MINISTRY OF DEFENCE

GOVERNMENT OF INDIA

REQUEST FOR INFORMATION

BY

DIRECTORATE GENERAL OF NAVAL ARMAMENT

INDIAN NAVAL ARMAMENT MANAGEMENT SYSTEMS VER 2.0 (INAMS Ver 2.0)



The document contains **86** pages including cover page and Appendices

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1 Invitation to Bidder

REGISTERED BY POST/BY HAND

Tele:

Directorate General of Naval Armament
NAVAL Headquarters
Ministry of Defence, West Block V
RK Puram, Sector-1
New Delhi - 110066

File Number Date:

To,

_____

_____

_____

(bidder concerned)

REQUEST FOR INFORMATION (RFI) FOR INDIAN NAVAL ARMAMENT MANAGEMENT SYSTEMS II (INAMS II)

Sir,

1. The Ministry of Defence, Government of India intends to procure services for Design, Develop, Supply, Commissioning, Implementation, Operation and Maintenance of the Integrated Naval Armament Management II (INAMS II) Application in the Naval Armament Depots and at Headquarter level Hardware of Directorate General of Naval Armament.

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

(a) **Part I**. This section provides the background of the INAMS II application software, describes the existing solution currently in use within IN, and outlines the operational requirements, characteristics, and features to be met by the software. Key technical requirements that the software must comply with are also detailed in this part.

(b) **Part II**. The second part of the RFI states the methodology of seeking response from the System Integrators (SIs). 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 bidder Selection/ Pre-Qualification in Buy Indian (IDDM), Buy (Indian) and Buy and Make (Indian) Cases.

3. **Liabilities of IN**

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

(b) This RFI, on discretion of Director General of Naval Armament, Naval Headquarters, Ministry of Defence, West Block V, RK Puram, Sector 1, New Delhi 110066 will be used for pre-qualification of suppliers for further issuing of Request for Proposal (RFP).

(c) **RFI Ownership**. All responses submitted against this RFI shall become the property of Indian Navy and will not be returned.

(d) This RFI is being issued solely for the purpose 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 DGoNA to make any purchases.

(f) The Indian Navy 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 the requirements as proposed by DGoNA.

(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 Navy 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 Navy will not pay for the preparation of any information submitted by a respondent or for the Indian Navy'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:-

S.No.	Start (In Days) a.	End (In Days) b.	Event c.
1	S Day	-	Approved RFI hosted on Indian Navy Website
2	S+ 01	S+14	Bidder interaction at Directorate General of Naval Armament, Naval Headquarters, Ministry of Defence, West Block V, RK Puram, Sector-1 New Delhi – 110066 , with representatives of concerned Naval department in presence
3	S+15	S+60	Bidder interaction and final RFI responses from SIs
4	S+60	S+75	Preparation of RFI Response Matrix and Comparative Analysis of Specifications

5. The responses of RFI to be communicated to the email address: dona@navy.gov.in.

6. Along with the e-mail, the hard copies of the responses and queries are to be forwarded to the below mentioned address positively for consideration.

Directorate General of Naval Armament
Naval Head Quarters,
Ministry of Defence,
West Block V, RK Puram Sector 1
New Delhi – 110066
Telephone: 011 - 2962842

2 PART – I

2.1 Intended Use of INAMS II Application Software

2.1.1 Background.

Naval Armament Organization under Directorate General of Naval Armament is responsible for provisioning, procurement, storage, maintenance and timely supply of Naval Armament Stores (NA Stores) which comprises of armament, ammunition and other explosives to Indian Navy and Indian Coast Guard (CG) assets.

Directorate General of Naval Armament Organization under Ministry of Defence is headed by Director General of Naval Armament (NHQ DGoNA) who is responsible for preparation of policies and plans for Naval Armaments including provisioning through indigenous and foreign sources, coordinating with various defence entities (units such as DRDO, ARDE, HEMRL, NSTL, DAD, CFEES, etc), Defence PSUs and professional Directorates of Indian Navy, Coast Guard Headquarters etc.

The Naval Armament Organization is seeking to enhance its productivity, quality of service and effectiveness by upgrading the Integrated Naval Armament Management System I (INAMS I) across the depots. To achieve this objective, Directorate has initiated the Project- INAMS II

2.1.2 Functions of Naval Armament Organization

a. The organizations handle various activities and are as follows:

   i Maintain, prepare and issue armaments and ammunition to IN and CG assets
   ii Repair, innovate solutions to resolve armament and ammunition technical issues
   iii Provision and procurement within the delegated financial powers
   iv Commercial explosive handling at sea ports
   v HR Management
   vi Proof and life extension activities etc.

2.1.3 Divisions & Functions of NADs

a. A depot is generally organized into 8 divisions

   i Admin, IT, Projects & Works, Procurement division
   ii Guided Weapons division
   iii Material division

iv Ammunition Workshop division
v Afloat and TPW division
vi HRD and Training division
vii Security, fire-fighting and medical division
viii Production

2.1.3.2 **Following are the functions / activities of each of the divisions:**

b. Admin, IT, Projects & Works, Procurement division:

i Depot administration
ii INAMS and IT
iii New Infrastructure
iv Projects and works
v Procurement

c. Guided Weapons division:

i Missiles
ii Torpedoes
iii Mines
iv Decoys
v Targets

d. Material division:

i Explosive storehouses / magazines
ii Non-explosive store sheds
iii Store movement by road, rail, sea and air
iv MT and Jetty Department
v Import / Export of explosives including handling at ports
vi Accounts
vii Small arms

e. Ammunition Workshops division:

i Repair and Maintenance
ii Breakdown and Assembly
iii Proof House
iv Life extension of Ammunition
v Disposal of unserviceable ammunition
vi Bar coding on the boxes / containers

f. Afloat and TPW division:

   i Repair and maintenance of guns on-board ships
   ii Preparation and issue of torpedoes (combat and exercise)

g. HRD and Training division:

   i Conduct of in-house training
   ii Competence mapping
   iii Technical library
   iv Preparation and maintenance of technical reading materials

h. Security, fire-fighting and medical:

   i Security organization
   ii Intelligence
   iii Fire-fighting services
   iv Medical services

j. Production:

   i Factory
   ii Box repair
   iii Small arms
   iv Section-5 stores
   v Gun repair workshop
   vi Protective Treatment

2.2 Scope of INAMS II

The bidder shall design, develop, implement, operate and maintain the INAMS II solution addressing all the requirements of the Directorate. The scope shall cover all the functions of Naval Armament Depots and the DGoNA (Directorate General) / NHQ. The scope of work of the bidder includes the following:

a. System Requirements Study and System Design

b. Design, development, testing, supply, installation, configuration and deployment of bespoke application software and database software for Material Management, Production Planning & Control, Explosive Handling, Local Purchase,

Indigenization, Provisioning, Central Procurement, Training (MATI), Ship and Audit modules of NAD and NHQ.

c. Development of necessary connectors / interface as well provisioning of client access licenses for integrating with various IN services, if necessary.

d. Development of necessary connectors / interface as well provisioning of client access licenses for integrating with various IN services, if necessary.

e. All source code and IPR shall be the sole property of Indian Navy (IN) and the source code shall be handed over before the final Go-Live (and subsequent changes made thereafter).

f. Procurement, installation, configuration and commissioning of all hardware for NADs and NHQ including desktops, digital pens & pads, printers, QR Code printers & scanners, L3 and L2 switches and wall mount racks including all stipulated warranties for hardware.

g. Procurement, installation, configuration and commissioning of all system software for NADs and NHQ, including but not limited to, the Windows / Linux operating system software, Open source (like Libre etc.) office suite for desktops, project management tools and testing tools required for the project.

h. Procurement, installation, configuration and commissioning of server side system software including application server software, database software (enterprise), operating system, logging software (for application logs) and helpdesk software including all licenses at DC's, NLDC and Disaster Recovery Centre.

j. Visibility of data to Command Headquarters and Naval Armament Inspectorate.

k. Data Migration including data migration of masters (entities) from the legacy system (INAMS I) to INAMS II.

l. Testing of all hardware & software and support for User Acceptance Test (UAT)

m. Provide support for Vulnerability Assessment and Penetration Testing (VAPT), third party acceptance testing, audit and certification.

n. Change Management and Capacity Building including training of users for effectively using the system and recording of trainings conducted for future reference

o. Deployment of INAMS II application at IN Datacentres (DCs and DR)

p. Documentation of the INAMS II Project.

q. Operationalize the project from the intermediary Go-Live stages through to the Final Go-Live and obtain operational acceptance of the project.

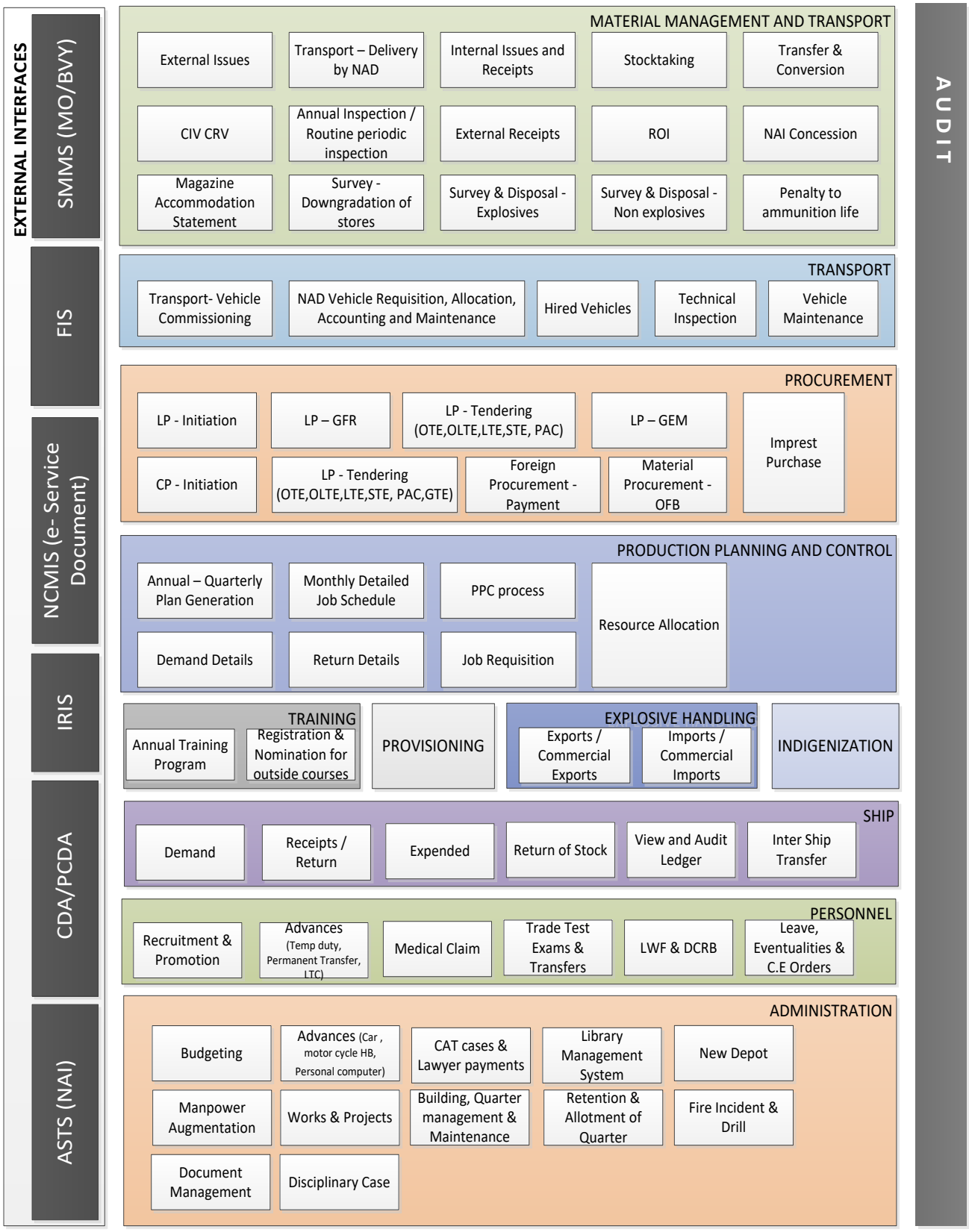
r. Operations and Maintenance of the entire INAMS II Solution including, but not limited to, the application, IT hardware, handhold support (1st two years of O&M), support services, and equipment for a period of three years from the date of final Go-Live.

s. Project Management during the entire period of contract.

t. Exit Management and transition

2.3 System Concept.

The indicative functional / business modules for the INAMS II system are represented below.



2.4 System Design and Architecture

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.

2.5 System Deliverables

2.5.1 System Study

a. The bidder shall carry out a system study of INAMS -I and other application deployed at various NAD.

b. The existing networking and data Centre infrastructure available in the Indian Navy 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 System Integrator shall interact with the users of the existing INAMS -1 and other applications and then conduct an analysis for development of INAMS – II software.

2.5.2 Important Technical Parameters

a. **Scope**. The qualified bidder shall be solely responsible for designing, development, integration, facilitating the testing and acceptance of a user friendly, fully functional INAMS -II application software. The scope of this project shall include the following:-

i **Software Development**. The scope of work encompasses all critical functional areas required for the effective implementation and deployment of the solution. It includes Material Management, covering inventory control, stores management, and transportation of materials. Production Planning and Control which will ensure efficient scheduling, monitoring, and management of production activities. The solution will also address specialized processes such as Explosive Handling, with adherence to safety protocols, secure storage, and regulatory compliance.

Further, the scope covers Provisioning, Procurement, and Local Purchase, ensuring timely availability of resources through defined supply channels.

Emphasis will be placed on Indigenization to encourage utilization of indigenous components and reduce dependency on imports.

Administration and Personnel Management functions will be integrated to streamline HR and organizational processes. Comprehensive Training modules will be implemented to enhance user competency and ensure optimal use of the system. Audit and Compliance mechanisms will provide transparency, accountability, and support governance requirements. Finally, the scope includes the Ship Module, covering shipbuilding, modular integration, and associated operational activities, thereby ensuring end-to-end coverage of all relevant domains.

ii **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.

iii **Collation and Corroboration of Data**. The database populated should be collated and validated 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 the updated information only. The manual override facility to accept cluttered / conflicted information should exist within the system.

iv **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 Indian Navy. The database should cater for future migration to prescribed DBMS as per Indian Navy/ 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.

v **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 Artificial Intelligence (AI) and Machine Learning (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.

vi **Dissemination**. The user should able to disseminate the data, queried or otherwise to lower or higher headquarters through the backbone network that is the Indian Navy Centric Network (NCN) or through the Indian Navy Messaging Application – ASGIMA.

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

i Maximum use of Open-Source Frameworks with assured support.

ii Web Browser independence (if applicable).

iii Industry standard UI design document will be guiding documents for developing user interface and interactions.

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

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

vi Application wise comprehensive “natural language” based search facility.

c. 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 Indian Navy Cyber Group (ACG)/ Indian Navy 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.

d. 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.

2.5.3 Major Software Components and Connected Requirements.

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

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

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

iii **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 to 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) System should facilitate automatic updation of grid reference fields corresponding to symbols used for map annotation.

(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.

iv **Queries (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.

v **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.

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

vi **Data Entry**.

(i) **Validation**. The bidder 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.

vii **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.

b. **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.

c. **Data Dictionary**. The bidder with assistance of DgoNA 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 DgoNA as part of project deliverables.

d. **Data Security**. Adequate security measures will be ensured by the bidder as per the latest guidelines/ policies of Naval Cyber Group (NCG) and other Naval agencies as applicable which will be shared at appropriate time. Key security highlights are mentioned below:-

i 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.

ii **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.

iii Procedures and mechanisms will be developed by bidder to prevent unauthorized access to the queries, reports and dashboards.

iv 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.

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

vi Access control methods to be implemented for the application.

vii 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.

viii The bidder will be responsible for fixing the observations raised by Naval Cyber Group during the cyber vetting process in order to obtain security clearance. Any design change proposed by NCG at that time, due to

detection of some previously unforeseeable vulnerability will be fixed by bidder.

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

e. 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, authorised queries and symbols.

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

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

i. **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.

ii. **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.

iii. **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.

iv. **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.

v. **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.

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

vii. **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.

viii. **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.

ix. **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.

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

xi. **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.

(j) **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.

xii. **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.

xiii. **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.

xiv. **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 INTC. Application should be designed in a manner wherein it is frugal in the use of scarce bandwidth resources.

xv. 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.

xvi. **Cyber Security Vetting**. Post functionality testing by sponsor unit the software application along with the source code be forwarded to Naval Cyber Group for undertaking detail cyber security vetting.

k. **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.

l. **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.

m. **Application Software Features**. The proposed INAMS-II software should have the following distinct features:-

i 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.

ii 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.

iii 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.

iv The application should have a modular design for ease of maintenance and up gradation.

v Application should be capable of vertical and horizontal scaling.

vi Avoidance of use of proprietary libraries/frameworks to prevent bidder dependency and licensing issues.

vii 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.

n. **Offline/ Lightweight Module**. There are a number of units/subunits which are likely to be disconnected from Indian Navy Data Network (temporarily or due to bandwidth constraints) due to various operational/administrative/ other reasons. There is a need to develop a mechanism such as client-side desktop application must also be developed 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 NCN. Alternatively, a mechanism should also be built to export the synchronized data from lightweight module and transfer it manually in the system connected on NCN.

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

p. **Software Package**. The solution is to be installed/ hosted at Indian Navy Data Centre with Regional/Central Data Centre as the access points.

i Hosted on NCN using planned CDC/ RDCs infrastructure.

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

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

iv Receive, process and disseminate inputs within IN and with other services, HQ IDS and other Govt agencies.

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

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

q. **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.

r. **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.

s. **Integration.**

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

ii The application to have method of creating new API using front end only.

t. **Support of Software Products**. The bidder 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 bidder 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 uthorize prior to deployment.

Development and Testing

u. Software will preferably be developed at user location, Non Disclosure Agreement (NDA) and other connected security protocols should be adhered to. Hardware and software for the same will be provided by the bidder. Resources for carrying out this testing (viz. manpower for data entry, computers etc) shall be provided by the bidder. 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 NCG to confirm implementation of security requirements. Acceptance after testing of each phase/module will be given by DGoNA.

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

w. Getting the developed software tested will be the responsibility of the bidder as per the SRS. It will also be tested by Independent third party software tester. The cost of testing will be borne by the bidder.

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

x. **Establishment of System Integration Test Facility (SITF)**. The bidder will establish a fully functional SITF in the DGoNA premises or any designated place. 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.

y. **Hosting of INAMS – II Application Software**.

i The INAMS -II software is envisaged to be used by 1200 concurrent users PAN India. The software is proposed to be installed as instances at Central Data Centres (CDCs) and Regional Data Centres (RDCs) with instances occurring at Naval Head Headquarters.

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

iii 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.

z. **Environment.** The selected bidder shall provision and maintain multiple logically segregated environments for the proposed application, at a minimum including Development, Testing / QA, Training / UAT, and Production environments. Each environment shall be logically and securely separated from the others, with appropriate access controls, data sets, configurations and security policies to prevent any unintended interference, data leakage or performance impact across environments. The Development environment shall be used exclusively for code development and unit testing; the Testing / QA environment shall be used for system, integration, security and performance testing; the Training / UAT environment shall be used for user training, demonstrations and user acceptance testing with anonymized / masked data; and the Production environment shall be used only for live operations and production data. The bidder shall also propose any additional environments required (such as Staging or Disaster Recovery) in line with best practices, security guidelines and uptime requirements, and shall ensure version control, configuration management, backup and rollback mechanisms across all environments.

2.5.4 Hardware Specification:

2.5.4.1 Data Centres Hardware

The bidder shall propose a detailed Hardware Requirement Specification (HRS) for the complete solution, covering all application, database, web, integration, security and support components. The HRS shall clearly specify the required compute, storage and network capacities (including CPU, memory, disk type and size, IOPS, network bandwidth, redundancy, scalability margins, etc.) for each environment (Development, Testing, Training/UAT, Production and Disaster Recovery, as applicable). The proposed hardware architecture shall be modular, scalable (both vertically and horizontally), and compliant with Government of India / Indian Navy standards for data centre, cloud and security. The bidder shall ensure high availability, appropriate clustering / load balancing, backup and archival mechanisms, and shall avoid any vendor lock-in arising from proprietary hardware. All hardware components shall be of enterprise grade, from OEMs with proven support in India, and shall come with comprehensive warranty / AMC for the duration of the project, including timely replacement, firmware updates and performance tuning support.

2.5.4.2 End-Users Hardware

The field units shall be equipped with necessary end-user hardware to enable smooth operation of the proposed solution. This will typically include, but not be limited to, desktop computers / laptops, printers, scanners, UPS and any other accessories required for day-to-day functioning. The broad categories and minimum technical specifications for such end-user hardware will be as per the details provided in the subsequent paragraphs of this RFI / RFP, and may be further refined at the time of finalization of the Bill of Material (BoM). The bidder shall ensure that all field hardware proposed is compatible with the application, operating system and network architecture, is of reputed make with adequate warranty / AMC support in India, and is suitable for the environmental and usage conditions of the concerned locations (including power quality, dust, temperature and connectivity constraints). The bidder may also suggest additional field devices, wherever necessary, to improve usability, efficiency or security, subject to approval of the DgoNA.

The tentative quantity of the end-user hardware is as below:

S. No.	Item Description a.	Qty b.
1	Desktop	789
2	UPS 1 KVA	789
3	L2 Switches	616

S. No.	Item Description a.	Qty b.
4	L3 Switches	368
5	9U Network Rack	984
6	QR Code printers and scanners	123
7	A4 Laser Printer	118
	A3 Laser Printer	16
7	A3 InkTank Printer	200
8	Flatbed scanner	16
9	Digital Pen with pad	1578
10	UTP Cabling for 789 Desktops	789
11	Fibre optic cable	15000 mts

The specification of end-users hardware is as below:

2.5.4.2.1 **Desktop**

S. No.	Component a.	Specifications b.	
		Intel Processor	AMD Processor
1	Processor	Intel i5-13400 13th Generation processor or Higher.	AMD Ryzen 7 5700G processor or Higher.
2	Motherboard	Intel Q670 series or better.	Compatible motherboard with AM4 socket and support AMD B500 series chipsets or better.
3	Memory	32 GB 2993 MHz DDR4 RAM with minimum 64 GB Expandability.	
4	Hard Disk Drive/ Solid State Drive	1 TB SSD or NVMe PCIe SSD.	
5	Keyboard & Mouse	Wired USB 104 Keys keyboard with rupees font and Wired USB optical Mouse with scroll.	
6	Monitor	21.5 inches HD (1920x1080) or higher LED Digital Colour Monitor TCO-08 certified.	

S. No.	Component a.	Specifications b.
7	Warranty	Onsite warranty for one years.
8	Operating System Compatibility/ OS Certifications	Windows 11 Professional and above compatible.
9	Compliance/ Certifications	ROHS (Restriction of Hazardous Substances), BEE/ Energy Star, BIS Registration under CRS of MeitY and valid BIS Registration Number.
10	Graphics Card	Integrated Graphics.

2.5.4.2.2 **Network A4 Laser Printer**

S. No.	Component a.	Specifications b.
1	Functions	Black-and-white printing, black-and-white copying, , black-and-white and color scanning
2	Print speed	Minimum: Up to 40 PPM (letter) and 30 PPM (A4) measured using ISO/IEC 24734
3	Duty Cycle	Minimum: 15,000 pages per month or higher
4	Print quality	Up to 600 x 600 dpi
5	Print Options	Duplex/Network enabled
6	Processor Speed	350 MHz
7	Copy speed	40 PPM (letter), 30 PPM (A4)
8	Copy resolution (black graphics)	Up to 600 x 600 dpi
9	Scan type	Flatbed
10	Enhanced scanning	Up to 19200 dpi
11	Color scanning	Integrated
12	Auto document feeder capacity	Standard, 50 sheets
13	Standard paper trays	2 Standard Paper trays

S. No.	Component a.	Specifications b.
14	Standard media sizes	A4, A5, postcard; automatic document feeder (ADF): A4, A5
15	Standard connectivity	Minimum: Built-in 10/100 wired Ethernet network connectivity with RJ-45 port; Hi-Speed USB 3.0 port
16	Memory	2048 MB or higher
17	Warranty	Onsite warranty for one year.
18	Compatible Operating Systems	Debian Linux/ BOSS Linux, Windows 11 and above, Windows Server 2019- 2012 (32 & 64 bit).
19	Compliance/ Certifications	BIS Registration under CRS of MeitY, BIS Registration No, RoHS, Other Certifications (UL,CE,FCC etc)

2.5.4.2.3 **Network A3 Laser Printer**

S. No.	Component a.	Specifications b.
1	Functions	Black-and-white printing, black-and-white copying, black-and-white and color scanning
2	Print speed	Minimum: Up to 27 PPM
3	Duty Cycle	Minimum: 15,000 pages per month or higher
4	Print quality	Up to 600 x 600 dpi
5	Print Options	Network enabled
6	Copy speed	30 PPM (A4)
7	Copy resolution (black graphics)	Up to 600 x 600 dpi
8	Scan type	Minimum Flatbed
9	Enhanced scanning	600x600 dpi
10	Color scanning	Integrated

S. No.	Component a.	Specifications b.
11	Auto document feeder capacity	Standard, 250 sheets
12	Standard paper trays	2 Standard Paper trays
13	Standard media sizes	automatic document feeder (ADF): A4, A3
14	Standard connectivity	Minimum: Built-in 10/100 wired Ethernet network connectivity with RJ-45 port; Hi-Speed USB 3.0 port
15	Warranty	Onsite warranty for year.
16	Compatible Operating Systems	Debian Linux/ BOSS Linux, Windows 11 and above, Windows Server 2019- 2012 (32 & 64 bit).
17	Compliance/ Certifications	BIS Registration under CRS of MeitY, BIS Registration No, RoHS, Other Certifications (UL,CE,FCC etc)

2.5.4.2.4 **Network A4 Multi-function Ink tank Printer**

S. No.	Component a.	Specifications b.
1	Functions	Color printing, Color copying, color scanning
2	Print speed	>18ppm
3	Print quality	Up to 1200 x 1200 dpi
4	Print Options	Duplex/Network enabled
5	Copy speed	> PPM
6	Copy resolution (black graphics)	Up to 600 x 600 dpi
7	Scan type	Flatbed
8	Auto document feeder capacity	Standard, 50 sheets
9	Standard paper trays	2 Standard Paper trays

S. No.	Component a.	Specifications b.
10	Standard media sizes	A4, A5, postcard; automatic document feeder (ADF): A4, A5
11	Standard connectivity	Minimum: Built-in 10/100 wired Ethernet network connectivity with RJ-45 port; Hi-Speed USB 3.0 port
12	Compatible Operating Systems	Debian Linux/ BOSS Linux, Windows 11 and above, Windows Server 2019- 2012 (32 & 64 bit).

2.5.4.2.5 **Network A3 Ink tank Printer**

S. No.	Component a.	Specifications b.
1	Functions	Color printing,
2	Print speed	>18ppm
3	Print quality	Up to 1200 x 1200 dpi
4	Print Options	Duplex optional
5	Auto document feeder capacity	Standard, 50 sheets
6	Standard paper trays	2 Standard Paper trays
7	Standard media sizes	Automatic document feeder (ADF): A4, A3
8	Standard connectivity	Minimum: Built-in 10/100 wired Ethernet network connectivity with RJ-45 port; Hi-Speed USB 3.0 port
9	Compatible Operating Systems	Debian Linux/ BOSS Linux, Windows 11 and above, Windows Server 2019- 2012 (32 & 64 bit).

2.5.4.2.6 1KVA online UPS

S. No.	Component a.	Specifications b.
1	General	Online UPS should be free from workmanship defects, sharp edges, nicks, scratches burns etc. All fasteners should be fixed properly. All parts of equipment should be complete and functional
2	Switching Device	MOSFET or IGBT
3	Input Voltage	160 – 280 V, 50 +/- 3% Hz. Single phase A.C
4	Output Voltage (A.C mode)	230V +/- 1 %, 50 +/- 3% Hz. Single Phase
5	Output Voltage (Batt. Mode)	230V + 10 %, 50 + 0.5 Hz. At load power factor: > 0.6 LAG
6	Total Harmonic Distortion	40% Maximum (IN DC MODE)
7	Inverter Efficiency at rated Output Voltage &Frequency	Minimum 80%
8	Regulation	Should not exceed 10% from no load to full load
9	Protections	UPS should switch over to battery mode if input voltage goes outside the range 160v-280v
10		Overvoltage, short circuit & overload protection at output terminal provided
11		Protection against battery over discharge should be provided.
12	Indicators to be provided	Mains Mode, UPS Mode , Battery Low & Overload
13	Batteries	Batteries should be 12 v, S.M.F , VRLA type only and should be fitted internally
14	Insulation Resistance	Insulation resistance : > 100 mega ohm

S. No.	Component a.	Specifications b.
15	High Voltage	High voltage: shall withstand 1.5 kv for 1 min. When applied between live parts & body
16	Leakage Current	Leakage current: < 210 micro amps
17	Compliance/ Certifications	Ingress Protection certificate, BIS Registration under CRS of MeitY, BIS Registration No, Availability of the Type Test Report from Central Govt/ NABL/ ILAC Accredited lab covering all technical requirements, Valid Type Test Certificate No.

2.5.4.2.7 **Networking Access Layer 3 Switch**

S No	Item Description a.
General Requirements	
1	The Switch shall be designed for continuous operations with Modular and Pluggable Redundant Power Supplies.
2	Switch shall have End of Life (EOL) date at least **two** years ahead from the date of purchase (i.e., EOL should not fall before **two** years from date of purchase).
3	Switch shall have End of Support (EOS) date at least **four** years ahead from the date of purchase (i.e., EOS should not fall before **four** years from date of purchase).
Hardware Capabilities	
4	Switch shall have 04 Nos. 10G Base X ports complying IEEE 802. 3ae standard.
5	Switch shall have 48 Nos. 1000 Base-T auto- sensing ports complying IEEE 802. 3ab standard, supporting half duplex, full duplex mode and auto negotiation on each port to optimize bandwidth.
6	Switch shall support Auto- MDIX (Media Dependent Interface Cross-Over) on all 1000 Bade-T Ports.
7	Switch shall have minimum of 176 Gbps forwarding bandwidth at layer 2 switching fabric. This should not include any stacking bandwidth which should be over and above 176 Gbps.
8	Switch shall have minimum 130 Million packets per second forwarding rate.

S No	Item Description a.
9	Switch shall have min 2 dedicated ports of atleast 200Gbps bandwidth per port for stacking of multiple switches (in addition to switching bandwidth specified).
10	The switch hardware shall be designed to run both Ipv4 & Ipv6 simultaneously (Dual Stack) from day one.
11	The switching fabric for all the LAN ports shall be non-blocking and each port shall run at wirespeed / line-rate.
12	Switch shall be capable of working with AC Power Supply with a Voltage varying from 190-240 Volts at 50 +/- 2Hz.
13	Switch shall have internal Redundant Power Supply (RPS). The primary as well as redundant power supply shall be hot swappable and no downtime/ reboot shall be required for addition/ removal of power supply module.
14	Switch shall support for 19 inch rack mountings.
Functional Requirements	
15	Switch shall support Link Aggregation Control Protocol (LACP) as per IEEE 802. 3ad.
16	Switch shall support 802. 1Q VLAN on all ports with support for minimum 255 VLANs.
17	Switch shall support IEEE 802.1Q tagging on all ports.
18	Switch shall support minimum 128000 concurrent MAC Addresses.
19	Switch shall support Spanning Tree Protocol as per IEEE 802.1d.
20	Switch shall support Multiple Spanning Tree Protocol as per IEEE 802.1s.
21	Switch shall support Rapid Spanning Tree Protocol as per IEEE 802. 1W.
22	Switch shall support Jumbo frames up to 9000 bytes.
23	Switch shall support self learning of active unicast & multicast MAC addresses and associated VLANs.
24	Switch shall support TFTP/FTP.
25	Switch shall support IGMP snooping V-1, 2&3.
26	Switch shall support Multilayer functionality (L2 for Switching and L3 for Routing).
27	Switch shall support latest version of IP routing protocols like OSPF, EIGRP, BGP and IS-IS.
28	Switch shall support IP GRE Tunnels with IPSEC.
29	Switch shall support NTP (Network Time Protocol), MVRP, SNTP (Simple Network Time Protocol) for date& time synchronization from NTP Server.
Quality of Service (QoS) Features	
30	Switch shall support classification and scheduling as per IEEE 802. 1P on all ports.

S No	Item Description a.
31	Switch shall support Strict Priority Queuing.
32	Switch shall support eight hardware queues per port.
33	Switch shall support QoS configuration on per switch port basis.
34	Switch shall support classification and marking based on IP Type of Service (TOS) and DSCP.
35	Switch shall provide traffic shaping and rate limiting features (for egress as well as ingress traffic) specified Host, network, Applications etc.
Layer 3 Features	
36	Switch shall have following Layer-3 features:
	(a) Inter-VLAN IP routing for full layer 3 routing between two or more VLANs.
	(b) IP unicast routing protocols (static, OSPF, BGP)
	I Virtual Router Redundancy Protocol (VRRP)
	(d) Switch should support Layer 3 Network Segmentation using VRF-Lite or equivalent.
	I Switch should support Static IP routing, OSPF and PIM for Multicast.
	(f) Switch should support Policy Based Routing
Security Features	
37	Switch shall support per port broadcast, multicast and unicast storm control to prevent degradation of overall system performance occurred due to faulty end stations
38	Switch shall support for IEEE 802. 1x port based authentication with VLAN assignment, port security and ACL (Access control list) assignment.
39	Switch shall support MAC Address based Filters/ Access Control Lists (ACLs) on all switch ports.
40	Switch shall support port as well as VLAN based Filters/ ACLs.
41	The switch shall support authentication, authorization and accounting through RADIUS/ TACACS+.
42	Switch shall have a console port with RJ-45 or USB interface for configuration and diagnostic purposes.
43	Switch shall be SNMP manageable with support for SNMP Version 1, 2 and 3.
44	Switch shall support all the standard MIBs (MIB-I&II).
45	Switch shall have web based network management software for configuration and management. In case, the management is not supported through general purpose internet browser, the bidder shall provide necessary software/ client for web based management of the switch.

S No	Item Description a.
46	Switch shall support SSH Version-2 for Command Line Management and Telnet to be disabled by default.
47	Switch shall support 4 groups of embedded RMON (history, statistics, alarm and events).
48	Switch shall support multiple privilege levels to provide different levels of access on console port.
49	Switch shall support DHCP Spoofing and IP Source Guard.
50	Switch shall support System & Event logging functions as well as forwarding of these logs onto a separate server for log management.
51	Switch shall support on-line software reconfiguration to implement changes without rebooting. Any changes in the configuration of switches related to Layer-2 functions, VLAN, STP, Security, QoS shall not require rebooting of the switch.
52	Switch shall have comprehensive debugging features required for software & hardware fault diagnosis.
53	There should be a streamlined and well-established system for Switch Firmware and Patch update.
54	Switch shall support following in the user level of access i.e. the user with minimum privileges:
	(a) Display of input and Output error statistics on all interfaces.
	(b) Display of input and Output data rate statistics on all interfaces.
	I Display of Dynamic ARP table.
	(d) Display of MAC Address table.
55	Proposed Switches shall be capable for integration to existing EMS/NMS deployed in Indian Navy.
Compliances & Certifications	
56	Switch shall conform to CE or IEC EN 60950-1 Standards for Safety requirements of information Technology Equipment.
57	Switch shall conform to EN 55022 or CISPR22 or FCC Standards for EMC (Electro Magnetic Compatibility) requirements.
58	It is mandated that the L3 Switch is of indigenous origin where in the intellectual property Right (IPR) resides in India for Hardware Design. The Copyright is in India for software design & Development and Network operating system copyright is owned by Indian Company. The Company is willing to provide the entire design and IP for review and security audit to Indian Defence, if asked for.

S No	Item Description a.
59	Preference to make in India products: Preference shall be given to Class 1 local supplier as Department for promotion of Industry and internal Trade (DPIIT) order for Public Procurement (Preference to Make In India) vide No P-45021/2/2017-PP (BE-II) dated 15.06.2017 followed by revisions dated 28.05.2018, 29.05.2019 and amended further on 4th June 2020& 16th September 2020.
	Department of Telecommunication Notification No 18-04/2019 dated
	19.02.2020 for " Clause 10 (d) of Public procurement order 2017- identification of telecom items regarding"

2.5.4.2.8 **Networking Access Layer 2 Switch**

S No	Component a.	Specifications b.
1	Ports	24 Ports (10/100/1000 Base T Ports), with 4*1G/10GE SFP Ports
2	Architecture	Switch shall have minimum of 128 Gbps forwarding bandwidth with 95 Mpps forwarding Capacity. Switch should support MAC address table size of 32K
3	Form Factor	1 RU 19" rack mountable
		Switches should support GUI as well as CLI based management.
		Switches should be integrated to the existing management System deployed in NFS.
		Switches should be able to operate at ambient temperature of 0 to 55 deg C
		The switches should have 4x1G /10G SFP+ and 24*10/100/1000 Base T Ethernet interfaces.
		The Layer 2 switch shall be standalone fixed configuration chassis.
		A single point failure on the equipment shall not result in network or network management system downtime.
		Layer 2 switch should support PoE/PoE+
		The layer 2 switch should support multilevel priority scheduling for voice and video applications with minimal jitter, latency and packet loss.

4	Feature-Sets	The Layer 2 switches module shall support fault-tolerant connections to other switches or shared media segment to protect against a primary link failure. If the primary link fails, the backup path shall be automatically activated to maintain network connectivity and throughput.
		Comprehensive hardware and software fault isolation and recovery feature shall be supported.
		The Layer 2 switches shall support dynamic online configuration.
		It shall have natural cooling arrangement. If fans are used for cooling they shall be supplied in redundant configuration.
		It shall support Ethernet Ring protection based on ITU-T G.8032v1/v2.
		Protocols. It shall support shall support the following protocols:-
		(a) Link layer discovery protocol (IEEE 802.1ab) or similar protocol.
		(b) Logical link control (IEE 802.2).
		I The switch shall support both Ipv4 and Ipv6.
		(d) Internet Group Management Protocol versions 2 and 3 (IGMPv2 and v3) IPV6 ready.
		VLAN Features. The switch shall support the following VLAN features:-
		Minimum 1000 VLANs (as per IEEE 802.1Q) shall be supported.
		VLAN ingress filtering prevent VLAN leakage.
		VLAN CoS Preservation.
		VLAN CoS differentiation.
		Layer 2 Features
		The layer 2 switch shall not allow port to port traffic to prevent the bypassing of network policy enforcement point by the users.
		Should support per VLAN MAC learning to ensure MAC addresses are learnt only from a VLAN perspective and automatic/manual disabling of MAC address learning for the VLAN where there are less than two ports in that VLAN.
		Shall support L2 learning parameters as below:- Source learning per port/ VLAN/Source Address.
		It shall be possible to enable L2 Aging on every port.

		It shall be possible to set per dynamic MAC learning limit.
		It shall be possible to set per port static MAC Configuration.
		Shall support Frame sizes from 64 bytes to 1600 and to 9216 bytes on all ports.
		QoS. The layer 2 switch shall support the following QoS feature per port and per VLAN:-
		Eight No of hardware queues are required for per port for flow treatment of traffic:-
		The Layer 2 switch shall support scheduling of queues according to strict priority with the number of priority levels being 2 or more.
		The Layer 2 switch shall support setting the maximum size/depth of all queues.
		Policy based QoS.
		Congestion avoidance mechanism like WRED, WFQ etc.
		Security Requirements. The Layer 2 switch must support the following security features:-
		Security through ACL filters for layer 2 and layer 3 traffic, MAC address limits and storm control for broadcast, multicast and unknown Unicast.
		Authentication, Authorization and Accounting (AAA).
		RADIUS/TACACS+, Secure shell (SSH) Protocol, Bridge protocol. Data Unit (BPDU) filtering, Unicast, Multicast and Broadcast storm control.
		Blocking (UUFB), Dynamic Host Configuration Protocol (DHCP) Snooping and Unicast Path Reverse Forwarding.
		Port mirroring should support. At least 10 sessions, Options to filter incoming/ outgoing traffic, At least concentration ratio of 1:5 (i.e. capability to mirror Upto 5 ports on to a single port).
		Filtering. The Layer 2 switch shall be capable of filtering L2 traffic configurable on per Service and per Session basis and support the following:-
		Broadcast Traffic/ broadcast storm control.
		MAC address based filtering.
		IP address based filtering.
		Source and destination IP address range based filtering.

		Ether type based filtering.
		Protection from ARP spoofing attacks using Dynamic ARP inspection.
		IP Source Guard.
		DHCP Snooping.
		EMI/EMC Certifications.
		OEM certificates for Switches against EMI & EMC specifications are as follows:-
		FCC Part 15 Subpart B, Class A
		EN 61000-3-2, EN 61000-3-3
		EN-61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5
		EN 61000-4-6, EN 61000-4-8, EN 61000-4-11
		Proposed switch should be integrated seamlessly from day 1 with existing infrastructure like NMS (Network Management System), NAC (Network Access Control Systems), Syslog server and AAA servers.
5	Management	Switch should be able to integrate with 3rd party EMS for FCAPS functionality using SNMP MIB OIDs.
6	PMI for MII	**Preference to Make in India products**. Preference shall be given to Class 1 local supplier as Department for Promotion of industry and internal Trade (DPIIT) order for Public Procurement (Preference to Make in India) vide No. P-45021/2/2017-PP (BE-II) dated 15.06.2017 followed by revisions dated 28.05.2018, 29.05.2019 and amended further on 04.06.2020 & 16.09.2020.
7	Guidelines	
		Department of Telecommunications), Gazette notification dated
		29th August, 2018 for “Public Procurement (Preference to Make in
		India) Order 2017- Notification of Telecom Products, Services or Works- regarding”
		Department of Telecommunications Notification No. 18-04/2019-IP dated 19.02.2020 for “Clause 10 (d) of Public Procurement order 2017-identification of telecom items regarding” for defining the Value addition requirement for Domestic OEMs.
8	Quality	ISO 14001:2015, ISO 9001:2015

Networking Component Specification

2.5.4.2.9 Passive Component Specifications

a. Cat 6 AUTP Cable

S No	Material a.	Specification b.
1	Type	Unshielded Twisted Pair, Category 6 A TIA / EIA 568-B.2.
2	Conductors	23 AWG solid bare copper or better.
3	Insulation	Polyethylene.
4	Jacket	Flame Retardant PVC.
5	Operating temperature	-20° C to +60° C.
6	Frequency tested up to	Minimum 250 MHz .
7	Delay Skew	45ns MAX.
8	Impedance	100 Ohms ± 15 ohms, 1 to 600 MHz.
9	DC Resistance	≤ 6.658 Ohms per 100m.

b. Cat 6 AU

S No	Material a.	Specification b.
1	Type	PCB based, Unshielded Twisted Pair, Category 6A, TIA / EIA 568-B.2.
2	Modular Jack	750 mating cycles.
3	Wire terminal	200 termination cycles.
4	Accessories Mandatory	Strain relief and bend-limiting boot for cable.
5		Conductor management.
6	Housing	Polyphenylene oxide, 94V-0 rated.

7	Jack contacts	Phosphorous bronze, plated with 1.27micro-meter thick gold.

c. Cat 6 AUTP Jack Panels

S No	Material a.	Specification b.
1	Type	24-port, PCB based, Unshielded Twisted Pair, Category 6A, TIA/ EIA 568-B.2.
2	Category	Category 6. Should have cable manager to occupy same space.
3	Port Identification	9mm or 12mm Labels on each of 24-ports (to be included in supply).
4	Modular Jack	750 mating cycles.
5	Wire terminal (110 block)	200 termination cycles.
6	Housing	Polyphenylene oxide, 94V-0 rated.
7	Jack contacts	Phosphorous bronze, plated with 1.27micro-meter thick gold.

d. Faceplates

S No	Material a.	Specification b.
1	Type	1-port, White surface box.
2	Material	ABS / UL 94 V-0.
3	No. of ports	One/Two/Four.

e. Cat 6 AUTP Patch Cords

S No	Material a.	Specification b.
1	Type	Unshielded Twisted Pair, Category 6A, TIA / EIA 568-B.2.
2	Conductor	At least 24 AWG 100 OHMS.
3	Plug Protection	Moulded polyolefin boot.
4	Category	Category 6.
5	Terminals	Phosphor Bronze, 50 micron gold plating over selected area and gold flash over remainder, over 100 micron nickel underplate.
6	Insulation	Flame Retardant Polyethylene.
7	Jacket	PVC.

6-Core Single Mode Fibre Optic Cable (Required cores mentioned in the passives tentative quantities). The Fibre Optic Cable be suited for operating temperature as per terrain.

2.5.4.2.10 **Barcode Scanner**

S.No	Features a.	Specification Required b.	Remarks c.
PHYSICAL CHARACTERISTICS			
1	Weight	Weight less than/equals to 1000 gm including battery, Straps etc	
2	Display	Color Display	
		Touch Screen (dual support with finger and gloved finger)	
		Screen size 4.5 inches or Bigger)	
		The screen Glass should be hard enough to sustain dust and moisture environment.	
3	Data interface/Network connection	USB 2.0 or latest	
		Should be able to transfer data to computer system while docked.	

S.No	Features	Specification Required	Remarks
	a.	b.	c.
		The device should not allow WIFI, Bluetooth, GSM, Internet based connectivity. These features should be blocked at the hardware level.	
4	Keypad	Alpha-numeric keypad for data entry	
5	Data capture/ write	2D Bar codes : GS1 Data Matrix, GS1 QR Code	
	Camera	The device should not allow camera access.This features should be blocked at the hardware level.	
BARCODE SCANNING SPECIFICATION			
6	Symbology	2D Bar codes : GS1 Data Matrix, GS1 QR Code	
7	Scan engine	LED aimer	
PERFORMANCE CHARACTERISTICS			
8	Operating system	Whichever operating system is supported by the device. It should be the latest version with the latest security patch updated. Vendor should provide OS upgrade to latest version without additional cost.	The vendor to mention the level of upgraded version being provided**.**
		The reader should also be compatible with the middleware applications suitable for data exchange.	
9	Memory	Min 4 GB RAM	The vendor to mention specification for batteries being provided.
		Min 32 GB internal storage	
		Removable Battery	
		Rechargeable Battery	
		Should give a good battery life once charge	
		Battery backup- Min 5000mAH or more	
		The vendor should also declare the ideal environmental condition for the battery to perform optimally.	
OPERATIONAL ENVIRONMENT			
10	Operating temperature	10 Degree Celsius to 55 Degree Celsius	
11	Storage temperature	-30 Degree Celsius - + 60 Degree Celsius	

S.No	Features	Specification Required	Remarks
	a.	b.	c.
12	Humidity	The device should be capable to sustain high humidity environment. Preferably up to 95% RH	
13	Drop spec	Should be of Military grade and capable to sustain accidental drops from the users operating on floors which either mud or concert. Preferably 6 ft or above.	
14	Sealing/ ingress protection rating	IP54 or above	
ACCESSORIES			
15		Ethernet dock/cradle(charging & Ethernet communication) along with power supply	
16		Accessories for gun configuration	
17		Accessories for gun configuration	
18		Mounting bracket	
19		Data at rest/ device data be secured with AES-256 level encryption or higher.	
REGULATORY AND CERTIFICATION			
20	Safety	The device will be used in environments where explosive items are stored	
		The vendor should produce necessary certifications ensuring the electrical safety of the product	
		Vendor should also suggest methods fire containment shielding mechanism to prevent any fire incidents arising out of device battery bursting	
		The vendor should produce necessary regulatory standard certification with respect to EMI/EMC, Electrical Safety and RF exposure.	
21	Industry standards	Approved and complaint with various industry standards	

S.No	Features	Specification Required	Remarks
	a.	b.	c.
22	Country of Origin	Made in India product is preferred or else the country of origin should be from those countries that satisfies the procurement or trade agreement requirements of Indian Army. Necessary Certification should be produced to ensure the compliance	

2.5.5 Other Requirement

a. **Timelines.** The overall duration of the project is envisaged as five (05) years, comprising an Implementation Phase of two (02) years followed by an Operations & Maintenance (O&M) Phase of three (03) years. The Implementation Phase shall cover all activities related to detailed design, development/configuration, customization, integration, testing, data migration, training, pilot rollout and full-scale deployment of the solution across all designated locations, along with successful completion of acceptance testing and Go-Live. The subsequent three-year O&M Phase shall include steady-state operations, helpdesk support, preventive and corrective maintenance, performance monitoring, security updates, minor enhancements, and handholding support to end-users, as per the Service Level Agreements (SLAs) to be finalized at the RFP/contract stage. Bidders shall submit a detailed, activity-wise project plan with milestones, dependencies and deliverables aligned to this overall timeline.

b. **Training**.

i SIs 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. Based on the users feedback, the team be changed if found not adequate.

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

c. **Maintenance and Support**

Suitable tools shall be developed, in consultation with INAMS -II, to provide dash boarding facilities to important functionaries, for data import/export, data synchronization, data conversion and disaster recovery to facilitate the integration process.

d. **Help and Support**.

i. The bidder shall be responsible for providing 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).

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

e. **Warranty / AMC / ATS.**

The bidder shall provide comprehensive Warranty / AMC / ATS support for the entire duration of the contract, covering all supplied hardware, system software, application software, databases, middleware and related components of the solution. This support shall include, but not be limited to:

i. Analysis and bug fixing whenever issues are notified;

ii. Regular database administration, management and maintenance;

iii. Implementation of enhancements requested by the Purchaser that fall within the scope of the approved SRS, as well as additional major/minor process changes or enhancements required to address policy changes;

iv. system training support, along with all requisite training artefacts and user support materials, kept fully updated to reflect any changes carried out in the software, so as to cater for roll-over of personnel on a quarterly basis at DGONA / designated locations;

v. provisioning of regular monthly/quarterly patches on physical media as a clean, single-step executable and uploading of the same on the ADN/user environment;

vi. regular presence / availability within a reasonable response time of software engineers of the bidder for resolving any issues; (vii) yearly Vulnerability Assessment and Penetration Testing (VAPT) and implementation of necessary security upgrades; and (viii) obtaining periodic security clearance, including post-change clearance, from ACG / the designated cyber security authority whenever changes are carried out in the application.

vii. SIs can quote their rates as part of their commercial offer as per **Appendix D.**

The support shall ensure that the system remains fully operational, secure and performant as per the agreed SLAs. The exclusions from this comprehensive support shall be limited to consumables, such as printer ink/toner cartridges, paper and other stationery items, and UPS batteries, which shall be provided or replaced by the Purchaser as required. All other components and activities, including non-consumable spares, firmware/software updates, on-site visits, configuration changes, patches and documentation updates, shall be deemed to be included in the quoted Warranty / AMC / ATS cost.

f. **Proprietary Rights.**

i. The bidder 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 Navy 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 Navy after final acceptance of the software after testing. Indian Navy 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 bidder during the training phase.

ii. The following will be the requirements for incorporating IPR provisions:-

S No	Artefact a.	Associated IPR b.	Remarks c.
1	System Design	System Patent	System in entirety
2	Functional features	Methods Patent	Number and listing of functions performed by software
3	External appearance	Registration of design	GUI menus
4	Input domain	Registration of design, Patent	Data type, format, source
5	Processing Algorithm	Method Patent	Algorithms
6	Compilation script	Copyright	Code specific to OS and compiler
7	Source Code	Copyright	Code in a programming language
8	Libraries/DLLs/ Executables	Copyright/ Licenses	The artefact sharing for re-use
9	Logos/Images/Audio files	Copyright/ Licenses	All audio files, images developed for buyer

g. **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 Navy. It must be understood that the software will be developed for the Indian Navy as a dedicated project. Entire software and other details will be made available to the Indian Navy and it cannot be utilized for any other purpose without specific clearance from the Indian Navy (DGONA).

h. **Certifications.**

The bidder should have Capability Maturity Model Integration (CMMi) level 5, ISO 9001 and 27001 certifications. Any other relevant certification may be mentioned by the bidder.

j. **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.

k. **Project References.**

The bidder should at least list three previous projects achieved providing the following: -

i. Name of client including contact information.

ii. Size of organization.

iii. Size of supported units.

iv. Business Intelligence (BI) functionality used

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

m. SIs should confirm that the following conditions are acceptable: -

i 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.

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

iii Amongst the SIs cleared by the TEC, a Contract Negotiations Committee (CNC) would decide the lowest cost bidder (L1) and conclude the appropriate contract.

iv The bidder 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.

v Offset (if applicable). Not applicable.

vi **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**).

vii **Performance-cum-Warranty Bond**. Performance-cum Warranty Bond both equal to 5% value of the contract inclusive of taxes and duties is required to be submitted after signing of contract.

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

n. **Indigenous Content (IC).**

i. 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.

ii. The indigenous content should be as per Para 21 of Chapter I of DAP 2020.

3 PART II

Procedure for Response

a. SIs 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.

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

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

d. The Government of India invites responses to this request only from Original Equipment Manufactures (OEM), Authorised SIs 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 Navy (IN). 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.

e. 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.

4 PART III

4.1 Guidelines For Framing Criteria For bidder 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)

a. The guidelines prescribed for short-listing/ pre-qualification of Indian SIs in Buy (Indian-IDDM), Buy (Indian) and Buy and Make (Indian) cases are enumerated in the succeeding paragraphs.

b. **Parameters**.

i. **General Parameters**

(i) Applicant Entity should be an Indian bidder 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).

ii. **Technical Parameters**

(i) bidder 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 SIs.

(ii) Minimum five years experience in broad areas of software development/ integration of software applications.

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

(iv) The bidder is expected to function as a System Integrator with strong in-house software development capabilities, capable of undertaking end-to-end design, development, and maintenance of the proposed solution. The bidder should minimize reliance on third-party developers for core application development activities. Additionally, the bidder should have a demonstrated track record of successfully developing and managing large-scale software applications.

(v) **Turnkey Projects**. Experience of successful completion of one Turnkey project of similar nature within last five years with value of at least 200 Crore.

(vi) **ICT Cases**.

a. 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.

iii. **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 2023 may please be informed.

(ii) **Net Worth**. Net worth of entities, ending 31st March of the previous financial year i.e 31 March 2023 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.

iv. **Other Parameters**

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

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

c. **Stipulations for Applying Parameters**

i. Areas like software development/ development of APIs/ Software integration etc.

ii. The Applicant entity may be a single entity.

iii. SIs 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 5 years.

(ii) Annual reports for three years of applicant entity.

(iii) Details of vigilance action, viz. ongoing investigation and suspension /debarment/ blacklisting actions against the applicant entity.

(iv) A certificate from CA/ CS indicating the financial parameters for the last three years as per **Financial Parameter.**

Any bidder furnishing false information will be liable for action as per existing guidelines

4.2 Appendix A

(Ref to Para 50 of Part I of RFI)

REQUEST FOR INFORMATION: PROCEDURE FOR RESPONSE

General

a. The Indian Navy is planning to design and develop INAMS-2 application software. With the view to identify probable SIs who can undertake the said project, OEMs and Authorised SIs 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 SIs are required to furnish details as per Performa at **Appendix 'B' (refer Annexure II of Appendix A of Chapter II of DAP 2020)**.

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

c. The required information/ details may please be forwarded to the following address by **xx.xxx.xxxx**.

Address:

i. Additional Director General
Acquisition Technical (M&S)
New Delhi - 110011
Tele: 011-21411712 Fax: 011-21411710

ii. The Principal Director of Naval Armament
Directorate General of Naval Armament
Naval Headquarters of
Ministry of Defence
West Block – V, R.K. Puram,
New Delhi - 110066

Tele: 011-20863287 Fax: 011-26108290
Email:

Appendix B

4.2.1 Bidder Information Proforma

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

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

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

c. **Contact Details**.

(i) Postal Address :
(ii) Building No :
(iii) City :
(iv) State :
(v) Pin Code :
(vi) Tele :
(vii) URL / web Site :
(viii) Email :

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

(i) Name :
(ii) Postal Address :
(iii) Building No :
(iv) City :
(v) State :
(vi) Pin Code :
(vii) Tele :
(viii) URL / web Site :

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

f. **Certification by Quality Assurance Organisation**.

S No	Agency a.	Certification b.	Applicable from (Date and Year) c.	Valid Till (Date and Year) d.

g. **Details of Registration**

S. No.	Agency a.	Registration No b.	Validity (Date) c.	Equipment d.
1	GeM			
2	DGQA/ DGAQA/ DGNAI			
3	OFB			
4	DRDO			
5	Any other Govt Agency			

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

S No	Name of Organisation a.	Membership Number b.

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

(i) Name of Product:
(IDDM Capability be indicated against the product)

(ii) Description (attach technical literature):

(iii) Whether OEM or Integrator:

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

(v) Industrial License Number:

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

(aa) Overall IC (in percentage)

(ab) IC of material/components/software manufactured in India (in percentage)

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

(viii) Production capacity per annum:

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

(x) Estimated price of the RFP:

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

(xii) Any other relevant information:

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

(Authorised Signatory)

4.3 Appendix C

4.3.1 Request For Information: Questionnaire

a. **Bidder Information**. The Bidder will provide the following information:

i. Name of person responsible for the information contained in this RFI.

ii. Telephone Number, Email address, Web page.

iii. When was company established.

iv. Have your implemented your system in Indian Navy for any operational role? If so, please provide reference information.

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

vi. A sample implementation schedule for a solution implemented in government/ public sector organization.

vii. Describe any third party alliances, relationships, or dependencies.

viii. Please provide information on your implementation methodology.

ix. What documentation is provided with the software/ system and in what format.

x. Was your software written by your organization or acquired from a third party (for Administration Module).

Operational Parameters

b. **System Concept**. The background, system concept, system design, architecture, deliverables and the proposed service employment of INAMS 2 application software and its utilization have been covered in detail. **The Bidder is required to clearly indicate suitability and validate the design and architecture of the INAMS 2 application software**.

c. **System Design and Architecture**. The bidder is required to validate the integration of the INAMS 2 application with OIS & MIS data sets. The bidder would also be required to respond to the development of INAMS 2 software as modular/ incremental model and the methodology/ approach to achieve this.

d. **System Study**. As mentioned in the referred Para the bidder 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.

Indigenization and Technology Roadmap

a. Indicate the extent of indigenization proposed to be achieved under the project, along with a broad implementation plan outlining the approach for achieving the envisaged indigenization levels.

b. Provide details of the Indian and foreign technologies proposed to be incorporated as part of the solution.

c. Specify any dependencies on foreign OEMs for critical components and/or technologies, along with a long-term roadmap for indigenization of such foreign dependencies.

d. State the current indigenization status and future plan for critical and niche technologies proposed to be delivered under the project.

e. Provide details of subsystems, Line Replaceable Units (LRUs), and software that are proposed to be mandatorily indigenously manufactured or developed, along with identification of any foreign dependencies for critical enabling technologies or components.

f. Detail the mandatory indigenous capabilities and training requirements necessary for undertaking comprehensive maintenance, repair, obsolescence management, and life-cycle support of the equipment/platform/system, including details of associated test setups and equipment required during design, development, and operational phases.

g. In cases involving foreign collaboration, provide details regarding the scope, depth, and extent of Transfer of Technology (ToT), along with confirmation of formal acceptance by the foreign partner’s government (country of origin) that requisite licenses for technology transfer will be granted, if selected. Any requirement for an inter-governmental agreement may also be specified.

h. Specify whether a minimum of 50% of the overall Indigenous Content (IC) is proposed to be achieved in the form of material, components, and/or software manufactured in India.

j. Industry may also provide suggestions on the proposed trial methodology to facilitate preliminary understanding at the RFI stage.

Important Technical Parameters.

k. **Ingestion/ collection of Data**.

i The bidder will list out the requirements for ingestion of data into the INAMS 2 application software including aspects like software, databases, protocols and any other aspect required for designing an API.

ii 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 bidder will list out the proposed methodology to achieve the same and the metadata/ attributes required for integration.

iii The proposed mechanism of offline integration should be clearly brought out by the bidder.

l. **Storage/ Population of Database**.

i 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).

ii 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 bidder propose for modification of datasets, attributes and metadata field in future to enable use of AI and ML.

iii 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 bidder.

m. **Collection and Corroboration of Data**. The methodology to be followed for conflict resolution while storing similar datasets and the manual override feature to be incorporated should be responded to.

n. **Retrieval of Data Query Management**. The process of unstructured query management to be followed should be listed out alongwith the response times (in milliseconds) achievable for the queries.

o. **Analytics**. How will the advance analytics and predictive analysis using AI, ML and BI be incorporated. The bidder should give examples of possible/ existing use cases of these analytics of existing projects in industry.

p. **Dissemination**. The application will have admins at different levels. 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.

q. **Terms of Reference**.

i Which open source frameworks are proposed to be used.

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

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

iv Will the BI tools for commander be customizable and how will you achieve it.

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

r. 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.

s. Which additional plug-ins for running the INAMS 2 application on browsers are proposed to be utilized.

t. 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.

Major Software Components and Connected Requirements.

u. **Database Management System**.

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

ii What is the proposed methodology for data migration from existing OIS & MIS applications.

iii What interfaces will be used for data exchange.

iv 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.

v How will the data dictionary be created.

vi What is the level of normalization of data being proposed.

vii What methodology will be followed for data import and export.

viii What data validation and linking methods are proposed to be used.

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

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

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

v. **Queries**.

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

ii The response time of the INAMS 2 application software to various queries should be as low as possible. However, the bidder is required to list out the approximate response times for various queries as under:-

iii

S No	**Type of Query and Data Transfer** **a.**	**Time in s/ ms** **b.**	
		Local	**Remote**
1	Temporal, Attribute, Predefined Words, Structured and Unstructured Query on Database	-	-
2	Query on Database	-	-
3	Transfer of Map Overlay	-	-
4	Transfer of Map Frame	-	-
5	Message Transfer (1000 Words)	-	-

Interactive Conversation Facility			
6	Establishment Time	-	-
7	Response Time	-	-

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

w. **Data Entry**.

i What validation procedures/ process does the bidder proposed to identify the data/ critical data elements which require validation during the development process.

ii How does the bidder propose to achieve the validation through role based access control for various data entry personal.

x. **Database Management**.

i How does the bidder proposed to replicate the database to prevent loss of data due to any reason.

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

iii What technique will the bidder utilized for data visualization and transfer of data on the network.

y. **Database Administration**.

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

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

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

aa. **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.

bb. **Data Dictionary**. How does the bidder 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.

cc. **Data Security**. The bidder 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 NCG. 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 bidder should respond to all security aspects as mentioned in scope. The bidder should also include any other aspects related to security which he plans to include for a comprehensive security solution for INAMS 2 application software.

dd. **Suggested Security Aspects**.

i **Designed and Architecture**. What are the latest technological solutions available for design of an application software like INAMS 2. Will the proposed web based architecture be a sufficient solution for the Indian Navy. The security aspects related to web based architecture and the client server model should be included in the response.

ii **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.

iii **Session Management**. How does the bidder 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.

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

v **Code Construction**.

i. What type of coding language is proposed to be used.
ii. Software coding standards being complied may please be given out.

vi **Communication Security**. How does the bidder propose to implement security of data during transit.

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

viii **Website Security**. How does the bidder propose to website security.

ix **Server Configuration**. The bidder 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.

x **Development Testing**. Will the bidder 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.

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

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

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

gg. **Vertical and Horizontal Scaling**. How does the bidder propose to achieve vertical and horizontal scaling of the INAMS 2 application software through the hierarchy of IN.

hh. **Digital Signatures**. How does the bidder 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.

ii. **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 bidder propose to achieve this.

jj. **Offline/ Lightweight Module**. The INAMS 2 application software should be able to function in reduced/ low bandwidth environment as given in **scope of RFI.** The Synchronization post restoration of bandwidth should take place. How does the bidder proposed to achieve this.

kk. **Support of Software Products**.

i The bidder should provide details of life cycle support, version management and builds of INAMS 2 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.

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

ll. **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 INAMS 2 application software.

mm. **Establishment of SITF**. The bidder should clearly respond to the requirement for establishing a SITF for testing of INAMS 2 application software. The proposed testing criteria/ methodology should also form a part of the response.

nn. **Training**. The bidder will indicate the ability and willingness to offer following:-

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

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

iii Recommended training period for users and maintenance will given out by the bidder.

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

v Availability and willingness of the bidder to provide soft and hard copies of user handbook, technical manuals alongwith the CBT for training should be indicated.

vi How does the bidder plan to provide a separate training mode functioning will be provided at any level irrespective of Normal Mode.

oo. **Maintenance and Support**

The bidder will details provide details of the following:-

i Guarantee/ warranty.

ii AMC.

iii Monthly/ Quarterly Patches.

iv Periodic database management maintenance.

v Resource Plan for Operation and Maintenance at Data Centre Level and each locations.

pp. **Post Warranty AMC/ATS**

i AMC/ATS philosophy of the OEM.

ii What the level of ATS/AMC envisaged for minimizing downtime.

iii Will special tools be provided for carrying out error correction and detection.

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

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

Manufacturing and Production Aspects

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

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

tt. **Indigenisation**. The bidder 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.

uu. **Infrastructure Requirements**. The bidder will give details of the following:-

i Minimum requirements of hardware and software.
ii Recommended requirements of hardware and software.
iii Requirements for future scaling.
iv The OS on which the software will be able to run.
v Development environment proposed to be used.

vv. **Software Capability & Requirements**. The bidder will give details of the following:-

i Will the INAMS 2 application software integrate with active directory.

ii Will the INAMS 2 application software facilitate the setting of thresholds and provide alerts to users.

iii Can user easily create these thresholds and alerts.

iv How are these alerts communicated to the end user.

v Name all browsers that your system will be compatible with.

ww. **Quality Control**. The bidder will give details of the following:-

i CMMi level certification.
ii IEEE certification.
iii ISO certification.
iv Security certification.
v Any other certification.
vi Quality control and software testing fools and methods used during development.
vii Third party testing.

xx. **Integration**. The bidder will give details of the following:-

i Number of data sources that can be simultaneously accessed.

ii Type of data sources supported

iii Name all third party products required to meet the criteria described in this RFI.

iv Does your system provide APIs.

yy. **Actions Before Software Development**. The bidder will give details of the following:-

i Analysis and details of applications to be integrated and connected requirements.

ii Method of integration of modules.

iii Software Requirement Specification (SRS) and vision documents.

iv Process mapping methodology.

v Workflow management methodology.

vi Use of SDLC methodology.

vii Software modules and function point analysis/ effort estimation.

zz. **Actions During Software Development**. The bidder will give details of the following:-

i Modules of Ops, Int, OL and other additional packages proposed to be developed.

ii Features envisaged to be provided for ease of use.

iii Interfacing applications/ agencies.

aaa. **Actions After Software Development**. The bidder will give details of the following:-

i Installation procedure.

ii Scalability.

iii Reliability.

iv Extension/ Flexibility.

bbb. **Hardware**

i. General questions

(i) Please confirm OEM name, model number for each quoted item (Desktop, Printers, UPS, Switches, Passive Components, Barcode Scanner, Middleware).

(ii) Confirm that all quoted products are commercially available and not declared End-of-Life (EOL) or End-of-Support (EOS).

a. Provide EOL and EOS dates as declared by OEM for each model.

(iii) Confirm that all quoted items are Brand New, Factory Sealed, and not refurbished / used / grey-market.

(iv) Provide the country of origin and manufacturing location for each hardware item.

(v) Confirm Make in India classification (Class 1 / Class 2 / Non-local supplier) and attach Local Content declaration as per DPIIT orders.

(vi) Confirm availability of OEM authorised service centre and support ecosystem in [City/State/Region].

(vii) Confirm Spares availability period (in years) from date of supply for each device.

(viii) Provide an MTBF / reliability statement if available from the OEM.

(ix) Confirm RoHS compliance and any other relevant environmental standards (e-waste, recyclability, etc.) for all proposed hardware.

(x) a) Bidders are requested to indicate whether they can provide NATO Stock Numbers (NSN) for items/parts/equipment included in the Bill of Material (BoM), MRLS, and Jigs/Fixtures, duly linked with the OEM Part Numbers in accordance with the NATO Codification System (NCS) adopted by DDP/Directorate of Standardisation (DoS), Government of India.

(xi) In cases where NSN is not readily available, bidders are requested to provide details on their approach and capability to obtain relevant technical data and cataloguing information, and to initiate codification in consultation with the Directorate of Standardisation (DoS).

ii. Desktop

(i) Confirm that the proposed desktop meets or exceeds the following:

- Intel: Core i5-13400 13th Gen or higher / AMD: Ryzen 7 5700G or higher.
- Attach CPU model and benchmark/spec sheet.

(ii) Confirm motherboard specifications:

- Intel: Q670 series or better.
- AMD: Compatible with AM4 socket and AMD B500 series chipset or better.
- Share OEM part numbers of motherboard used.

(iii) Confirm RAM:

- Minimum 32 GB DDR4, 2933 MHz or higher.
- Minimum 64 GB expandability and number of free RAM slots available.

(iv) Confirm Storage:

- 1 TB SSD / NVMe PCIe SSD.
- Mention type (SATA SSD / NVMe SSD), interface, read/write speeds.
- Confirm availability of additional slots for storage expansion.

(v) Confirm Monitor specs:

- 21.5” or higher, 1920×1080 or higher, LED, TCO-08 certified.
- Provide evidence / certificate of TCO.

(vi) Confirm Keyboard & Mouse:

- USB 104-key keyboard with ₹ (rupee) symbol and optical mouse with scroll.
- Confirm language/layout (e.g. English (India)).

(vii) Confirm Graphics:

- Integrated graphics only. Confirm integrated GPU model and max resolution supported.

(viii) Confirm OS compatibility / certification:

- Desktop must be Windows 11 Professional compatible.
- Provide OEM statement / link showing Windows 11 compatibility.

(ix) Confirm Certifications:

- ROHS, BEE/Energy Star, BIS under CRS of MeitY with valid BIS Registration Number.
- Attach copies of certificates or BIS registration details.

(x) Warranty & Support:

- Confirm minimum 3 years onsite warranty for desktop including monitor, keyboard, mouse.
- Specify response time, resolution time, escalation matrix, and call logging process.

(xi) Imaging / Deployment:

- Confirm support for network-based OS deployment (PXE Boot, etc.).
- Confirm that BIOS/UEFI supports secure boot and TPM (if needed).

b. Network A4 / A3 Laser Printers (Apply appropriately to both A4 and A3 models.)

i. Confirm OEM model and whether it is MFP (Print/Copy/Scan) as per the specification.

ii. Confirm print speed:

- A4 model: ≥ 40 PPM (Letter) / 30 PPM (A4).

- A3 model: ≥ 27 PPM (or as specified).
- Provide official data sheet mentioning speeds as per ISO/IEC 24734.

iii.Duty cycle:

- Confirm minimum 15,000 pages per month or higher for each printer.

iv.Print quality:

- Confirm 600×600 dpi or higher.

v.Functions:

- duplex printing, network printing, ADF capacity (50 sheets for A4 / 250 sheets for A3), flatbed scanner, fax, color scanning where required.
- Confirm enhanced scan resolution (up to 19200 dpi for A4 printer, 600×600 dpi for A3).

vi.Memory:

- Confirm 2 GB RAM or higher.

vii.Connectivity:

- Confirm 10/100 Ethernet (RJ45), USB 3.0 and any other ports (USB host / Wi-Fi etc.).
- Confirm support for standard network printing protocols (TCP/IP, LPR/IPP, etc.).

viii.OS Compatibility:

- Confirm support and provide drivers for Debian/BOSS Linux, Windows 11 and above, Windows Server 2012–2019 (32/64 bit).

ix.Consumables:

- Ask for yield of toner/cartridges and drum (pages at 5% coverage).
- Request per unit cost of toner/drum and availability of separate drum and toner (if applicable).

x.Warranty:

- Confirm 3 years onsite warranty for A3, 1 year onsite for A4 (or as specified).
- Clarify coverage: printer + ADF + scanner + fuser etc.
- Mention SLA for onsite visit and maximum downtime allowed.

xi.Certifications:

- Confirm BIS under CRS of MeitY, RoHS, UL/CE/FCC or equivalent.
- Provide BIS registration number and certificate copies.

xii. Management & Monitoring:

- Confirm support for SNMP / web-based management, page counters, toner level monitoring, alerts.

c. Network A4 / A3 InkTank Printers

i. Confirm InkTank technology (type of ink, number of colors, refill mechanism).

ii. Confirm print speed (>18 ppm) and print resolution (1200×1200 dpi or higher) – share data sheet.

iii. Confirm duplex printing (enabled/optional as per spec) and network support.

iv. Confirm ADF capacity (50 sheets) and media sizes supported (A4, A5, postcard, A3 where applicable).

v. Confirm OS compatibility (Debian/BOSS Linux, Windows 11, Windows Server 2012–2019).

vi. Ink / Consumables:

- Provide page yield per ink bottle, expected cost per page (B&W and Color).
- Provide warranty conditions relating to print heads.

vii. Warranty & Support:

- Warranty period and SLA.
- Availability of authorised service in location.

d. 1 KVA Online UPS

i. Confirm that UPS is true online with MOSFET/IGBT-based inverter.

ii. Confirm capacity and backup:

- 1 KVA rating, single phase input/output.
- Backup time at full load and 60–70% load – specify battery Ah and number of batteries.

iii. Input / Output parameters:

- Confirm input voltage range (160–280 V) and frequency (50 Hz ±3%).
- Confirm output voltage 230 V ±1% (AC mode) / +10% (battery mode).
- Confirm output frequency and THD ≤ 40% in DC mode.

iv. Batteries:

- Confirm 12 V SMF VRLA batteries, internal mounting.
- Provide OEM, make, capacity, design life, and replacement procedure.

v. Protection features:

- Confirm over-voltage, short-circuit, overload, battery deep discharge protection, auto switch to battery when input outside 160–280 V.
- Confirm acoustic / visual alarms.

vi. Indicators:

- Confirm availability of Mains, UPS mode, Battery Low, Overload indicators.

vii. Safety & Compliance:

- Confirm insulation resistance >100 MΩ, high voltage withstand (1.5 kV for 1 min), leakage current <210 µA.
- Provide BIS, Ingress Protection certificate, Type Test reports from NABL/ILAC lab with certificate numbers.

viii. Warranty:

- Confirm warranty on UPS electronics and separate warranty on batteries.
- Mention onsite support SLA.

e. L3 Switch

i. Confirm that the proposed L3 switch model meets or exceeds all listed hardware capabilities:

- 48 × 1G Base-T ports, 4 × 10G Base-X, min 176 Gbps switching bandwidth, 130 Mpps forwarding, dedicated stacking bandwidth, dual-stack Ipv4/Ipv6, non-blocking fabric.

ii. Stacking:

- Provide details of stacking technology, number of switches supported in a single stack, bandwidth per stacking port (≥200 Gbps).

iii. Power:

- Confirm dual, hot-swappable internal power supplies with no reboot required during addition/removal.

iv. Functional features:

- Confirm support for 802.1Q VLANs (≥255), LACP (802.3ad), STP/RSTP/MSTP, jumbo frames (up to 9000 bytes), IGMP snooping v1/2/3, TFTP/FTP.

v. L3 features:

- Confirm support for Static Routing, OSPF, BGP, IS-IS, PIM, VRRP, VRF-Lite, Policy-Based Routing, IP GRE with IPSEC.

vi. QoS:

- Confirm 8 hardware queues per port, 802.1p classification, DSCP/TOS marking, traffic shaping and rate limiting (ingress/egress).

vii. Security:

- Confirm support for 802.1X, ACLs (MAC, port, VLAN, IP), RADIUS/TACACS+, storm control, DHCP Snooping, IP Source Guard, port security.

viii. Management:

- Confirm SNMP v1/v2/v3, RMON, web GUI, SSHv2, syslog, NTP/SNTP, and CLI access.
- Confirm ability to integrate with existing EMS/NMS / Indian Navy NMS environment – describe supported MIBs and integration approach.

ix. High availability:

- Confirm online configuration without reboot for L2/VLAN/STP/QoS/Security changes.

x.I ndigenous Origin / Make in India:

- Confirm that IPR for hardware design and network OS resides in India, and that OEM is willing to share design/IP for security audit by Defence authorities, as required.

- Provide self-declaration and supporting documents.

xi. Certifications:

- Confirm compliance with CE/IEC EN 60950-1, EN 55022/CISPR22/FCC EMC standards.
- Provide certificates.

xii. Support & Licensing:

- Clarify licensing model (perpetual/subscription) for L3 features, routing protocols, and stacking.
- Confirm that all required features are included without hidden/recurring feature licenses.
- Provide software upgrade and patch policy (major/minor releases).

xiii. SDN Compatibility

- Clarify whether switches will be compatible for SDN configuration

f. L2 Switch

i. Confirm L2 switch specifications:

- 24/48 × 10/100/1000 ports, 4 × 1G/10G SFP+, min 128 Gbps switching capacity, 95 Mpps throughput, 32K MAC table.

ii. Confirm PoE/PoE+ support, total PoE power budget, and per-port power rating.

iii. VLAN & L2 Features:

- Confirm support for ≥1000 VLANs, VLAN ingress filtering, VLAN CoS differentiation, per-VLAN MAC learning, jumbo frames up to 9216 bytes.

iv. QoS:

- Confirm 8 hardware queues/port, strict priority and other scheduling, congestion avoidance (WRED/WFQ etc.).

v. Security:

- Confirm ACL filtering (L2/L3), MAC limits, storm control, DHCP Snooping, IP Source Guard, Dynamic ARP Inspection, BPDU filtering, RADIUS/TACACS+, SSH.

vi. Redundancy:

- Confirm support for Ethernet Ring Protection (G.8032 v1/v2) and other link redundancy mechanisms.

vii. Management:

- Confirm GUI & CLI management, integration with existing NMS, NAC, syslog, AAA.
- Confirm port mirroring with at least 10 sessions and 1:5 concentration ratio.

viii. SDN Compatibility

- Clarify whether switches will be compatible for SDN configuration

g. Passive Networking Components *For Cat6A UTP cable, I/O, Patch Panels, Faceplates, Patch Cords, Fiber, etc.*

i. Confirm that all copper components are Category 6A and comply with TIA/EIA 568-B.2 or latest equivalent.

ii. Confirm electrical characteristics: conductor size, impedance, DC resistance, frequency range, delay skew etc., as per your spec.

iii. Brand & System Warranty:

- Confirm whether all passive components are from a single OEM and eligible for structured cabling system warranty (e.g. 15/20/25 years).
- Ask for OEM authorisation letter.

iv. Testing and Certification:

- Confirm that each link / channel will be tested with a certified field tester.
- Confirm provision of test reports after installation.

v. Fiber:

- Confirm single-mode fibre type (e.g. OS2), cores, construction (armoured/unarmoured), and operating temperature.
- Provide compliance standards (ITU-T, IEC).

vi. Labelling & Documentation:

- Confirm provision of labelling scheme, as-built diagrams, and documentation for all passive components.

h. Barcode Scanner & Middleware

i. Confirm exact model and form factor (handheld / gun-type) with weight ≤1000 gm including straps/battery.

ii. Display & Input:

- Confirm touchscreen display ≥4.5”, support for gloved operation, rugged glass, and alphanumeric keypad.

iii. Connectivity Restrictions:

- Confirm that Wi-Fi, Bluetooth, GSM, Internet connectivity and camera are disabled at hardware level (not merely via OS configuration). Describe method and certificates (if any).

iv. Scanning:

- Confirm support for GS1 DataMatrix and GS1 QR Code 2D symbologies with LED aimer.

v. OS & Upgrades:

- Confirm OS version and assurance of updates and security patches for at least 3–5 years.

vi. Memory & Battery:

- Confirm ≥4 GB RAM, ≥32 GB storage, removable & rechargeable battery with ≥5000 mAh capacity.
- Declare expected backup time and optimal environmental conditions.

vii. Ruggedness & Environment:

- Confirm operating temperature (-20°C to +55°C), storage temperature, humidity tolerance (up to 95% RH), drop rating (≥6 ft), IP54 or higher.

viii. Dock/Cradle & Accessories:

- Confirm provision of Ethernet charging dock, gun grip accessories, mounting brackets, and required power supplies.

ix. Security:

- Confirm AES-256 or higher encryption for device data at rest and ability to wipe device in case of loss/theft.

x. Safety and Certifications:

- Provide certifications relating to electrical safety, EMI/EMC, RF exposure, and suitability for explosive environments (if applicable – clarify class/zone).

ccc. **Terms and Conditions**. The bidder will give details of the following:-

i Handing over of Intellectual Proprietary Rights (IPR).
ii Supply of source code.

iii Delivery, Installation and implementation schedule.
iv Support services.
v Transition.
vi Production.
vii Performance.

ddd. **Detailed Cost Model**. The bidder will give details of the following:-

i Estimate of scoped requirements.
ii Is there anything that would require an additional or third part purchase to meet the requirements outlined in this RFI.
iii What is your expected product life cycle.
iv What is your licensing model and prices.
v Method used for cost estimation.

eee. **Hosting of INAMS 2 application software**.

i How do you plan to host INAMS 2 application software at CDCs and RDCs with instances accruing at Corps HQ level.

fff. **Detailed Cost Model**.

i Estimate of scoped requirements.

ii What is included.

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

iv Support offered. (Hours, methods of contact)

v What is your annual maintenance.

vi What is your licensing model and price.

vii Method used for cost estimation.

viii Assumptions.

ggg. **Miscellaneous**.

i Recommended categorization as per DAP 2020.

ii Recommended development of software time plan.

iii Requirement of PSQR (Preliminary Staff Qualitative Requirements) prior to formulation of GSQR (General Staff Qualitative Requirements).

iv Is there any requirement of PoC.

v Time required for training of persons on software.

hhh. **Timelines**. The bidder should clearly bring out the proposed development cycles for the INAMS 2 software with clear cut milestones of each cycle and is the timelines mentioned in RFI sufficient for development and operation.

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

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

4.4 Appendix D

4.4.1 COMMERCIAL OFFER FOR PROJECT INAMS 2 FOR INDIAN NAVY

Price Bid Format. The Price Bid Format is given below and Sis 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 bidder.

S.No	Description a.	Quantity b.	Rate c.	Amount d.	GST e.	Total Amount f.
1	Hardware					
2	System Software & Licenses					
3	Development / Implementation					
4	Audit & Certification					
5	Rollout Services					
6	Training					
7	Consulting Services					
	Total of Implementation					
1	AMC/ATS					
2	O&M Resources					
3	PMU Services					
	Cost of Maintenance					
	Add more rows as required					
	Grand Total					

Note: bidder may add more row (for hardware, software and licenses etc) as required.

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.

4.5 Appendix E

4.5.1 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 INAMS 2 (name of the Project).

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.

a. 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.

b. 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.

c. 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.

d. 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.

e. 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.

f. 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 uthorized representatives.

Disclosing Party

_____ **(Signature)**

_____ **(Typed or Printed name)**

Date _____

Receiving Party

_____ **(Signature)**

_____ **(Typed or Printed name)**

Date _____

5 Abbreviations

AMC	Annual Maintenance Cost
AI	Artificial Intelligence
ATS	Annual Technical Support
BI	Business Intelligence
CG	Coast Guards
DBMS	Database Management System
DC	Data Center
DR	Data Recovery Center
EMD	Earnest Money Deposit
EOSL	End-of-Support-Life
IDDM	Indigenously Designed, Developed and Manufactured
NHQ	Naval Head Quarter
IN	Indian Navy
INAMS	Indian Navy Armament Management System
IPR	Intellectual Property Rights
IT	Information Technology
MIS	Management Information System
ML	Machine Learning
MSA	Master Services Agreement
NAD	Naval Armament Depot
NDA	Non-Disclosure Agreement
NCN	Navy Communication Network
O&M	Operation and maintenance
OEM	Original Equipment Manufacturer
OFB	Ordnance Factory Board
OIS	Office Information System
RFP	Request for Proposal
SAG	Scientific Analysis Group
SI	System Integrator
SQL	Structured Query Language
SRS	Software Requirements Specification
SSOT	Single Source of Truth
TLS	Transport Layer Security
UI	User Interface
XSS	cross-site scripting