JHARKHAND SPACE APPLICATIONS CENTER

Department of Information Technology& e-Gov, Govt. of Jharkhand
2nd Floor, Engineers Hostel – I, Golchakkar, Dhurwa, Ranchi – 834004,
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Tender Notice: JSAC/Re-Tender/2016/03 Dated 24/08/2016

Jharkhand Space Applications Center, Department of Information Technology& e-gov, Govt. of Jharkhand invites online sealed Tender(Technical and Commercial) from manufacturer or their authorized dealer for this region for

i) **Up-gradation of ERDAS Apollo Advantage Server to Intergraph Geospatial Server v2016 or Latest Professional edition (Containing ERDAS Apollo and Geomedia Webmap)**at Jharkhand Space Applications Center, Engineers Hostel -1 Dhurwa, Ranchi.

ii) **Jharkhand State Spatial Data Infrastructure (JSSDI)-To develop the Jharkhand state geo-portal.**

Tender Reference		
1.	Date of commencement of tender document	27/08/2016
2.	The last date of online submission of bids	19/09/2016 up to 3.00 p.m
3.	Date and Time of Opening of Technical Bid	20/09/2016 at 11.00 a.m
4.	Date and Time of Opening of Price Bid (Commercial Offer)	To be announced after opening of Technical bid.
5.	Place of opening tender offers	Jharkhand Space Applications Center, 2nd Floor, Engineers Hostel – 1 Dhurwa, Ranchi-834004

A. Conditions of Tenders for Technical Bid

1. A complete set of Tender document to be downloaded from http://jsac.jharkhand.gov.in or https://jsac.procuretiger.com and the fee of Rs 10,000/- should be paid online.

2. Tenderers are required to pay Earnest Money Deposit (EMD) of Rs. 1,80,000 (Rs. One Lakh Eighty Thousand Only) online for **Up-gradation of ERDAS Apollo Advantage Server to Intergraph Geospatial Server v2016 or Latest Professional edition and Rs. 90,000 for development of Jharkhand State Spatial Data Infrastructure (JSSDI)** along with their offer. Unsuccessful Bidder's EMD will be discharged/ returned after required formalities.

3. Installation of the above should be done without creating any significant disturbance to office environment and existing computer network (LAN). Before submitting quotations, bidders may inspect all the existing installations to take necessary precaution for the installation of above-mentioned work.

4. Bidder must mention minimum system specification for the solution required.

5. Any discount /free modules /free services (if any) should be mentioned in the quotation

6. Tender Specific Authorization (Ink Signed) from the Principal Company (OEM) in the name of the Director, Jharkhand Space Application Center is must for all participating vendors mentioning details like tender number, date and products for which the authorization is provided.

7. The Tenderers are required to furnish latest VAT clearance certificate from the sales tax authority of the State of Jharkhand or any other State as applicable. And L1 has to register for VAT in Jharkhand.

8. The Tenderers should have Service Tax registration. The latest service tax return certificate valid as on date of tender should be submitted.

9. The tenderers are required to furnish attested copy of PAN Number, TAN Number and TIN Number.

10. The annual turnover of the firm must exceed Rs. 75 Lakh per year during the last two financial years. The bidder should submit Audited Balance sheet, Profit and Loss A/c for the year 2013-14 and 2014-15.

11. Bidder should have the experience of at least 2 Web-based GIS project of Rs. 10 lakh valued each in last three (03) years using Intergraph products. Bidder should submit copy of Completion Certificate of each project.

12. Bidder should submit the methodology for development of JSSDI.

13. A self-certificate by company to be submitted that company has not been blacklisted in any state of India.

14. The rate quoted for the item must be inclusive of all applicable taxes and F.O.R.

15. Acceptance of lowest rate is not obligatory and the undersigned reserves the right to reject any or all quotations without assigning any reason thereto.

16. The undersigned reserves the right to may be cheeked /verified the software by any authorized persons or agency. Software not found satisfactory would be rejected outright.

17. All the products supplied will have one year warranty after Installation and completion of training.

18. The offers shall be in two separate parts containing Technical and Commercial Offers. The technical and financial documents should be uploaded in prescribed folders.

B. (Jharkhand State Spatial Data Infrastructure)

1. Background

The proposed Geo Portal will be a web based system built to serve the user, spread over the internet and intranet. It will act as a Spatial Data Clearinghouse and central repository of all spatial data (Satellite Data & Geospatial Layers) of the state government. Backed by extensive OGC standard implementation, Jharkhand State Spatial Data Infrastructure in turn will be linked to NSDI and all the users of the State as well as Bhuvan portal of DOS and other users outside will be able to search, find, view and download all relevant Geospatial Data relating to the state of Jharkhand. It is proposed to preferably keep the GIS Database of all Departments of Govt. of Jharkhand at State Data Centre (SDC). It will ensure to remove the concern regarding their own data and spatial data can be shared among various Departments of Govt. of Jharkhand as well as Departments of Govt. of India and common users, this enables a win / win situation for all the stake holders sharing spatial data through a Common gateway i.e. Jharkhand State Spatial Data Infrastructure.

The server-side will host the web enabled database for already existing serving spatial data. Departments will be able to run the web applications for different geo-web services on web browsers. Typically, the user will request information from an Internet server holding the data repository. Then the server will process the request and send the required information to the user. The server components, i.e., the web server/application server and the data server will form a part of the server architecture. Only authorized/registered staff will have access to the server application/ database. This architecture will be developed specifically for Internet applications for publishing spatial data. It would also meet server capacity needs as web site access demand increases. The Web Server will host Internet Information Server (IIS), application server for providing portal services. The database servers will host a RDBMS. A hardware firewall will check all the dataflow between the Web Server and the database server. The users of the system will access the web application. The database will be accessed by the web application only. This will provide a clear segregation of three different layers such as user interface, application & business logic and database layers. It shall be based on a Service Oriented Architecture (SOA).

2. Objective

To develop the Jharkhand state geo-portal using Intergraph Geospatial Server v2016 and clearinghouse at organizing, securing, updating and facilitating delivery of geospatial metadata/ data/ products /application services to end users as per ISO/OGC standards. The geo-portal and the clearinghouse in the long run will ultimately result in the implementation of the State-wide Spatial Data Infrastructure.

3. Scope of Work

Jharkhand State Spatial Data Infrastructure (**JSSDI**) is fundamentally about facilitation and coordination of the exchange and sharing of spatial data between stakeholders, updation and management from different jurisdictional levels in the spatial data community. **JSSDI** comprises of following core components: an institutional framework, technical standards, fundamental datasets and clearinghouse.

In order to satisfy data exchanges between users, the Department of Science and Technology, Govt. of India, created National Spatial Data Infrastructure (NSDI) that delivers to the users integrated spatial information services. When setting-up a SDI based on Interoperable Web Services, one need to define the semantic of data and data types, design or map to an interoperable data model/schema, and adopt standard encoding (XML based), all this information will be registered in a Catalog Service. Service-oriented architecture (SOA) is proposed to be adopted in operationalizing the above mechanism.

Other advantages of SOA are to facilitate organizational decision support, by providing a dynamic environment to publish find- bind web services together, in a collaborative distributed development environment. For efficient data sharing through a geoportal, following are the principal tasks are to be taken into account:

- Create geospatial data and metadata.
- Deliver this data to their external clients, in real-time and independently from the software they use.
- Share this data with their clients.
- Ensure proper use and security of their data, managing the permissions of the users.
- Provide a discovery facility to their clients, allowing them to identify which data meet their needs.
- Provide an interface offering a dedicated solution to the particular business cases of external or internal clients.

The broad features of the envisaged system are.

3.1 CREATION OF CENTRALIZED DATABASE

JSAC is a Nodal agency for generation of Spatial Data base for all Government Departments of Jharkhand. Except some of the Govt. Departments, none of the Govt. Departments has their own Webserver or centralized database. Most of them are having GIS data formats as flat files (shape or CAD). JSAC has to take the responsibility to publish their data for easy discovery and access on the **JSSDI**. JSAC is also having a central RDBMS facility (SQL Server) for managing the GIS layers/ data sets. IP has to design a schema and implement it in order to create centralised database for keeping all Department specific Geospatial data. The database will be created in an industry-standard RDBMS with appropriate (data) security

environment and properly configured with the associated hardware and software for efficient search, access, and analysis.

3.2 MANAGING DATA AND METADATA

In addition to web services, an OGC/ISO compliant catalog aggregating all the metadata associated to the data is a prerequisite. The catalog should allow the user to find data relevant to his or her needs complementing the web services. The geo-portal visible part for the user should consist of a web graphical user interface, able to send queries to the web services and catalog, and receive and display their responses, after proper authentication, wherein the user will have access to what he/she is entitled to. Users do not need to have anything installed on their computer; only a web browser is necessary. Licensing rights are managed securely and dynamically. Four components of the portal requirement are the users, data providers, system administrator and the systems itself. An OGC/ISO-compliant open geospatial Interoperable web services that support any type of input, including Post GIS with combined offering of OGC/ISO certified WMS, WFS,WMTS and WCS coupled with mature support for GML3 and complete ISO19115 (data)/ ISO 19119 (service)-metadata management should be adopted.

Geospatial information providers collect, process, acquire and maintain the geospatial data critical to many business processes, inside their own organization and for external clients. Geospatial data may be in a multitude of formats, depending on the application software with which it is collected, processed or stored. Heterogeneous data is often incompatible, preventing smooth mixing and sharing. The use of meta data will enable to describe the services, interfaces and protocols, but also the service characteristics, the data served, their usage and semantic.
The metadata allows efficient identification of the data via specific queries and needs to be organized as ISO/TC 211 data standard. The data sets of geospatial information providers may reach terabytes in size, so the user must be guided to retrieve the data that meet his needs. There is mandatory metadata, including the scale, georeferencing, date and some basic keywords. Without this information, the data is simply unusable.

With the facility of data crawling, the DBA should be able to schedule crawling to a fixed time period, so that the crawlers would automatically identify and publish all the raster data present in the said directory to the server and update the required information in the database. Most importantly it should automatically harvest all the metadata and publish the same in ISO and OGC Formats. For vectors the DBA needs to publish them in Web Services, this will also be published in OGC Formats (WCS, WMS, and WFS etc.). While publishing, the DBA can design various styles to the vector layers wherein he or she may assign the different colors, symbology etc. to the vector layers.

3.3 META DATA STANDARDS

JSSDI will embrace basically the NSDI 2.0 metadata standards and the latest version of ISO/OGC compliant standards, Bidder needs to create the forms and publish metadata of data providers in the Geo-portal. A provision should be made in the system to permit various geo-spatial data providers in the State to publish their metadata sets into the

centralized database and get them registered either directly at JSSDI or from a remote location using the Web.

There should be a specific GUI for adding the metadata and system should allow to add or update metadata of the data or added web services as they don't have the proper metadata as per JSAC standard.

3.4 CONCEPTUAL DATA MODEL

A conceptual data model for bringing out the objects and the associations is required to be developed and appropriately documented. Unified Modelling Language (UML) formalism confirming to the specifications of ISO 19103 (Conceptual Schema Language) and ISO 19109 (Geographic Information – Rules for Application Schema) is required to be used in its development. The Conceptual Model is expected to be physically implemented for storing geo-spatial data sets in an OGC-compliant Relational Database Management System (RDBMS) or distribution in OGC's Geography Markup Language (GML) specification version 2.1.2 or higher (GML version 3.1's Simple Feature Profile 1 or 2 or GML 3.2.1 – ISO 19136/2007 - will be preferred). The Conceptual model should address software recommendations, refinement of physical system configuration (servers, network, and storage requirements, etc.) provided at Annexure, as well as a conceptual database design based on the applications identified and master data list generated during the Requirement Analysis/ Object Cataloguing phase. Conceptual Data Model is implemented in UML on a standard CASE Tool (Latest Rational Rose or Enterprise Architect) for implementation in RDBMS with Spatial blades/ OGC's GML, with appropriate documentation.

3.5 PUBLISHING METADATA OF DATA PROVIDERS IN THE GEO-PORTAL

A provision should be made in the system to permit various geospatial data providers in the State to publish their datasets/metadata into the centralized database at JSSDI or from a remote location using the Web. The Metadata standards prescribed in ISO 19115 should be adopted. With this, a web-based service for registration/ publication/ upload/ update of data/metadata at the Geoportal is achieved.

3.6 GEOSPATIAL PORTAL

JSAC officials should identify different Line Departments who want to share their Geospatial data with others and also made a list of sharable data.

There should be an initial login portal, where application will be provided to select Departments (with auto popups) user id and Password. When user will login with proper credentials the department specific portal with relevant data will open.
There will be another login user to portal as Guest, who will have access to all sharable data from all line departments

GUI of the JSSDI Geospatial portal should be attractive and smart enough to encounter all Portal user requirements. Vendor should give the (2/3 templates) choice for different GUI and it should be finalized by the JSAC officials. Vendor should employ best of portal development and visualization feature without use of any plug-in.

3.7 DELIVERING AND SHARING THE DATA: CZS

Bidder needs to utilize completely the clip zip ship functionality in the IGS software and build a suitable way to give user option to download the data via a FTP mechanism.

Should integrate Proper authentication module before downloading the Data. User should also be able to download Vector data as Shape file / GML to facilitate data processing at the end of the user or service provider.

3.8 WPS

The System, should allow publishing of Spatial Models via WPS Service as well as consume service. The System must provide a user friendly GUI for using the spatial models and should populate as and when new spatial models are published.

The Geoportal should be able to present a statistical dashboard to come up with a custom report based on features and attributes.

3.9 QUERY BUILDER MODULE AND SPATIAL DECISION SUPPORT SYSTEM

The system should give access to wide variety of Analytics, create real time analytics based on a query builder which gives ability to create newer queries based on Mathematical operators. The query builder will be available to all registered user. This is extension from the simple query features. The solution must have a generic query builder to execute any kind of query to help in decision support.

Standard Spatial queries should cover all spatial operators, including Proximity / Neighborhood Analysis, Thematic Analysis, shortest and Optimal Routing, Choropleth maps(as available in Bhuvan to visualize the census data), Multi-criteria Multi-Objective Analysis.

The Analytics Module should cover -User define expressions and use standard operators such as +,-<, <>, > including AND, OR, Between, Like etc.

Spatial Operators - Entirely within, intersect, join etc.

The solution should have -

a) Layer Search: Allows user to search for features using a Layer's attributes or a combination of layer's attributes and one or more joined tables (or views)
b) This should also enable to apply spatial filter to the queries from multiple layers.
c) Query across multiple map services
d) Nearby Search: find nearby places around a specific location
e) Location search based on place
f) Real time Localization: the solution should have provision to set the language (Hindi/ English), layers and most often used analysis functionality.
g) Charting: Without any dependency on any other 3rd party charting s/w, the solution should enable users to create dynamic charts from the map layer. The Charts should

include pie, bar, line etc. as per selections by the user using features and attribute fields selected. The charts should be displayed in a Chart Window.

h) Dynamic Attribute Table - should enable users to identify features on the map and get more detailed information about those from disparate databases.

3.10 EXTERNAL INTERFACES

a) GPS Tracking interface - Should enable mobile device with GPS (built in or Bluetooth enabled) users to center the map, based on GPS data; convert GPS co-ordinates to map projection and send information to the server on the acquired position.

b) Data access from "Bhuvan" - the portal should provide access to the raster images from Bhuvan Geoportal of Indian Space Research Organization.

c) VASHUDA- The user using the new application should be able to access the functionalities of VASHUDA application. Plot level ROR data will be linked to cadastral data for knowing the ownership of the land.

This database will be provided by JSAC through NIC.

3.11FIELD UPDATE

- Ground trothing based on Photographs. And the ability to geo tag the photos taken on ground from smart devices having the geo tag information or manually entered.
- Provide the ability to quickly create and communicate to users (by letting citizens update events on the map) about the latest updates about place during any natural or manmade disaster. Including an ability to define the validity of time
- Integrate with a device GPS to show location and tag information to the location.

3.12 PRINTING MODULE

Provide facility to print custom scale based maps both physically and electronically (as PDFs or JPEGs) for users. Custom map should have the ability for users to mark his red lines. The Printout should be in JSAC approved standard template and user should be able to dynamically print from A4-A0 layout.

Only approved users will be able to print in scale based layout format

3.13 CROWD SOURCING FACILITY

The system should allow citizens to enrich the published dataset via photograph and layer specific predefined forms will be available to them to update the info. The System Administrator at JSAC may need to review and validate the attributes before they are finally uploaded in the System. The Portal should manage all these feedback and maintain a dashboard of the same and published. At the minimum, the Mobile application should enable authorized users to find a location/locate a feature, enter field details if he is not satisfied with the attribute, capture photos and upload it to the central servers. The actual Mobile GIS Application requirements will be finalized during the User Requirement Study (URS) stage.

3.14 SECURITY SYSTEM TO HANDLE DATA, USER IDENTITY AND NETWORK

In order to secure the Geo-portal from unauthorized access, an appropriate security software module having provisions to safeguard data sets, manage user identity and transaction security; detect unauthorized intrusion, permit authorization/ authentication, and non-repudiation based access control on resources is required to be identified and installed with necessary hardware. The Security system should have facilities to create federated access and single sign on, on-the-fly creation of secured access and functionalities for userfriendly operations. The expected line departments accessing the date in the beginning would be around 50 to 100.

The Portal should provide fine grain security on the data, system administrator should be able to assign scale, resolution like Spatial Security for WCS Requests, Scale based Security for WMS Requests depending on the data and type of user, the administrator can set permissions and restrictions, on data usage.

System administrator should be able to control various flow of the portal like downloading data and system must give a user activity/log detail.

3.15 User Acceptance testing of the Geo-portal/ Database/ Services

Different units of the envisaged system like the Geo-portal or the database or the geo-web services should be thoroughly tested for individual satisfactory performance. A user acceptance test should be carried out to test the effectiveness, efficiency and user-friendliness of the integrated system. A set of criteria will be defined and finalized with the users in advance for testing of the system using the currently available Jharkhand State Wide Area Network environment. The Needs Assessment Document drawn up of this Scope of Work should form the base for the user acceptance testing.

The IP will need to perform the following tests on the integrated system to determine whether it meets all the requirements mandated for operational acceptance. Successful completion of the contract will be gauged through a series of formal system acceptance tests but not limited to the following tests and sub categories performed on all aspects of the system as mentioned below.

- Database test to verify complete and correct installation of database management system and data integrity testing.
- Data sampling - database back-up & recovery testing, query testing, database connection test.
- Unit testing - each module or component should to be fully tested independently before integration.
- System test - to verify functionality and performance with respect to the requirements of the system covering defect test, house-keeping functions like

archiving, easy to use GUIs, Server, Storage system shutdown and power up test, roll-back, system backup and restoration test.

- System Integration test - covering integration of Testing Component Integration, testing System Interfaces, parameter interfaces, procedure interfaces, message passing, validations, robustness, availability, Error Detection & Recovery Testing, measuring response time, throughput.
- Security testing - authentication, authorization, time-out, penetration testing, security audits.
- Stress, reliability and performance, consistency, recovery, volume and limit tests.
- Audit Trail - tracking critical transactions, logging all critical errors.
- Multi-user capability - Test that the application system can support several users.
- Storage testing - Testing to detect instances when the system exceed the specified limits
- Graphical User Interface (GUI) Test covering - menus, message boxes, keyboard interface, cursor management, visual design.

3.16 Spatial data to be committed to the Geoportal

Initially all the layers available with JSAC shall be made available on the Geoportal.

3.17 TIME PERIOD OF THE PROJECT

The time period of the project will be of Six (06) months from the date of signing of the agreement for the development of the complete geo-portal as per the scope of work and support for (06) Six months after incorporation of application for updation and management of the complete system.

Items	Time Period
SRS	15 Days after signing the MoU
Development	130 Days, after Approval of SRS
Testing	30 Days
Hosting	5 Days

3.18 SUPPORT STAFF

Vendor has to deploy one competent Senior Software developer qualification not less than MCA/B.Tech (CS)/BE (CS) on full time basis at JSAC for six months after the completion of Geo-portal.

3.19 Source Code

Vendor has to hand over the source code of entire Application (Geo Portal) to JSAC.

C. Schedule of Payment

a) Up-gradation of ERDAS Apollo Advantage Server to Intergraph Geospatial Server v2016 or Latest Professional edition (Containing ERDAS Apollo and Geomedia Webmap)

1. After satisfactory completion of the Supply, installation and training the agency will have to submit the challan/bill in triplicate with copy of Supply Order to this office and payment will be made by Jharkhand Space Application Center after passing of bill from this end.

2. 100% payment will be made after successful supply, Installation and training.

The number of items to be upgraded:

Sl.no	Items	New License	No. of License
1.	Up-gradation of ERDAS Apollo Advantage Server to Intergraph Geospatial Server v2016 or Latest Professional edition (Containing ERDAS Apollo and Geomedia Webmap)	2016 or Latest	02(Primary and TSB)

b)Jharkhand State Spatial Data Infrastructure (JSSDI)

The payment will be based on the delivery milestones. On successful completion of the milestone the vendor shall submit the deliverables to JSAC for verification. JSAC shall verify the deliverables submitted by the bidder within 7 days of receipt of the same and shall issue acceptance. On successful acceptance of the deliverables, the vendor shall raise invoice to JSAC along with copy of the acceptance letter of the deliverables issued by JSAC. JSAC shall release the payment as per the payment schedule as early as possible from the date of receipt of the invoice. The payment schedule is described in the following table.

Milestone	Payment
SRS Approval	20% of total cost
Successful User Acceptance Test	30% of total cost
Go-Live and Submission of Source Code	40% of total cost
Completion of support period	10% of total cost

D. Price Bid

Name of Work: ***Tender Notice Inviting quotation for***

*1.*Up-gradation of ERDAS Apollo Advantage Server to Intergraph Geospatial Server v2016 or Latest Professional edition (Containing ERDAS Apollo and Geomedia Webmap)

2. Jharkhand State Spatial Data Infrastructure (JSSDI)-To develop the Jharkhand state geo-portal

Tender Notice: JSAC/Re-Tender/2016/03

			Combined Price is to be quoted	
SL No.	**Description of Item**	**Quantity**	**Rate**	
			In figure	**In Words**
1.	Up-gradation of ERDAS Apollo Advantage Server to Intergraph Geospatial Server v2016 or Latest Professional edition (Containing ERDAS Apollo and Geomedia Webmap)	01 License (One Primary and One TSB)		
2.	Jharkhand State Spatial Data Infrastructure(JSSDI)- To develop the Jharkhand state geo-portal(Inclusive of one manpower)	01		
Total				

1. Rate should be inclusive of all applicable taxes, F.O.R and any other expense. Any increase in the taxes will not be applicable to the quoted price.
2. Lowest price will be decided based on the combined price of Sr. No. 1 & 2.
3. Price bid should be valid for 3 months.

Name and Signature of Authorized Person: ……

Name of Company……

Address: ……..

……

……..

Date: ……

All fields Mandatory

E .Technical Requirement Checklists

Sl. No	Items	Remarks(*)
1.	Tender Document Fee	
2.	EMD	
3.	Latest VAT registration and clearance certificate.	
4.	Valid Service Tax Registration certificate.	
5.	PAN Number, TAN Number and TIN Number.	
6.	A self certificate by company to be submitted that company has not been blacklisted in any state of India.	
7.	Tender Specific Authorization	
8.	Audited Balance sheet, Profit and Loss A/c for the year 2013-14 and 2014-15	
9.	Submission of methodology for development of JSSDI	
10.	Copy of Work Order/ Completion Certificate for Software Development.	