

(d) Process mapping methodology.

(e) Workflow management methodology.

(f) Use of SDLC methodology.

(g) Software modules and function point analysis/ effort estimation.

50. **Actions During Software Development**. The vendor will give details of the following:-

(a) Modules of Ops, Int, OL and other additional packages proposed to be developed.

(b) Features envisaged to be provided for ease of use.

(c) Interfacing applications/ agencies.

51. **Actions After Software Development**. The vendor will give details of the following:-

(a) Installation procedure.

(b) Scalability.

(c) Reliability.

(d) Extension/ Flexibility.

52. **Terms and Conditions**. The vendor will give details of the following:-

(a) Handing over of Intellectual Proprietary Rights (IPR).

(b) Supply of source code.

(c) Delivery, Installation and implementation schedule.

(d) Support services.

(e) Transition.

(f) Production.

(g) Performance.

53. **Detailed Cost Model**. The vendor will give details of the following:-

(a) Estimate of scoped requirements.

(b) Is there anything that would require an additional or third part purchase to meet the requirements outlined in this RFI.

(c) What is your expected product life cycle.

(d) What is your licensing model and prices.

(e) Method used for cost estimation.

54. **Hosting of AIDSS application software**.

(a) How do you plan to host AIDSS application software at CDCs and RDCs with instances accruing at Coprs HQ level.

(b) The vendor will calculate/ compute the requirements with respect to storage, computation power and bandwidth to cater for the application software based on OGC compliant GIS platform utilizing Defence Series Map (DSM), Satellite Imagery (2D/ 3D rendering). These requirements should be clearly listed out.

55. **Detailed Cost Model**.

(a) Estimate of scoped requirements.

(b) What is included.

(c) It there anything that would require an additional or third party purchase to meet the requirements outlined in the RFI.

(d) Support offered. (Hours, methods of contact)

(e) What is your annual maintenance.

(f) What is your licensing model and price.

(g) Method used for cost estimation.

(h) Assumptions.

56. **Miscellaneous**.

(a) Is there a requirement of preparation of DPR.

(b) Recommended categorisation as per DAP 2020.

(c) Recommended GIS platform.

(d) Recommended development of software time plan.

(e) Requirement of PSQR prior to formulation of GSQR.

(f) Is there any requirement of PoC.

(g) Time required for training of persons on software.

57. **Timelines**. The vendor should clearly bring out the proposed development cycles for the AIDSS software with clear cut milestones of each cycle.

58. **Method of Implementation**. The vendor should clearly bring out the most optimum and fast process for implementation of the project. The vendor is required to bring out the proposed approach for implementation of the project in order of priority i.e all '**BUY'** and **'MAKE**' approaches.

59. **Evaluation**. The vendor is required to list out methods proposed for evaluation of offered solution. The vendor should also define the bare minimum acceptable scalable model for evaluation.

60. **Satellite Imagery/ GIS**. Latest state of the art analysis techniques to including Deep Core, Signature Analysis, Precision 3D Registration, Vivid Base Map, Human Landscape etc provided by COTS solutions (eg Maxar Tech). The vendor should bring out the analysis techniques proposed to be adopted and its mechanism.

**Appendix D**
(Refer to Para 44 of Part I of RFI)

## COMMERCIAL OFFER FOR PROJECT ARMY INTEGRATED DECISION SUPPORT SYSTEM FOR INDIAN ARMY

1. **Price Bid Format**. The Price Bid Format is given below and vendors are required to fill this up correctly with full details. The bid should take into account all features as demanded and as recommended by the vendor.

2. **Development Cost**.

| S/No | Activity | Cost | Tax ( %) | Total Cost |
|---|---|---|---|---|
| (a) | Cost of Software Development (all tax inclusive) | | | |
| (b) | Cost of training per personnel per location | | | |
| | **Total Cost** | | | |

3. ATS for Maintenance of the software and providing upgrades as required after the free warranty period of three years: -

| S/No | ATS For | Cost | Tax ( %) | Total Cost |
|---|---|---|---|---|
| (a) | 1ST Year | | | |
| (b) | 2nd Year | | | |
| (c) | 3rd Year | | | |
| (d) | 4th Year | | | |
| (e) | 5th Year | | | |
| (f) | 6th Year | | | |
| (g) | 7th Year | | | |

Company Seal (Common Seal of the Company)

Company name: (Authorised Signatory of Company)

Date:

**Note**: - All prices quoted should be landed cost inclusive of all taxes, duties etc.

**Appendix E**
(Ref to Para 51 (k) of Part I of RFI)

## NON DISCLOSURE AGREEMENT

This Non Disclosure Agreement is entered into by and between SHQ/MoD (Disclosing Party) and _____located at _____ (Receiving Party) for the purpose of preventing the unauthorized disclosure of confidential information as defined below. The parties agree to enter into a confidential relationship with respect to the disclosure of the RFI for procurement of Project AIDSS (name of the Project).

1. For purpose of this Agreement, “Confidential Information” shall include all information or material in which Disclosing party is engaged. If confidential information is in written form, the Disclosing party shall label or stamp the materials with the word “Confidential” or some similar warning. If confidential information is transmitted orally, the Disclosing Party shall promptly provide a written communication indicating that such oral communication constituted confidential information.

2. Receiving party shall hold and maintain the confidential information in strictest confidence for the sole and exclusive benefit of the Disclosing party. Receiving party shall carefully restrict exercise to confidential information to employees, contractors and third parties as is reasonably required and shall require those persons to sign Non-Disclosure restriction atleast as protective as those in this Agreement. Receiving party shall not, without prior written approval of Disclosing party, use, publish, copy, or otherwise disclose to others, or permit the use by others or to the detriment of Disclosing party, any confidential information. Receiving party shall return to the Disclosing party any and all record, notes and other written, printed or tangible materials in its possession pertaining to confidential information immediately if Disclosing party requests it in writing.

3. Nothing contained in this Agreement shall be deemed to constitute either party a partner, joint venture or employee of the other party for any purpose.

4. If any provision of this Agreement is held to be invalid or unenforceable by court of law, the remainder of this Agreement shall be interpreted so as best to effect the intent of the parties.

5. This agreement expresses the complete understating of the parties with respect to the subject matter and supersedes all prior proposals, agreements, representations and understandings. This Agreement shall not be amended except with the written consent of both the parties.

6. That in case of violation of any clause of this Agreement, the Disclosing party is at liberty to terminate the services of Receiving party without assigning any reason and shall also be liable to proceeded against in a Court of Law.

7. This Agreement and each party's obligations shall be binding on the representatives, assigns and successors of such parties. Each party has signed this Agreement through its authorised representatives.

**Disclosing Party**

_____ **(Signature)**

_____ **(Typed or Printed name)**

**Date** _____

**Receiving Party**

_____ **(Signature)**

_____ **(Typed or Printed name)**

**Date** _____

**Annexure I**
(Refer Para 26 (g) of Part I of RFI)

## PROJ AIDSS: USER REQMTS - TAC ASPECTS

| Ser No | Aspect | Description | Automated Required |
|---|---|---|---|
| **Ops Functions** | | | |
| 1. | **Deployment** | **Deployment visualisation on GIS** | (a) Ability to ingest ORBAT, both own & enemy defined by authorised Higher HQ.<br><br>(b) Ability to allow amendment, addition, deletion & re-group of resources defined by authorised Higher HQ.<br><br>(c) Ingest ORBAT & display - own & enemy deployment on GIS platform & Defence Series Map (DSM).<br><br>(d) Ability to incorporate changes in ORBAT as defined by authorised Higher HQ. |
| 2. | **Resource visualisation and aggregation** | **GIS based asset management and visualisation** | (a) Ability to display nominated resources (all arms, CSA, services & specially nominated resources) in tabular & graphical form on GIS platform & DSM.<br><br>(b) Ability to nominate, add & delete 'resources' & change attributes of nominated 'resources'.<br><br>(c) Ability to aggregate & display resources in tabular & graphical form within specified fields such as geo area, ORBAT etc. |
| 3. | **Incident Reporting** | **GIS based ingestion of Op inputs from E-SITREP and Intelligence System** | (a) Ability to ingest, identify & aggregate pre-defined 'incidents'.<br><br>(b) Ability to add new/ delete & change attributes of pre-defined incidents.<br><br>(c) Ability to aggregate & display selected incident/ incidents in tabular & graphical form within specified fields such as geo area, ORBAT etc.<br><br>(d) Ability to store all incidents based on time stamp/ ORBAT/ geo-ref etc & retrieve at later time based on incident/ spatial/ temporal/ keyword query.<br><br>(e) Ability to share 'incident/ incidents' laterally/ vertically. |

| Ser No | Aspect | Description | Automated Required |
|---|---|---|---|
| 4. | **Operations Planning** | **Assist in planning process & carry out connected staff checks for staff officers** | (a) Ability to display individual & aggregated picture of Operations, Intelligence including ISR & OL resources in graphical form on GIS platform & DSM.<br><br>(b) Ability to carry out basic staff checks by SOs Module to work out the relation/ effect of data fields on one another.<br><br>(c) Ability to aggregate & display resources/ COP/ CIP/ COLP with staff checks to assist commanders to take decisions.<br><br>(d) Ability to disseminate decisions to subordinate formations & attach/ detach for executive & laterally to other formations for information. |
| 5. | **Ops Monitoring** | **Compilation, aggregation & dissemination of progress of Operations** | (a) Ability to ingest plan made within/ disseminated by higher HQ/ subordinate HQ.<br><br>(b) Ability to support qualifying of each stages/ phase of operations; report each stage/ phase graphically.<br><br>(c) Ability to add, delete & modified stages/ phase of executive.<br><br>(d) Ability to ingest data pertaining to progress of operations. |
| 6. | **Operations Progress Analysis** | **Visualization & monitoring op progress of operations for commander & staff** | (a) Ability to ingest pre-qualified stages/ phase of executive of operations.<br><br>(b) Ability to graphically report each stage/ phase of operations with individual percentage & cumulative percentage of completion.<br><br>(c) Ability to provide analytics based on data (ROS). |
| 7. | **Operations Control & Executive** | **Provide tools for real time change management** | (a) Ability to pass info to subordinate units/ formations based on progress of operations visualized.<br><br>(b) Ability to add, delete/ mod pre-defined stages/ phase of executive of operations post confirmation from subordinate units/ formations/ attach & detach based on staff check - during conduct of operations. |

| Ser No | Aspect | Description | Automated Required |
|---|---|---|---|
| 8. | **Analytics** | **GIS based analytics under pre-defined analysis parameters & user defined parameters & visualization** | (a) Ability to provide analysis of available data based on pre-defined parameters.<br><br>(b) Ability to display/ provide graphical representation of analysis carried out.<br><br>(c) Ability to add, delete, modified & re-define 'parameters'.<br><br>(d) Ability to store analytics & compare the same based on modified/ re-defined parameters. |
| 9. | **Query Management** | **User defined query management** | Ability to carry out user defined structured & unstructured queries. |
| 10. | **Reports Generate** | **Generate of various reports & returns** | (a) Ability to provide collated reports & analytics based on pre-defined schema.<br><br>(b) Ability to add, delete & modified existing schema. |
| **Intelligence Functions** | | | |
| 11. | **Combat Intelligence** | **Enemy ORBAT & information as per Green Book** | (a) Information on enemy strength, composition, distribute, deployed & organisation.<br><br>(b) Enemy activities - Information on movement of forces, Rail/ Road/ Water & Air traffic, improvement of defence infrastructure, Artillery/ Signals/ Air activity, establishment of dumps/ supply points & sabotage activity.<br><br>(c) Enemy Intentions - Information on enemy weapons & equipment, enemy training & tactical, morale & leadership.<br><br>(d) Enemy fighting efficiency.<br><br>(e) Topo & Met. |
| 12. | **Data Integration** | **Collection & collation of data from all sources** | (a) Ability to ingest data from different sources - supplied by subordinate units, lower formations, higher HQs, sister services & other Govt agencies.<br><br>(b) Ability to identify, collate, segregate, store & retrieve data ingested.<br><br>(c) Ability to provide analytics based on ingested data based on spatial, temporal & pre-defined user parameters. |

| Ser No | Aspect | Description | Automated Required |
|---|---|---|---|
| | | | (d) Ability to raise structured & un-structured queries. |
| 13. | **Data Visualization** | **Query based visualization of sieved data** | (a) Ability to display nominated ISR resources in graphical form on GIS platform & DSM.<br><br>(b) Ability to add & delete 'resources' & change attributes of nominated 'resources'.<br>(c) Ability to aggregate display resources in tabular & graphical form within specified fields such as geo area, ORBAT etc. |
| 14. | **Recording & Storage of Data** | **Creation of database to store historical data including analytics** | (a) Ability to store & retrieve all inputs based on spatial, temporal, ORBAT & user defined attributes.<br><br>(b) Ability to raise structured & un-structured queries. |
| 15. | **Query Management** | **Assist in user defined query management for intelligence process** | (a) Ability to assist Intelligence Staff Officers to generate ICP based on pre-fed schema.<br><br>(b) Ability to add, delete & modified available schema. |
| 16. | **Reports Generate** | **Generate of reports & returns** | (a) Ability to provide collated reports & analytics based on pre-defined schema.<br><br>(b) Ability to add, delete & modified existing schema. |
| **ISR Functions** | | | |
| 17. | **Asset & Resource Visualization** | **Ingestion of data & visualisation** | (a) Ability to display nominated resources in tabular & graphical form on GIS platform & DSM using geo-ref data, ORBAT & deployment data.<br><br>(b) Ability to nominate, add & delete 'resources' & change attributes of nominated 'resources'.<br><br>(c) Ability to aggregate & display resources in tabular & graphical form within specified fields such as geo area, ORBAT etc. |
| 18. | **Sensor Integration** | **Integration of all sensor data in defined area for real time intelligence picture & query management** | (a) Ability to integration & display inputs received from various sources & sensor feed individual & collectively.<br><br>(b) Ability to provide aggregated ISR picture.<br><br>(c) Ability to provide analytics based on inputs received & historical data available with same attributes. |

| Ser No | Aspect | Description | Automated Required |
|---|---|---|---|
| 19. | **Query Management** | **Assist in user defined query management** | (a) Ability to assist Intelligence Staff officers' to generate ICP based on pre-fed schema.<br><br>(b) Ability to add, delete & modified available schema. |
| 20. | **Storage Retrieval** | **Robust storage for historical data for analytics** | (a) Ability to assist Intelligence Staff Officers to generate ICP based on pre-fed schema.<br><br>(b) Ability to add, delete & modified available schema. |
| 21. | **Reports Generate** | **Generation of reports & returns** | (a) Ability to provide collated reports & analytics based on pre-defined schema.<br><br>(b) Ability to add, delete & modified existing schema. |
| **OL Activities** | | | |
| 22. | **Resource Visualisation & Aggregation** | **Ingestion of data & visualisation** | (a) Ability to display nominated resources (all arms, CSA, services & specially nominated resources) in tabular & graphical form on GIS platform & DSM using geo-ref data, ORBAT & deployment data.<br><br>(b) Ability to nominate, add & delete 'resources' & change attributes of nominated 'resources'.<br><br>(c) Ability to aggregate & display resources in tabular & graphical form within specified fields such as geo area, ORBAT etc. |
| 23. | **Resource Monitoring** | **Nomination & monitoring of resources** | (a) Ability to monitor nominated resources under heads - Manpower, Weapons, Equipment, Ammunition, Vehicles & FOL etc.<br><br>(b) Ability to add, delete & modified nominated resources.<br><br>(c) Ability to term resources as Critical Resources based on user defined attributes.<br><br>(d) Ability to display analytics based on pre-defined as well as user-defined parameters. |
| 24. | **Road, Rail & Air Movement** | **Planning & exec of movement** | (a) Ability to plan, execute, monitor & control of Road, Rail & Air Movement.<br><br>(b) Ability to provide progress & analytics of all movement undertaken. |
| 25. | **Maintenance Info** | **Forecast & monitor resources & services** | (a) Ability to forecast, predict, monitor & maintenance record regarding maintenance of weapons, equipment, ammunition, vehicles etc. |

| **Ser No** | **Aspect** | **Description** | **Automated Required** |
|---|---|---|---|
| | | | (b) Ability to monitor progress & predict on road status of all resources based on historical data & available data **MSN RELIABILITY**. |
| 26. | **Stores Info** | **Provide visibility & analytics** | (a) Ability to store data based on ORBAT, time & user defined parameters.<br><br>(b) Ability to provide analytics based on ORBAT, temporal, spatial, individual/ collective resource available/ non-available, down time/ maintenance cycle etc. |
| 27. | **Reports Generate** | **Generation of reports & returns** | (a) Ability to provide collated reports & analytics based on pre-defined schema.<br><br>(b) Ability to add, delete & modified existing schema.<br><br>(c) Ability to term resources as Critical Resources based on user defined attributes.<br><br>(d) Ability to display analytics based on pre-defined as well as user-defined parameters. |