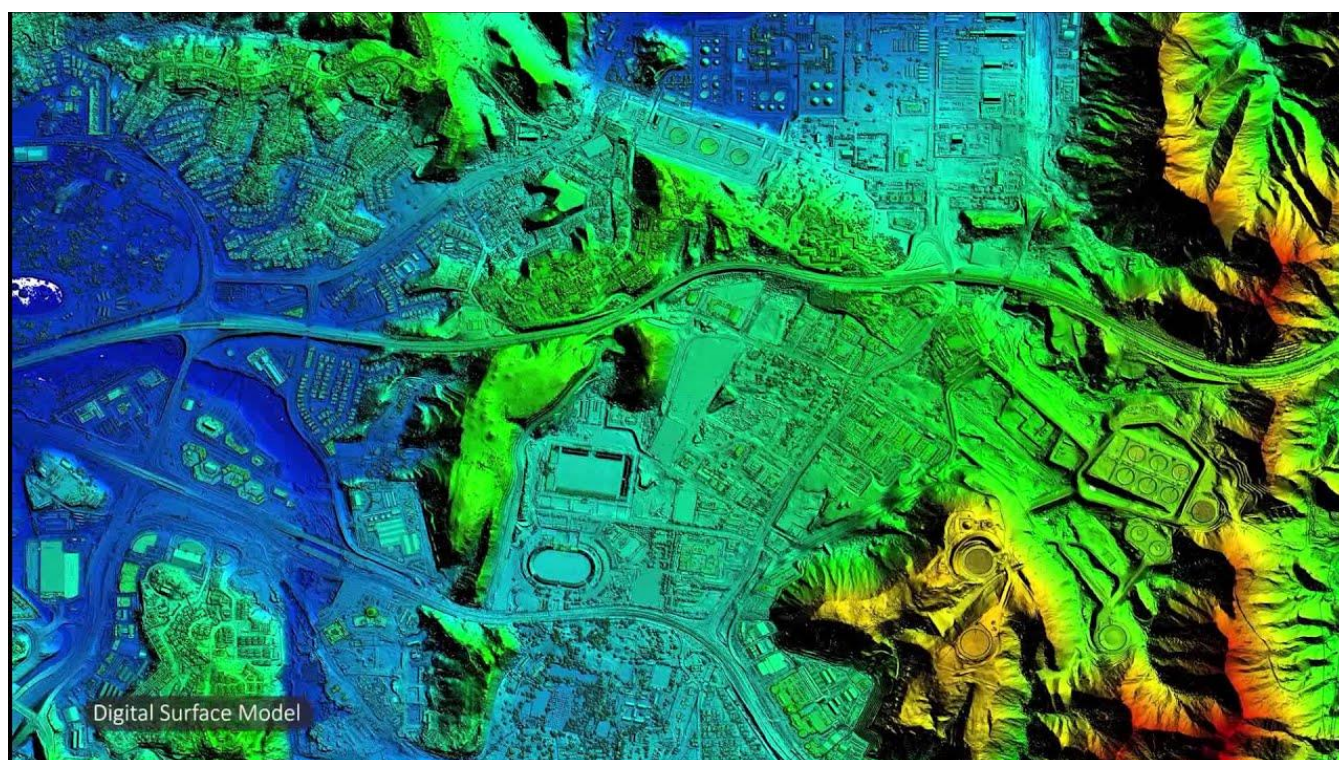


Request for Proposal

For

“LiDAR survey and building 3D City Geo-Spatial assets for Itanagar Capital Region, under Arunachal Pradesh State Spatial Data Infrastructure (APSSDI)”



State Remote Sensing Application Centre,
Department of Science and Technology,
Government of Arunachal Pradesh,
Daying Ering Colony, Ess-Sector,
Itanagar - 791111,
Arunachal Pradesh

State Remote Sensing Application Centre,
Government of Arunachal Pradesh,
Itanagar – 791111,
Arunachal Pradesh

Notice for Inviting Request for Proposal (RFP)

‘LiDAR Survey and building 3D City Geo-Spatial assets for Itanagar Capital Region under Arunachal Pradesh State Spatial Data Infrastructure (APSSDI)’ A Joint Project of NSDI, Department of Science & Technology Govt. of India and SRSAC, Govt. of Arunachal Pradesh.

State Remote Sensing Application Centre (SRSAC), Itanagar invites Request for Proposal (RFP) from reputed, established and reliable System Integrators (SI) in connection with the ‘LiDAR Survey and building 3D City Geo-Spatial assets for Itanagar Capital Region under Arunachal Pradesh State Spatial Data Infrastructure (APSSDI)’.

For collection of RFP document on payment of ₹ 3,000/- and any further information may contact:

Er. Timothy Nima,
Technical Officer cum Co-PI (APSSDI)
SRSAC, +91 7005714257, apssdi.srsac@gmail.com

Request for Proposal shall be submitted in two copies, in sealed envelope clearly super scribing the project name on top of envelope. Also, digital copy of the RFP to be submitted in the given email apssdi.srsac@gmail.com

Sealed envelope containing RFP shall be submitted at the following address.

The Director
State Remote Sensing Application Centre (SRSAC),
Ess – Sector, Itanagar – 791113,
Arunachal Pradesh, India.

The deadline for submission of the RFP bid is 21 (Twenty-one) days from the date of publication before 12.00 hrs.

SRSAC observes the right to accept/reject/modify & cancel the full tender or part thereof at any time without assigning any reason thereof.

(Dr. H. Dutta)
Director
State Remote Sensing Application Centre
Government of Arunachal Pradesh
Itanagar



LiDAR survey and building 3D City Geo-Spatial assets for Itanagar Capital Region, under Arunachal Pradesh State Spatial Data Infrastructure (APSSDI)

Sl. No	Information	Dates & Details
2	Notifying the document on SRSAC Notice Boards / Publishing at National and Local Dailies Newspaper, and online state website.	04-03-2022
3	Cost of RFP (Non-refundable)	Rs.3000/- in form of Cash/DD from any nationalized Bank in favor of the Director, SRSAC, Itanagar.
4	Earnest Money Deposit (EMD)	EMD, only in the form of a Bank Draft, of any Nationalized Bank, for Rs. 24,00,000/- (Rupees Twenty-four Lakhs), for the Bid of “LiDAR survey and building 3D City Geo-Spatial assets for Itanagar Capital Region, under Arunachal Pradesh State Spatial Data Infrastructure (APSSDI)” in favor of Director, SRSAC, Itanagar, Arunachal Pradesh , valid for 180 days from the date of opening of the technical bid.
5	Address for Submission of Bid	To, The Director, State Remote Sensing Application Centre, Department of Science and Technology, Government of Arunachal Pradesh, Daying Ering Colony, ESS-Sector, Itanagar - 791111, Arunachal Pradesh
6	Last Date of Receipt of Pre-Bid Queries.	12-03-2022, 17.30 hrs
7	Date of Pre-Bid Meeting	14-03-2022, 11.30 hrs through VC.
8	Issue of Consolidated and Relevant Clarifications on the received Pre-Bid Queries.	15-03-2022, 17.30 hrs vide email only.
9	Last date of receipt of Bids	25-03-2022, 16.00 hrs
10	Opening of General & Technical Bids, Financial Bids & Declaration of Bidding Results	28-03-2022, 11.00 hrs onwards



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INTRODUCTION

1. Project Background

Itanagar is the capital of Arunachal Pradesh and is being developed as a Smart City. **The foundation of the Itanagar Smart City is required to be based on a robust, high-quality, and reliable Geo-Spatial information** which then can be acted upon to enable the Government to provide the various citizen services more effectively. **This Geo-Spatial information is critical to every sphere of the socio-economic activity** – cultural conservation, urban planning, land management, infrastructure development, revenue collection, municipal services, disaster management etc. As per the technology trend around the world Itanagar needs a system where latest, highly accurate and high-resolution geospatial data can be stored and shared with its different stakeholders including line departments and public as data and solution.

3D GIS based on LiDAR technology is a highly evolved tool which can assist the city in rapidly gathering the minutest detail in the whole city with up to centimeter level accuracy. Hence, the current project aims to build a robust 3D foundation dataset based on LiDAR and Imagery data along with 3D GIS application for serving the data seamlessly.

Request for Proposal

Bids are invited from eligible, reputed and qualified Firms with sound technical and financial capabilities for **“LiDAR survey and building 3D City Geo-Spatial assets for Itanagar Capital Region, under Arunachal Pradesh State Spatial Data Infrastructure (APSSDI)”** for State Remote Sensing Application Centre, Govt of Arunachal Pradesh, Itanagar – 791111, as detailed out in the Scope of Work of this Request For Proposal (RFP) Document. This invitation to bid is open to all Bidders meeting the pre-qualification criteria as mentioned in this RFP Document.



BROAD SCHEDULE OF REQUIREMENTS

2. Broad Scope of Work

1. The complete Itanagar Capital Region with an area of approximately 130 sq km and surrounding rural area of approximately 100 sq km will be surveyed to a very high degree of detail and accuracy. The project area will be surveyed for 1:500 scale. The following are the requirements:
 - a. Aerial LiDAR data capture with density of 15 Points per Square meter with a FVA and FHA of 20 cm each.
 - b. Aerial Photography to generate Orthophotos with a GSD of 5 cm for AOI.
 - c. Vehicle mounted Mobile LiDAR survey along with 360-degree panoramic imagery at an interval of every 10 m along the road length of approximately 1800 km. Accuracy of Mobile LiDAR survey is required to have FVA and FHA of 10 cm each.
 - d. Carry out Point of Interest (PoI) Survey for collecting attribute data for approximately 1,00,000 PoI.
 - e. Generate contour of urban and rural area at 50 cm contour interval.
 - f. Geospatial Data Content and GIS Data Structure Standards will be as per AMRUT layer design for feature capturing and its corresponding geometry. These guidelines are provided in “Formulation of GIS based Master Plan for AMRUT Cities – Design & Standards” (Ministry of Urban Development, Govt. of India, 2016).
 - g. One Ground Control Point (GCP) will be established at every 10 sq km of area. All the GCPs will be observed by both GNSS and levelling from SoI levelling Benchmark. Local Geoid Model is to be created for transforming the height of LiDAR points from ellipsoidal height to MSL height. In addition, for QA/QC also Vendor will establish Check Location with Test Points as per the USGS LiDAR base specifications and ICSM LiDAR Acquisition Specifications standards. At least 20 sites of Check Location should be there to represent the accuracy properly.
2. The survey data will be used to deliver the following outputs:
 - a. Topographic Map with 1:500 Scale.
 - b. Contours with 50 cm interval
 - c. Digital Elevation Model at 0.5 m Grid



- d. True Orthophotos with an average GSD of 5 cm
 - e. Panoramic Images
3. The web-based GIS platform will have the capability to show the generated data:
- a. Base map along with all GIS layers
 - b. Orthophotos
 - c. Panoramic Imagery from Mobile LiDAR
4. **Capacity Building:**
- The contractor will establish a Centre of Excellence (CoE) with SRSAC. The CoE will be operated for a period of 1 year's post implementation of the system. The objective of the CoE would be to train the Administration staff on the following:
- a. LiDAR technology covering LiDAR data capture, LiDAR data processing
 - b. LiDAR and GIS software which can seamlessly show all the captured data
 - c. Geo-referencing of future data capture with the captured LiDAR data
5. The bidder will be responsible for obtaining all permits for the Aerial data capture as per laid down procedures in vogue issued by Government of India.
6. The following will be adopted for the project:
- i. Horizontal Datum WGS 84
 - ii. Vertical Datum Mean Sea Level
 - iii. Geoid model EGM 2008

3. RFP Schedule

Open invitation for RFP is being issued to invite all prospective bidder(s)
Following tentative schedule will be followed for RFP:

Sl. No	Information	Dates & Details
2	Notifying the document on SRSAC Notice Boards / Publishing at National and Local Dailies Newspaper.	04-03-2022
3	Cost of RFP (Non-refundable)	Rs.3000/- in form of Cash/DD from any nationalized Bank in favor of the Director, SRSAC, Itanagar.
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9	Last date of receipt of Bids	25-03-2022, 16.00 hrs
10	Opening of General & Technical Bids, Financial Bids & Declaration of Bidding Results	28-03-2022, 11.00 hrs onwards

4. Declaration by SRSAC and Information for Bidders

1. While the Request for Proposal(RFP) has been prepared in good faith, SRSAC does not make any representation of warranty, express implied, for accept any responsibility or liability, whatsoever, in respect of any statement or omission herein, or the accuracy, completeness or reliability of information contained herein, and shall incur no liability under any law, statue, rules or regulation has to the accuracy, reliability or completeness or this request, even if any loss or damage is caused by any act or omission on its parts.
2. Bidders are requested to keep the information and details strictly confidential. SRSAC is looking for support and co-operation of the bidder in getting fully responsive expression of interests.
3. SRSAC shall not be responsible for any expense incurred by bidder in connection with the preparation and delivery of the RFP or other expenses.
4. SRSAC reserves the right to reject any or all the expression of interest without assigning any reason hereof.
5. The process of inviting RFP for ascertaining various options available to SRSAC. After evaluation/examination of the officers, SRSAC may act its sole discretion decide further course of action.
6. SRSAC shall carry out evaluation of the bidders based on the parameters mentioned in the evaluation sheet available in Special Conditions of Contract. The bidder, who will score Eighty percent (80%) or more than that mark will be eligible for the next course of action.
7. SRSAC reserves the right to deal with the proposal in any manner without any assigning any reasons for the same. The decision of SRSAC in this regard shall be final.
8. The prospective bidder shall submit the bid after going through in detail the scopes of the work components and eligibility criteria the bidders shall sign a copy of RFP with the official stamp signifying that they have gone



through in detail and are submitting the bid with full understanding of the work components and deliverables intended under the project.

9. There will be a pre-bid Videoconferencing based on the inputs received from the prospective bidders by email only. After pre-bid videoconferencing, the clarification will be issued through SRSAC.
10. The Prospective Bidders shall submit all the document required under the general, Financial, and technical eligibility criteria. The documents shall be indexed properly for easy retrieval during evaluation by the committee.
11. The prospective bidders shall submit the Methodology of the component of the work, which will be evaluated by the technical committee. Flow Diagram will be preferred.

LATE BID:

- a) Bids received after the due date and the specified time (including the extended period if any) for any reason whatsoever, shall not be entertained and shall be returned to the service provider, unopened.
- b) The bids submitted by telex/telegram/fax/e-mail etc. shall not be considered. No correspondence will be entertained on this matter.
- c) SRSAC shall not be responsible for any postal delay or non-receipt/ non-delivery or the documents. No further correspondence on the subject will be entertained.

MODIFICATION AND WITHDRAWAL OF BID: Bids once submitted cannot be modified in any circumstances. Withdrawal of a Bid during this interval may result in the service provider's forfeit me of its Bid security/EMD and /or any other action as per law.

RIGHT TO ACCEPT AND REJECT ANY OR ALL BIDS:

SRSAC reserves the right to accept or reject any proposal and to annul the tendering process and reject all proposals at any time prior to award of contract, without thereby incurring any liability to the affected service provider or service providers or any obligation to inform the affected service provider or service providers of the grounds for the SRSAC action. Incomplete bid will be straightaway rejected by SRSAC.



TECHNICAL SPECIFICATIONS AND FUNCTIONAL REQUIREMENTS

5. Aerial LiDAR Data Specifications

Coverage	The project will cover an area in the range of 230 sq km. Appropriate flight plans need to be prepared to achieve the desired point density. The defined survey area will be buffered by about 100 m.
Data density	Urban Area: 15 Point / m ² .
Fundamental Spatial Accuracy Requirements	Fundamental spatial accuracy of the survey must conform to the following standard: <ul style="list-style-type: none"> • Fundamental Vertical Accuracy (FVA) $\leq \pm 20$ cm. 95% confidence interval (1.96 x RMSE) • Fundamental Horizontal Accuracy (FHA) $\leq \pm 20$ cm. 95% confidence interval (1.96 x RMSE)
Horizontal Datum	The World Geodetic Datum 84 (WGS-84).
Map Projection	The coordinate system for all deliverables is Universal Transverse Mercator (UTM).
Vertical Datum	Ellipsoid: All deliverables specified below as ellipsoidal will be in terms of the WGS-84 reference frame. The source of the ellipsoidal height control shall be explained in the “Post-Survey Spatial Accuracy Report”.
Geoid Model	EGM 2008 shall be used to derive Orthometric heights from ellipsoidal data.
Survey Control	<ul style="list-style-type: none"> • All raw survey control data used or derived from this contract will be supplied to client to ensure independent Quality Assurance (QA) of the survey operations, and for possible use in other surveys requiring these. It is therefore essential that all primary ground stations are permanently marked in accordance with the Survey of India standards.



	<ul style="list-style-type: none"> • The primary ground control and check point surveys must be referenced to the survey of India local vertical datum specified above comprising Survey of India Benchmarks. • Survey to establish new primary control shall use techniques to achieve a minimum standard of Survey of India for Densification of geodetic survey or equivalent in international standards. This will be mentioned the Project Plan and Project Report submitted to client. • Any systematic bias in elevation data will be corrected and must be reported to client.
<p>LiDAR Sensor</p>	<p>The sensor must be capable of:</p> <ul style="list-style-type: none"> • Detecting multiple discrete returns, with a minimum of 4 potential returns for each outbound laser pulse. • Recording the intensity of each return. <p>LiDAR Sensor:</p> <ul style="list-style-type: none"> • Pulse Repetition Rate of 300 kHz or better • Range at reflectivity of 20% and 300 kHz PRF to be more than 2000 m • Field of view 60 degrees <p>IMU:</p> <ul style="list-style-type: none"> • Gyro Bias <0.05 deg/hr • Data rate > 200 kHz • Roll Pitch Accuracy better than 0.003° • Heading Accuracy better than 0.007° • Velocity Accuracy better than 0.005 m/s



<p>Collection Requirement s</p>	<p>The survey design must plan on:</p> <ul style="list-style-type: none"> • A scan angle not exceeding 50° Total FOV (+/- 25° from nadir) • LiDAR Flight line overlap must be 10% or greater, as required to ensure there are no data gaps between the usable portions of the swaths.
	<ul style="list-style-type: none"> • LiDAR Data Voids (with void areas more than and equal to 4 x NPS²), measured using 1st-returns only within a single swath are not acceptable, except: <ul style="list-style-type: none"> • where caused by water bodies • where caused by areas of low near infra-red (NIR) reflectivity • where appropriately filled-in by another swath • The spatial distribution of geometrically usable points is expected to be uniform and free from clustering. To ensure consistent data densities throughout the project area. • Environmental conditions for data capture are: <ul style="list-style-type: none"> • Cloud and fog free between the aircraft and the ground. • Flights would not be undertaken during periods of heavy smoke, haze, and rain. <p>Every effort shall be made to avoid breaks within individual flight lines. Where breaks within a flight line are necessary, the entire flight line composed of the resulting segments shall meet all the requirements set forth in these specifications</p>

6. True Orthophoto Specifications

GSD	5 CM GSD
Bands	R G B (Three band natural colour imagery)
End overlap	80% minimum
Side overlap	60% minimum



Collection condition	<p>Same as LiDAR with following additional conditions:</p> <ul style="list-style-type: none"> • Cloud free with minimal smoke, smog, fog, and dust. • Minimum soil moisture. • Every effort shall be made to avoid breaks within individual flight lines. Entire flight line composed of resulting segments shall meet all requirements set forth in these specifications. Where breaks occur, these shall have an overlap of at least four frames to ensure a stereo model of overlap or tie.
Radiometric	Minimum 8 bit per band in accordance with chosen image format
Horizontal Datum	The World Geodetic Datum 84 (WGS-84).
Map Projection	The coordinate system for all deliverables is the Universal Transverse Mercator (UTM).
Vertical Datum	Ellipsoid: All deliverables specified below as ellipsoidal will be in terms of the WGS-84 reference frame. The source of ellipsoidal height control shall be explained in the “Post-Survey Spatial Accuracy Report”.
Geoid Model	EGM 2008 shall be used to derive Orthometric heights from ellipsoidal data.
Camera Specification	Camera with minimum 80 MP resolution

7. Mobile LiDAR Specifications

Data specification to be same as Aerial LiDAR except for the following:

Data Density	50 Points per Sq Meter
LiDAR Coverage	<ul style="list-style-type: none"> • 50 mts on either side of road except where limited by permanent obstacles • Data to be captured with low road traffic



<p>Fundamental Spatial Accuracy Requirements</p>	<p>Fundamental spatial accuracy of the survey must conform to the following standard:</p> <ul style="list-style-type: none"> • Fundamental Vertical Accuracy (FVA) $\leq \pm 10$ cm. 95% confidence interval • Fundamental Horizontal Accuracy (FHA) $\leq \pm 10$ cm. 95% confidence interval
<p>Panoramic Imagery</p>	<ul style="list-style-type: none"> • Each individual camera to be of Minimum 5 Megapixel • For a 6 Camera configuration camera, Panoramic imagery to be generated for a minimum of 30 MP (6x5 MP) • Spacing between two Panoramic images will not be more than 10 m
<p>Equipment Specifications</p>	<p>LiDAR Scanner</p> <ul style="list-style-type: none"> • PRF > 150 kHz • Range at 150 kHz & reflectivity > 10% will be more than 150 m • Two number of LiDAR Scanners to be used • Field of view to be 360 degrees <p>IMU:</p> <ul style="list-style-type: none"> • Gyro Bias < 0.05 deg/hr • Data rate > 200 kHz • Roll Pitch Accuracy better than 0.003° • Heading Accuracy better than 0.007° • Velocity Accuracy better than 0.005 m/s <p>DGPS: Dual Frequency GNSS receivers</p> <p>Panoramic Camera with individual cameras having a minimum resolution of 5 MP</p> <p>Optical Distance Measurement Unit (Odometer)</p>

8. DEM Specifications

- Digital Elevation Model (DEM) of 0.5 m grid in urban areas and 1 m grid in rural areas
- The DEM will be generated from the LIDAR mass point data classified as “Ground” only, so that it defines the “bare earth” ground surface.



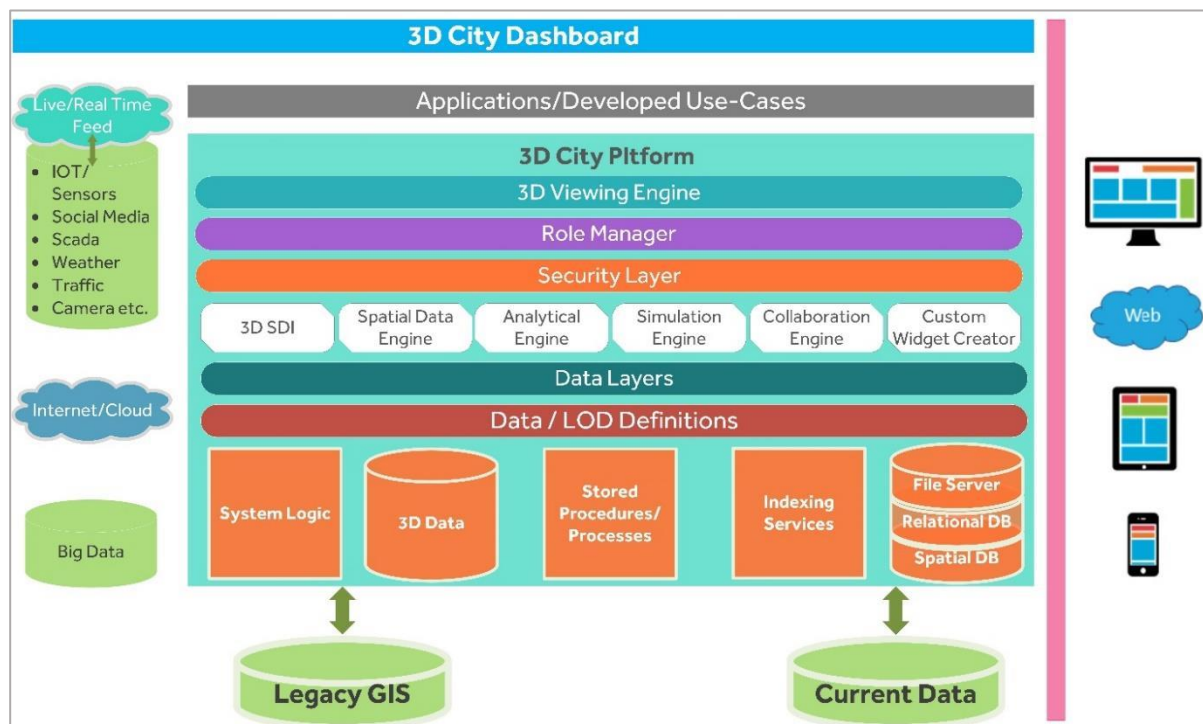
- The DEM generation will employ a Point to TIN and TIN to Raster process with Natural Nearest Neighbour interpolation.
- Void areas (i.e., areas outside the project boundary but within any tiling scheme) shall be coded using a unique “NODATA” value
- Raw datasets and LIDAR system data, including orthometric heights for each point, in comma-delimited ASCII files in x, y, and z format, and DEM in ESRI floating point GRID format and Interleaved by Line (BIL) format.
- Tiled delivery: DEM tiles will show no edge artifacts or mismatch. A quilted appearance in the overall project DEM surface, whether caused by differences in processing quality or character between tiles, swaths, lifts, or other non-natural divisions, will be cause for rejection of the entire DEM deliverable.



9. 3D GIS Web Platform Specifications

Architecture of 3D City Platform

Following is a broad architecture of the 3D City Platform



General Requirements

- The Integrated Enterprise GIS application shall be accessed by Authority staff within the City Departments with approx. 100 Intranet users.
- User Management – Each user shall have a personal username and password to control access to data and layers. User Rights System for Administrator and Other Users shall be implemented.
- On the 3D GIS Platform, rendering of 3D models should be enabled along with some analysis tools.
- 3D GIS data will be stored in the Open Geospatial Consortium (OGC) recommended CityGML format
- GIS data should have metadata associated with each GIS feature.
- 3D GIS data will be supported till Level of Detail 2 (LOD2).
- This platform should support Geospatial web services WMS and WFS.
- The GIS Web Server will be capable of serving the above-mentioned Web Services.

Functional Requirements of Web-GIS Application

The following are the suggested functional requirements which may be expanded later as per best practices:

Navigation

- Pan View, Refresh Map
- Zoom to full extents
- Zoom In (User-defined area)
- Zoom Out (User-defined area)
- Zoom to Previous extents (Back)
- Zoom to Next extents (Forward)
- Zoom to Selected Features
- Activity indicator - display notification while map/data is being processed
- Move up/down/left/right.
- Scale input box - allow user to enter representative fraction scale for dynamic services - For cached services, scale box should contain dropdown menu of available cache scales (levels of detail)
- Show/hide mouse coordinates

Descriptive Map Information Tool

- On Clicking or Mouse Hovering over each map feature, information should be shown based on the feature's attributes. Functionality should be available for all feature classes; should be able to display a combination of attributes and should not limit the number of features that can be included with the map tool.
- It should allow user to turn on and off this attribute information as needed

Searching Tools

- Should allow users to search features by both pre-configured and dynamic based on unique values as follows.
 - Search by Zone,
 - Search by Ward



- Search by Parcel ID etc.
- Should allow user to run the custom queries on-the-fly and save those queries for future use
- Should allow user to run spatial query on multiple layers with spatial operators
- Should also allow for a buffer to be applied to the search criteria allowing for features within a certain distance of the query feature to be selected.
- Should have a tool allowing users to search and zoom to a location based on GPS coordinates
- Should have facility to run combination of attribute & spatial query

Distance and Area Measurements

- Should have distance measurements tool to allow user to measure the length of
 - irregular shaped lines
- Should have area measurements tool to allow user to measure irregular shaped polygons
- Measurements should be shown using the metric system.

Visualization of 3D Data

- The proposed platform shall be capable of rendering 3-dimensional GIS models of ground terrain, vegetation, waterbodies as well as man-made features.
- This platform shall be available for access over the internet. The rendering shall be optimized for network bandwidth as well as high performance at client side with the help of thin client application.

Printing

- Should have ability to print maps to a printer/plotter with the selection of paper size (A2, A1, A0, Letter, Tabloid etc.) and page orientation (landscape or portrait)
- Should have print preview option
- Should be able to handle and process any redlining / markups of the map.
- Should have ability to export the map to a standard image format (BMP, TIF, JPEG and PDF file)

- Print date and time should be automatically added to output at application runtime f. Legend should be automatically adjusted based layers displayed in print area
- User will have option to choose from various features like scale style, legends, etc. to be printed on the map (hard copy).

Hardware and Software:

a. Point cloud data and image processing software.

1	Able to Read & Write point cloud data type from various platform sources such as, Terrestrial, UAV, Mobile Vehicle & Aerial.	YES
2	Able to read point cloud data from various known formats such as, LAZ, LAS, FBI, ASCII, ENZ, XYZ formats.	YES
3	Able to export point cloud data to various known formats such as, LAS 1.0, LAS 1.1, LAS 1.2, LAS 1.4, LAZ 1.0, LAZ 1.1, LAZ 1.2, LAZ 1.3, ENZ, FBI formats.	YES
4	Able to generate the DEM output in GeoTiff 16 bit, GeoTiff 32 bit, GeoTiff float, Intergraph Grid, Arc Info Grid, Surfer ASCII, Surfer Binary, XYZ text formats.	YES
5	Able to perform point cloud project transformation to different project parameters.	YES
6	Software should support 32-bit & 64-bit multi-core applications.	
7	Able to import / load point clouds with selective class parameter definition.	YES
8	Able to view all loaded point cloud data in 360 degree orientation interactively.	YES
9	Able to load trajectory from XYZ text format with defined transformation parameter.	YES
10	Able to display point clouds with specific colour mode such as, Intensity, Elevation, Class, Shading with user defined weight & order settings.	YES
11	Able to display point clouds in multiple view within the software.	YES
12	Able to draw / digitise vector in Polyline, Line, Polygon geometry.	YES



13	Able to draw / digitise vector with snapping to defined point cloud class.	YES
14	Able to perform classification of point clouds with interactive automatic process.	YES
15	Able to perform classification of point clouds with automatic batch processing method.	YES
16	Able to view point clouds in interactive cross section view in synchronised different views.	YES
17	Able to perform manual user interactive classification over selected point cloud classes.	YES
18	Able to save & store classification rules & load back from file.	YES
19	Able to add additional key referenced points within the point clouds.	YES
20	Able to classify using digitised vector geometries or predefined feature classes.	YES
21	Able to generate automatic vector model for the classified point cloud classes such as Building, Road surface.	YES
22	Able to detect and classify and vectorise power line & strings. Also user can design and model powerline tower attachments.	YES
23	Able to subset & clip point cloud project data as individual tile or block with user required specification measurements.	YES
24	Able to create a Triangulate surface model from Survey data, Design file elements & XYZ text file.	YES
25	Able to place elements at the elevation of a surface.	YES
26	Able to calculates a slope upwards lower edge from the element at an angle.	YES
27	Able to compute excavation quantities using the Compute Quantity tool. User can use it based on a grid method.	YES
28	Abe to define the storage location and elevation as lattice database files.	YES
29	Able to display contours and save to file with user defined intervals. The output shall be generated on directly as saved file format or within the software as vector file.	YES
30	Able to adds graphical elements as break line points to a surface model. User can use this tool to create a surface model or to add points to an existing model loaded.	YES
31	Able to draws the surface model coloured by elevation and by triangle slope at the same time. The display method utilizes the Hue-Saturation-Value (HSV) colour model in order to visualize	YES



	the surface.	
32	Able to smooth linear elements with a high vertex density. The smoothing is done by fitting vertices to an average line or circular arcs within a given distance.	YES
33	Able to export a Lattice model file from a surface model using a grid structure of points. Files include regularly distributed points at constant intervals in both, X and Y directions.	YES
34	Able to export surface model as raster image with colouring information based on the elevation values of a surface model.	YES
35	Able to export surface model as Xyz text file where the easting, northing, and elevation coordinates of each point are stored. Supported text file formats are Geodimeter, Gemini, Tekla, Wild GRE, Wild COGO, and XYZ Text.	YES
36	Able to rectify the multi trajectories point cloud with tie-line calibrations. The method can be used for both Aerial Laser & Mobile Laser & UAV Laser.	YES
37	Able to apply other correction methods also such as Intensity correction, Fluctuation corrections, Range correction to match forward & backward point cloud mismatches.	YES
38	Able to apply Vertical match correction methods of a referenced point cloud to another point cloud by using only planar surfaces that are detectable in both point clouds	YES
39	Able to apply Tie Line matching with the automatic tie line search.	YES
40	Able to add ground point or known point to place tie line of the type Known xyz, Known xy, or Known z point.	YES
41	Able to georeferenced & calibrate project photos within the project.	YES
42	Able to get RGB photo colour to the point clouds with proper accuracy validation.	YES
43	Able to generate Orthophoto from the calibrated project imageries.	YES
44	Able to make fly thru movie from the loaded orthoimages & point clouds. Also user can manage the texture frame & store the rendering view.	YES
45	Able to import UAV nadir & oblique images to the project calibration.	YES



46	Able to converts raster files from one image format to another to transform the positions of images or to change the image orientation between landscape and portrait. Supported file formats include: BMP, ECW compressed, GeoTIFF, JPEG, JPEG2000, Raw RGB, and TIFF	YES
47	Able to apply camera calibration parameters to all photo derived from Aerial & Mobile platform.	YES
48	Able to interactively change the raw image used for creating a wall texture. User can select list of raw images to create a texture which cover a selected building wall.	YES
49	Able to exports selected building models into a standardized text file. The supported file formats are Collada (.DAE), CityGML (.GML), and Trimble Locus (.GML). Also can be able to import City Model / building models from Trimble Locus files (.GML).	YES
50	Able to removes missing / inactive / outside of AOI images from the project image list where are no raster files in the image directory of the camera that captured the images.	YES

b. Photogrammetric software:

1	Software should support 32-bit & 64-bit multi-core applications.	YES
2	Software should support the setting up of satellite with RPC/ RPB model data.	YES
3	Software should support the setting up of aerial data with frame camera or digital camera parameters.	YES
4	Software should support the functionalities of vector creation and editing capability in 2D and 3D environment.	YES
5	Software should support facility to validate the extracted data as per Military survey standards.	YES
6	Software should support Single and dual screen support.	YES
7	Software should support Automatic & Manual Exterior & Interior Orientation parameters & Measurements.	YES
8	Users should have the choice of manual and automatic interior & exterior orientation, Relative (manual and semi-automatic) orientation, absolute orientation.	YES
9	Software should generate all types of outputs such as Stereo model, DTM & DEM (with best fitted pixel resolution), Ortho imagery, Contours (with defined interval), Slope, Relief and Flythrough.	YES
10	Application should provide the tools for viewing, enhancing, tools for remotely sensed imagery such as SAR and RADAR imagery.	YES



11	Software should support Co-ordinate readout in degree: minute: Second, degrees, decimal and Easting-Northing.	YES
12	Software should generate the Contours and Shaded relief from the DEM.	YES
13	The software should have capability to perform Ortho Rectification.	YES
14	Software should be able to import and export elevation data in defined grid interval and edit using stereo imagery.	YES
15	The software should have tools for elevation model viewing and editing using stereo imagery.	YES
16	The software should have the capability to automatically correct Camera sensor distortions and optimize accuracy of image which represents the terrain.	YES
17	The software should have the capability to integrate tools in 3rd party CAD / GIS software user-interface (ArcGIS / AutoCAD / Microstation / Global Mapper)	YES
18	The software should support designated 3rd party software tools & commands for feature capture & editing tasks.	YES
19	The software should support editing of Elevation Model with integration of 3 rd party GIS / CAD software.	YES
20	The software should have the capability to collect Tie points in Semi / Automatic way.	YES
21	Software should have tools to perform Oblique image rectification. The software should provide tools for rectification of oblique Aerial photo and Satellite images.	YES
22	The software should support 3D or 2D Vector Superimposition with 3 rd party GIS / CAD software.	YES
23	The software should support cursor Terrain following and Z digitizing based on DEM files.	YES
24	The software should support 3D Stereo Enabled visualization in anaglyph & electronic shutter mode.	YES
25	The software should support designated Built-in vector drawing and editing tools.	YES
26	The software should support Dedicated 3D input device enabled	YES
27	The software should support designated 2D and 3D vertex editing & snapping & attribute managing.	YES
28	The software should support Real Time Contour Terrain Visualization with active DTM GIS / CAD data.	YES
29	The software should have designated tool for creating user defined Contours & able to save in GIS/ CAD format.	YES
30	The software should support Epipolar Correction & Scale Correction of data.	YES



31	The software should support Importing GCP / Control file & able to adjust the data.	YES
32	The software should be able to collect & edit DTM using dedicated 3D input devices. Should be able to edit single selected or multiple DTM points.	YES
33	The software should be able to create Orthophoto products & mosaic data. Should also supports using existing vector data to create True-Orthophoto data.	YES
34	The software should have tools for Ortho Mosaic Histogram & Image colour balancing adjustments.	YES
35	The software should supports importing 3 rd party created UAV/ Drone project & data. Should also supports 3D digitization & OrthoPhoto generation of UAV data.	YES
36	The software should supports importing 3 rd party created Satellite stereo or Aerial stereo projects with defined camera calibration & correction parameters & defined tie-points.	YES
37	The software should support LIDAR LAS file integration in the stereopair projects.	YES

c. Hardware:

3D supported system with 3D monitor (3D pluraview), Mouse, Keyboard, 3D vision and workstation (precision 7920 tower)

10. Documentation

The project team shall provide the following documentations in hard as well as soft copies:

- a. Detail Project Plan
- b. Weekly and Monthly progress reports

11. Setting up GIS Centre of Excellence

Maintenance of spatial and non-spatial database is critical since the quality of decisions made from a GIS depends largely on the quality of the GIS database. Hence, maintaining data quality and routinely updating the system is imperative. Therefore, the successful bidder shall assist the Authority in setting up a GIS Centre of Excellence for supervising and managing the GIS data during the implementation and operation & maintenance of the GIS.

To update and manage the GIS Data & Application, Successful Bidders shall deploy two GIS Analyst with three-year experience for period of one year after final submission.



12. Capacity Building and Training

- The Successful Bidder shall provide training to departmental users to efficiently use the system. The staff thus trained would subsequently train the other staff as and when required.
- The Successful Bidder shall provide training as per the proposed training plan schedule to be shared as part of Approach and Methodology section in technical bid.
- The Successful Bidder shall provide training to the selected officials of Authority as decided by the authorized official. The training batch size should not be more than 25 officials.
- A detailed training schedule, including the dates, areas to be covered, time and the training literature (to be supplied to Authority) at various stages of the training cycle and feedback for effectiveness shall be agreed to by both parties (Authority and the Successful Bidder) during the performance of the Contract.
- Training to be imparted to users:
 - **Functional Training:** This training would focus on the usage of application software so that the users are aware of all the operations of the application systems, ensuring a smooth run of Citizen Services or Departmental Operations. It would be covered for each of the functional module.
 - **Administrative Training:** This training would focus on the administration of Application Software and Server Infrastructure and would be imparted to the relevant staff of Authority.

13. Operation & Maintenance

Once the systems have been commissioned, the Successful Bidder shall provide Three (3) years support for GIS data management, application management and future enhancements. The Bidder shall propose the teams for this along with their roles, job descriptions and profiles of key individuals as specified. The team must be operating from as required at site and bidders' office. The team shall perform but not limited to the following activities:

- Minor Enhancement / modifications with respect to new / enhanced / enriched functionality
- Ensure the desired functioning of the Interface / integration



- System installation and testing whenever required
- Provide technical support on system parameters and requirement of Authority
- Manage Enterprise GIS Data Edits
- Provide handholding support and training services as part of the post implementation services, on a scheduled basis as well as on a need basis.
- Process collected Data, undertake necessary Quality Assurance (QA) and Quality Checking (QC) activities, and remove errors
- Prepare updated comprehensive database including spatial and associated attribute Data and based on geographic coverage, richness, and accuracy on daily basis.
- The Successful bidder shall provide the below reports during the Operation & Maintenance phase:
 - Monthly / Quarterly / Annual Performance Report of below:
 - Detailed Work Report
 - Downtime Report
 - MIS Reports
 - Resources' Work & Progress report

GENERAL CONDITIONS OF CONTRACT

14. Earnest Money Deposit (EMD)

The bidder should enclose bid security (EMD) of Rs. 24,00,000.00/- (Rupees Twenty-four Lakhs only) of the State Remote Sensing Application Centre, Govt of Arunachal Pradesh in form of Demand Draft drawn in a favor of the Director, SRSAC valid for at least 6 months. The tenders without EMD shall be summarily rejected. No exemption for EMD will be entertained.

15. Performance Bank Guarantee (PBG)

The successful bidder shall be required to deposit performance security in form of bank guarantee valid for 12 months, equal to 10 % of contract value within 15 days from the date of the award of the work. The EMD of the unsuccessful bidders shall be returned without interest after award of work to the successful bidder. The EMD of the successful bidder shall be returned only after the signing of the contract along with performance security deposit. The EMD stands forfeited in case the bidder withdraws or amends his bid after submission of tender document.

Award Criteria

SRSAC, Govt of Arunachal Pradesh will award the Contract to the successful bidder whose proposal has been determined to be substantially responsive and has been determined as the most responsive bid as per the process outlined above.

Right to Accept Any Proposal and To Reject Any or All Proposal(s)

SRSAC, Govt of Arunachal Pradesh reserves the right to accept or reject any proposal, and to annul the tendering process / Public procurement process and reject all proposals at any time prior to award of contract without thereby incurring any liability to the affected bidder or bidders or any obligation to inform the affected bidder or bidders of the grounds for SRSAC, Govt of Arunachal Pradesh action.

Notification of Award

Prior to the expiration of the validity period, SRSAC, Govt of Arunachal Pradesh will notify the successful bidder in writing or by fax or email, that its proposal has been accepted. In case the tendering process / public procurement process has not been



completed within the stipulated period, SRSAC, Govt of Arunachal Pradesh may request the bidders to extend the validity period of the bid.

The notification of award will constitute the formation of the contract. Upon the successful bidders furnishing of Performance Bank Guarantee, SRSAC, Govt of Arunachal Pradesh will notify each unsuccessful bidder and return their EMD. The EMD of successful bidder shall be returned only after furnishing of Performance Bank Guarantee and signing of Contract.

Signing of Contract

After SRSAC, Govt of Arunachal Pradesh notifies the successful bidder that its proposal has been accepted, SRSAC, Govt of Arunachal Pradesh shall enter into a contract, incorporating all clauses, pre-bid clarifications and the proposal of the bidder between the SRSAC, Govt of Arunachal Pradesh and the successful bidder with mutually agreed terms and conditions.

Payment Schedules

Total payment will be done immediately after submission and invoicing. This must be done as per the amount quoted by the bidder in financial bid.

Fraudulent and Corrupt Practices

The Bidders and their respective officers, employees, agents, and advisers shall observe the highest standard of ethics during the Selection Process. Notwithstanding anything to the contrary contained in this RFP, SRSAC, Govt of Arunachal Pradesh shall reject a Proposal without being liable in any manner whatsoever to the Bidder, if it determines that the Bidder has, directly or indirectly or through an agent, engaged in corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice (collectively the “Prohibited Practices”) in the Selection Process. In such an event, SRSAC, Govt of Arunachal Pradesh shall, without prejudice to its any other rights or remedies, forfeit and appropriate the Bid Security or Performance Security, as the case may be, as mutually agreed genuine pre-estimated compensation and damages payable to the Authority for, inter alia, time, cost and effort of the Authority, in regard to the RFP, including consideration and evaluation of such Bidder’s Proposal.

For the purposes of this Section, the following terms shall have the meaning hereinafter respectively assigned to them:



– “corrupt practice” means (i) the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the action of any person connected with the Selection Process (for avoidance of doubt, offering of employment to or employing or engaging in any manner whatsoever, directly or indirectly, any official of SRSAC, Govt of Arunachal Pradesh who is or has been associated in any manner, directly or indirectly with the Selection Process or the LOI or has dealt with matters concerning the Agreement or arising there from, before or after the execution thereof, at any time prior to the expiry of one year from the date such official resigns or retires from or otherwise ceases to be in the service of SRSAC, Govt of Arunachal Pradesh, shall be deemed to constitute influencing the actions of a person connected with the Selection Process); or (ii) save as provided herein, engaging in any manner whatsoever, whether during the Selection Process or after the issue of the LOA or after the execution of the Agreement, as the case may be, any person in respect of any matter relating to the Project or the LOA or the Agreement, who at any time has been or is a legal, financial or technical consultant/ adviser of SRSAC, Govt of Arunachal Pradesh in relation to any matter concerning the Project;

– “fraudulent practice” means a misrepresentation or omission of facts or disclosure of incomplete facts, to influence the Selection Process.

– “coercive practice” means impairing or harming or threatening to impair or harm, directly or indirectly, any persons or property to influence any person s participation or action in the Selection Process.

– “undesirable practice” means (i) establishing contact with any person connected with or employed or engaged by SRSAC, Govt of Arunachal Pradesh with the objective of canvassing, lobbying or in any manner influencing or attempting to influence the Selection Process; or (ii) having a Conflict of Interest; and

– “restrictive practice” means forming a cartel or arriving at any understanding or arrangement among Bidders with the objective of restricting or manipulating a full and fair competition in the Selection Process.

Force Majeure

Force Majeure is herein defined as any cause, which is beyond the control of the selected bidder or SRSAC, Govt of Arunachal Pradesh as the case may be, which they



could not foresee or with a reasonable amount of diligence could not have foreseen and which substantially affect the performance of the contract, such as:

- Natural phenomenon, including but not limited to floods, droughts, earthquakes, and epidemics/pandemics.
- Acts of any government, including but not limited to war, declared or undeclared priorities, quarantines and embargos
- Terrorist attack, public unrest in work area provided either party shall within 10 days from occurrence of such a cause, notifies the other in writing of such causes.

The bidder or SRSAC, Govt of Arunachal Pradesh shall not be liable for delay in performing his/her obligations resulting from any force majeure cause as referred to and/or defined above. Any delay beyond 30 days shall lead to termination of contract by parties and all obligations expressed quantitatively shall be calculated as on date of termination. Notwithstanding this, provisions relating to indemnity, confidentiality survive termination of the contract.

Limitation of Liability

Neither party shall be liable to the other party for any special, indirect, incidental, exemplary, punitive, or consequential losses or damages or loss of profit, loss of goodwill, loss of revenue or operational losses whether in contract, or other theories of law, even if such party has been advised of the possibility of such damages. The total cumulative liability of either party under this Agreement shall not exceed in aggregate the amount paid to bidder by the SRSAC, Govt of Arunachal Pradesh for the Service that gives rise to such liability during the twelve-month period immediately preceding such claim. The limitation on any Party's liability herein shall not apply to liability for damages, resulting from the willful misconduct. Bidder shall not be held liable for any delay or failure in its obligations, if and to the extent such delay or failure has resulted from a delay or failure by or on behalf of SRSAC, Govt of Arunachal Pradesh to perform any of Customer's obligations. In such event, Bidder shall be (a) allowed additional time as may be required to perform its obligations, and (b) entitled to charge the SRSAC, Govt of Arunachal Pradesh for additional costs incurred, if any, as may be mutually agreed upon between the Parties.

Disputes & Arbitration

All disputes arising out of the contract shall be amicably settled by both parties. In the unfortunate event of any dispute or differences, breach and violation relating to the



terms of this agreement, the said dispute or difference shall be referred to the sole arbitration of the Arbitrator appointed by Secretary, SRSAC for the purpose. The award of the arbitrator shall be final and binding on both the parties. The adjudication of arbitrator shall be governed by the provision of the Arbitration and Conciliation Act, 1996, or any statutory modification or re-enactment thereof or any rules made thereof. All legal disputes are subject to the jurisdiction of courts in Itanagar.

Governing Laws

The contract between Director, SRSAC and the selected Bidder shall be governed by and interpreted in accordance with the laws for the time being in force in the state of Arunachal Pradesh. The courts at Itanagar shall have exclusive jurisdiction in all matters arising under the contract.



SPECIAL CONDITIONS OF CONTRACT

16a. Duration of the assignment

The total duration of the survey assignment shall be for 240 days after issue of work order. This includes the 60 days as the time required for obtaining for necessary permissions from Government for the work and 180 days for the completion of the actual survey works.

The Web-GIS must be implemented within 360 days after issue of work order.

16b. Annual Technical Support (ATS)

ATS will be applicable on COTS SW based on OEM requirements. It is the discretion of the employer to enter ATS with the OEM directly since the licenses will be procured in the name of the employer.

17. General Eligibility Criteria

The following are the minimum eligibility criteria need to be fulfilled by the bidder by submitting the relevant Proof documents:

- The Bidder must be a company in India Registered under The Company's Act 1956 with a minimum of 5 years of operations.

Document Required: Certificate of Incorporation / Registration Certificate

- The bidder must have achieved in its name in last three Financial Years FY 2018-19, FY 2019-20, and FY 2020-21 an average financial annual volume of Geospatial Services of at least INR 10 Cr

Document Required: CA Certificate

- Bidder must have experience as service provider in its name of at least one service contract of capture of Aerial LiDAR data for an Urban area in India.

Document Required: Work Order, Work Completion Certificate, or receipt of 70% of project cost, Copy of DGCA Permission for Aerial Data Capture

- The bidder should have executed similar projects in India for an area of 160 Sqkm in a single work order for Government / PSU within last five years in Hilly terrain or Northeast. Document Required: Completion certificate, DGCA permission and work order required to be submitted.

- **Note:** Similar Project means, Aerial LiDAR Survey works completed in India for any Irrigation/ Railways/ Roadways/ Smart City applications.



- Works carried out by another Contractor on behalf of the Bidder on a back-to-back basis will not be considered for satisfaction of the Qualification Criterion by the Bidder.
- Bidder must have experience as service provider in its name of at least one service contract of Web GIS project in India. Document Required: Work Order, Work Completion Certificate
- Bidder must have experience as service provider in its name of at least one service contract of capture of Mobile LiDAR data for at least 200 km. Document Required: Work Order and Work Completion Certificate
- Bidder must have experience as a service provider for obtaining at least four permissions from DGCA in the last five Financial Years. Document Required: Copy of DGCA Permission for Aerial Data Capture
- Bidder must demonstrate ownership/availability of Aerial LiDAR equipment Document Required: Equipment Invoice & Bill of Entry Copy as proof of ownership OR Lease Agreement Copy as proof of leasing arrangement along with lessor's Equipment Invoice copy
- Bidder must demonstrate ownership/availability of Mobile LiDAR equipment Document Required: Equipment Invoice & Bill of Entry Copy as proof of ownership OR Lease Agreement Copy as proof of leasing arrangement along with lessor's Equipment Invoice copy
- Bidder must demonstrate availability of an aircraft along with NSOP holder for undertaking flying in India Document Required: Lease Agreement and/or NSOP Copy
- Bidder must demonstrate ownership of at least 6 DGPS for Ground Control. Document Required: Invoice
- The bidder must have on its roll at least 15 technically qualified professionals in LiDAR Survey, Field Survey, Geospatial map creation, IT support.
- Consortium is allowed.
- Consortium partner should also be registered firm, with minimum Annual Turnover of 5 cr. for the last three financial years.
- Consortium partner should have minimum survey experience of 1200 kms.
- The Consultant should not be blacklisted/debarred from participating in the Tender/EOI floated by State/Central Govt./World Bank. Document Required: Undertaking by the company on its letterhead.



- The bidder should have sufficient financial and funding capability to execute the project. Document Required: Minimum solvency of Rs. 5 Crores from nationalized bank.
- The bidder is required to submit attested copies of work orders and preferably successful completion certificates of each such project from the client with the bid.
- The solution provided by the bidder for the assignment/project must be in accordance to the policies/regulations applicable to such networks as laid by Government of India/Govt. of Arunachal Pradesh.
- The bidder having full-fledged support office or local tie ups with IT /GIS Companies in Arunachal Pradesh will be preferred, but it is not mandatory for bidding.
- The bidder having ISO 9001:2015, 27001:2013 or SEI-CMMi Level- 3 or above certified companies shall be preferred.

18. Evaluation Process

The Consultant is not permitted to alter or modify its proposal in any way after the proposal submission. While evaluating the proposals, SRSAC will conduct the evaluation solely based on the submitted Technical and Financial Proposals.

SRSAC evaluation committee shall evaluate the Proposals based on their responsiveness to the Terms of Reference and the RFP, applying the evaluation criteria, sub-criteria, and point system. Each responsive Proposal will be given the score. A Proposal shall be rejected at this stage if it does not meet the Criteria.

Technical Evaluation Criteria:

1.		Experience of the Consultant:	Max 35 Marks
	a.	General experience of undertaking Aerial LiDAR in the last 5 years (Form 10A):	
	i.	> 2,500 sq km	: 10 Marks
	ii.	> 1,000 sq km & ≤ 2,500 sq km	: 5 Marks
	iii.	> 100 sq km & ≤ 1,000 sq km	: 2 Marks
	b.	General experience of undertaking Mobile	



		LiDAR projects in the last 5 years (Form 10B)			
	i.	> 2000 km		:	10 Marks
	ii.	> 500 sq km <= 2,000 sq km		:	5 Marks
	c.	Specific experience of undertaking Aerial LiDAR projects in Urban Cities in the last 5 years (Form 10C):			
	i.	2 or More Projects		:	5 Marks
	ii.	1 Project		:	3 Marks
	d.	Specific experience of undertaking Web GIS projects in the last 5 years (Form 10D)			
	i.	2 or More Projects		:	5 Marks
	ii.	1 Project		:	3 Marks
	e.	Project Experience in North Eastern Region			5 marks
2.		Capacity of the Consultant			Max 40 Marks
	a.	Average turnover of the Consultant for last 3 years (Form 11):			
	i.	> 20 Crores per annum		:	10 Marks
	ii.	> 10 Crores per annum and ≤ 20 Crores per annum		:	6 Marks
	iii.	> 5 Crores per annum and ≤ 10 Crores per annum		:	3 Marks
	b.	Availability of Aerial LiDAR Scanner (Documents: Invoice Copy, Custom Duty paid Copy, Min Specifications Required with Documentary evidence: Range – 2 km or more, PRR – 400 kHz or more) (Form 12A):			
	i.	Own		:	5 Marks
	ii.	Rented/Leased		:	3 Marks
	c.	Availability of Mobile LiDAR Scanner (Documents: Invoice Copy, Custom Duty paid Copy, Min Specifications Required with documentary evidence: Dual LIDAR Scanner,			



		PRR of 400 kHz or or better, 25 MP Panoramic Camera) (Form 12B)				
		i.	Own	:	10 Marks	
		ii.	Rented/Leased	:	5 Marks	
	d.	Availability of Aircraft/Helicopter (Documents: Invoice Copy, Custom Duty paid Copy, NSOP copy) (Form 12C):				
		i.	Own	:	10 Marks	
		ii.	Rented/Leased	:	5 Marks	
	e.	Proof of Local support office/Service Centre in Itanagar / local technical collaborator/Sub-SI to provide technical support/service during and after the accomplishment of the project at least during warranty period.				5 marks
3.		Methodology			Max 25 Marks	
		i.	Technical Approach & Methodology	:	15 Marks	
		ii.	Work Plan	:	5 Marks	
		iii.	Organization & Staffing	:	5 Marks	
Note						
<ul style="list-style-type: none"> Total points for the three criteria are 100. The minimum technical score required to pass is 80. 						

4. Technical Evaluation

- Detailed technical evaluation shall be carried out along with other conditions in the tender document to determine the substantial responsiveness of each tender. For this clause, the substantially responsive bid is one that conforms to all the eligibility and terms and condition of the tender without any material deviation.
- The evaluation committee may call the responsive bidder(s) who comply with all terms and conditions of the tender for discussion and presentation to facilitate and assess their understanding of the scope of work and its execution. The bidder should give a detailed presentation on how their technology is best suited for the APSSDI, Govt of Arunachal Pradesh. However, the committee shall have sole discretion to call for discussion/presentation.



5. Financial Evaluation

- The Financial Bid of those Bidders who have been found to be technically eligible will be opened. The Financial bids of ineligible bidders will not be opened.
- The Financial Bids shall be opened in the presence of representatives of technically eligible Bidders, who may like to be present. APSSDI, Govt of Arunachal Pradesh shall inform the date, place, and time for opening of the Financial Bid.

6. Evaluation and Comparison of Bids

- 80 % weightage will be awarded for Technical Evaluation and 20 % weightage will be awarded for Financial Evaluation
- Technical Bid will be assigned a technical score (Ts) out of a maximum of 100 points, as per the Scoring Model provided in the previous section.
- The commercial scores would be normalized on a scale of 100, with lowest score being normalized to 100 and the rest being awarded on a pro-rata basis. Such normalized scores would be considered for the purpose of QCBS based evaluation, explained in section below.

7. Final Evaluation Criteria - Quality and Cost based selection (QCBS)

The individual Bidder's commercial scores (CS) are normalized as per the formula below:

$F_n = F_{min} / F_b * 100$ (rounded off to 2 decimal places) Where,

F_n = Normalized commercial score for the Bidder under consideration

F_b = Absolute financial quote for the Bidder under consideration

F_{min} = Minimum absolute financial quote

Composite Score (S) = $(T_s * 0.8) + (F_n * 0.2)$

The Bidder with the highest Composite Score(S) would be awarded the contract.



19. BOQ

	Item Description	Units	Quantity	Rate (Rs)	Total
	Data Capture and Pre-Processing:				
1.	Ground Control	Nos	23		
2.	Levelling	Km	1000		
3.	Mobile LiDAR Survey (Panoramic Images)	km	1,800		
4.	PoI/Attribute Survey	nos	1,00,000		
5.	Aerial LiDAR Survey	sq km	230		
	Processing:				
6.	Point Cloud, DEM, Contour & True Ortho	sq km	230		
7.	Topomap with Layers (1:500)	sq km	230		
	GIS SW & HW Package				
8.	GIS Enterprise Advanced software including 3D Visualization and CityGML Software with requisite licensing	Lumpsum			
9.	Cloud Point data and image processing software	1 no.			
10.	Photogrammetric software	1 no.			
11.	Workstation (7920 precision tower), 3D pluraview, mouse, keyboard and vision	1 no.			
9.	Centre of Excellence	lumpsum			
	Total				
	GST				
	Grand Total (Rs)				
	AMC for three Years (in %)				

Note 1: ATS will be applicable on COTS SW based on OEM requirements. It is the discretion of the employer to enter ATS with the OEM directly since the licenses will be procured in the name of the employer.

Note 2: The items from serial 1 to 7 will be payable based on actual quantities executed

BID REJECTION CRITERIA

Besides other terms and conditions highlighted in the tender document, bids may be rejected under the following circumstances:



General Rejection Criteria

- a. Bids submitted without RFP document fee.
- b. Financial bids of more than 25% over and above the estimated cost of the project approximately Rs. 12.00 cr., shall be considered as unreasonable and therefore, liable to be rejected forthwith.
- c. Bids submitted without or proper EMD
- d. Conditional bids are liable to be rejected.
- e. If the information provided by the bidder is found to be incorrect/misleading at any stage/time during the tendering process
- f. Any effort on the part of the bidder to influence the bid evaluation, bid comparison to contract award decisions.
- g. Bids received by the SRSAC after the last date and time prescribed for receipt
- h. Bids without signature of the person (s) duly authorized on required pages of the bid
- i. Bids without power of authorization and any other document consisting of adequate proof of the ability of the signatory to bind the bidder

Technical/commercial rejection criteria

- a. Technical bid containing commercial details
- b. Revelation of financials in any form or by any reason before opening the commercial bid
- c. Failure to furnish all information required by the tender document on submission of the bid not substantially responsive to the tender document in every respect
- d. Bidder not quoting for the complete scope of the work as indicted in the tender documents, addendum if any and any subsequent information given to the bidder
- e. Bidder not complying with technical and general terms and conditions as stated in the tender document
- f. The bidder not confirming unconditional acceptance of full responsibility of providing services in accordance with the scope of the work
- g. If the bid does not confirm to the timelines indicated in the bid
- h. Incomplete bid



20. Payment Milestones and Timelines

Payment schedule for LiDAR Survey component:

Sl. No.	Milestone	Payment	Timelines based on D Day
1.	Mobilization amount against submission of Performance Bank Guarantee @ 10% of total cost.	20% of the LiDAR project quoted cost	D Day
1	Ground Control Deliverables	10% of the LiDAR project quoted cost	D + 45
2	Mobile LiDAR Deliverables	15% of the LiDAR project quoted cost	D + 60
3	Aerial LiDAR Deliverables	15% of the LiDAR project quoted cost	D + 90
4	Point cloud, DEM/Contour, True Ortho	10% of the LiDAR project quoted cost	D + 110
5	TopoMap with layers	10% of the LiDAR project quoted cost	D + 150
6	GIS database, Attribution and LOD	10% of the LiDAR project quoted cost	D + 180
7	Final Approval	10% of the LiDAR project quoted cost	

Payment schedule for establishment of Centre of Excellence, Hardware and Software:

Sl. No.	Milestone	Payment	Remarks
1.	Supply, Installation, testing and commissioning of the Hardware and software at the SRSAC office.	100% of quoted cost	D + 45

DATA SHEET

Clause		
1.0 General		
1.1	Name of the Employer	The Director, State Remote Sensing Application Centre, Daying Ering Colony, ESS Sector, Itanagar -791111, Arunachal Pradesh
1.2	Method of selection	Quality cum Cost Based selection (QCBS)
1.3	Nature of the proposals requested	Technical and Financial proposals in separate sealed covers
1.4	Name, objectives, and description of assignment	LiDAR survey and building 3D City Geo-Spatial assets for Itanagar Capital Region, under Arunachal Pradesh State Spatial Data Infrastructure (APSSDI) Customization of data/software and development of applications for users as per Terms of reference (ToR)
1.5	Reference	Letter of Invitation for details
1.6	Publishing of tender Document	RFP to be published in National and Local Newspaper.
1.7	Proposal submission address	The Director, State Remote Sensing Application Centre, Daying Ering Colony, ESS Sector, Itanagar -791111, Arunachal Pradesh
1.8	Estimated number of calendar months required for the assignment	Assignment (a) and (b) should be completed within 12 calendar Months
1.9	Validity of proposal	90 days after the bid submission date
1.10	The SRSAC's representative is	Er. Timothy Nima Technical Officer cum Co-PI (APSSDI) State Remote Sensing Application Centre (SRSAC), Govt. of Arunachal Pradesh, Itanagar Mobile: +91 7005714257 Email: apssdi.srsac@gmail.com
1.11	Last date of submission of proposal (both technical and financial)	25-03-2022 till 12:00 hrs



LiDAR survey and building 3D City Geo-Spatial assets for Itanagar Capital Region, under Arunachal Pradesh State Spatial Data Infrastructure (APSSDI)

1.12	The formats of the technical proposal to be submitted are	As per the respective Sections
2.0 Clarifications		
2.1	Clarifications requisition	by email: apssdi.srsac@gmail.com
2.2	Address for clarification requisition	As per section 1.10 of Data Sheet
3.0 Submission of proposal		
3.1	Language of proposal submission	English
3.2	Information on the outer envelope	LiDAR survey and building 3D City Geo-Spatial assets for Itanagar Capital Region, under Arunachal Pradesh State Spatial Data Infrastructure (APSSDI), to be opened in the presence of Evaluation Committee.
3.3	No. of copies of proposal to be submitted	An original duly signed and one additional copy of each technical and financial proposal
3.4	Additional information in technical proposal includes	Past experience in executing similar assignments like development of geo portal, certification of recognition issued by competent authorities, etc., be attached with bid technical document.
3.5	Proposal accepted after due date and time	No
3.6	Whether any short-listed bidder can associate with other short-listed bidder	No
3.7	Whether the work can be sub-contracted	No
4.0 Training Activities		
4.1	Training	Training is a specific component of this assignment. The APSSDI staff needs to be trained in handling and executing the project.
5.0 Cost of Services		
5.1	Cost of executing the project	Split up of cost of services to be quoted as per the format provided including lump sum
5.2	Taxes	The bidder should include statutory taxes such as income tax, GST and other indirect taxes in the financial proposal. The proposal shall be all inclusive



LiDAR survey and building 3D City Geo-Spatial assets for Itanagar Capital Region, under Arunachal Pradesh State Spatial Data Infrastructure (APSSDI)

5.3	Currency referred to in the bid	Indian Rupees
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The Bidders are required to submit the information as per the following forms:

22. Form 1: Applicant's Information Form

SI'S Organization and Experience

A - SI's Organization

[Provide here a brief description of the background and organization of your firm/entity and each associate for this assignment/job. The brief description should include ownership details, date and place of incorporation of the firm, objectives of the firm etc. Also if the bidder has formed a consortium, details of each of the member of the consortium, name of lead members etc shall be provided]

B - SI's Experience

[Using the format below, provide information on each Assignment/job for which your firm, and each partner in the case of consortium or joint venture, was legally contracted either individually as a corporate entity or as one of the major partners within an association, for carrying out consulting Assignment/job similar to the ones requested under this Assignment/job (If possible, the SRSAC shall specify exact assignment / job for which experience details may be submitted). In case of consortium, the bidder must furnish the following information for each of the consortium member separately]

1. Firms Name:
2. Assignment/job Name:
 - 2.1 Description of Project
 - 2.2 Approximate value of the contract (in Rupees)
 - 2.3 Country
 - 2.4 Location within Country:
 - 2.5 Duration of the Assignment/job (months)
 - 2.6 Name of the employee:
 - 2.7 Address:
 - 2.8 Total No of staff-months of the Assignment/job: Approx. value of the Assignment/job provided by your firm under the contract (in Rupees):
 - 2.9 Start date (month/year):



- 2.10 Completion date (month/year):
- 2.11 Name of associated bidder, if any:
- 2.12 No. of professional staff-months provided by associated bidder:
- 2.13 Name of senior professional staff of your firm involved and functions performed.
- 2.14 Description of actual assignment/job provided by your staff within the assignment/job:

Note: Please provide documentary evidence form the employers i.e. copy of work order, contract for each of above mentioned assignment. The experience shall not be considered for evaluation if such requisite supporting documents are not provided with the proposal.

(Signature of the Bidder)

Address:



Form 2

Description of Approach, Methodology and Work Plan for Performing the Assignment/Job

[Technical approach, methodology and work plan are key components of the technical proposal. You are suggested to present your technical proposal divided into the following three chapters:

- a) Technical approach and methodology,
 - b) Work plan, and scheduling
 - c) Organization of staffing pattern
- a) Technical Approach and Methodology: In this section the bidder should explain their understanding of the objectives of the assignment/job, approach to the assignment/job, detailed methodology for carrying out the activities as per the ToR of this RFP, including procedures and scheme for conversion of spatial and non-spatial data into GML format and obtaining the expected output, and the degree of detail of such output. You should highlight the problems being addressed and their importance, and explain the technical approach you would adopt to address them. You should also explain the methodologies you propose to adopt and highlight the compatibility of those methodologies with the proposed approach.
- b) Work Plan: The bidder should propose and justify the main activities of the Assignment/job, their content and duration, phasing and interrelations, milestones (including interim approvals by the SRSAC), and delivery dates of the reports. The proposed work plan should be consistent with the technical approach and methodology, showing understanding of the TOR and ability to translate them into a feasible working plan. A list of the final documents, including reports, drawings, and tables to be delivered as final output, should be included here.

S. No.	Work item (s) as per the Scope of Work	Activity	Deliverable	Duration in days	Months in the form of bar chart								
					1	2	3	4	5	6	7	8	

Organization of staffing pattern. The bidder should propose and justify the structure and composition of the professional team and list the main disciplines of the Assignment/job, the key expert responsible, and proposed technical and support staff]



(Signature of the Bidder)

Address

(It is mandatory for the bidder to propose a detailed methodology including approach, time schedule and deployment of professionals. Incomplete proposals will be considered as non-responsive and rejected)



FORM 3

Team composition and task assignments/jobs

1. Professional/ Managerial Staff

Name of staff	Area of expertise	Position	Task assigned

2. Support staff

Name of staff	Area of expertise	Position	Task assigned

(Signature of the Bidder)

Address



FORM 4

Professional Staff available with the company

S. No.	Position	Name of staff member	Qualification, Experience and Expertise
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Certification:

I, the undersigned, certify that to the best of my knowledge and belief, the above details are correctly described. I understand that any willful misstatement described herein may lead to my disqualification or dismissal, if engaged.

Date:

[Signature of authorized representative of the bidder]

Day/Month/Year Fullname of Staff Member :

Full name of authorized representative & Sign:

(Signature of the Bidder)

Address



FORM 5

Work (activity) schedule

S. No.	Activity (work)	Months from the start of assignment							
		1	2	3	4	5	6	7	8

- 1 Indicate all main activities of the Assignment/job, including delivery of reports (e.g.: inception, interim, draft and final reports. For phased assignment/jobs indicate activities, delivery of reports, and benchmarks separately for each phase.
- 2 Duration of activities shall be indicated in the form of a bar chart. Completion and Submission of Deliverables/ Reports

Reports

S.No.	Deliverables/ reports	Date
1	Inception report	
2	Interim Progress	
	(a) First Status Report	
	(b) Second Status Report	
3	Draft Report version	
4	Final Report version	

Signature of Bidder



FORM 6

Description of Arrangement with Consortium members/ Subcontractors/ Service Providers

The bidder is required to provide the details of the activities that it proposes to subcontract to third parties (whether the bidder is a single entity or a consortium). In addition the bidder would need to submit a Memorandum of Understanding (MoU) / Agreement between the consortium members.

CONSORTIUM SERVICES INFORMATION			
Name of service	Description of service	Proposed party for subcontracting for the activities	Consortium member responsible for the activities

Signature of Bidder



Form 7

Commercial Bid Submission Form

[Location, Date]

To:

**The Director
State Remote Sensing Application Centre
Government of Arunachal Pradesh
Itanagar,**

Sir,

Sub: LiDAR survey and building 3D City Geo-Spatial assets for Itanagar Capital Region, under Arunachal Pradesh State Spatial Data Infrastructure (APSSDI).

Tender No.

We the undersigned bidder, having read and examined in detail all the tender documents in respect of appointment of SI for LiDAR survey and building 3D City Geo-Spatial assets for Itanagar Capital Region, under Arunachal Pradesh State Spatial Data Infrastructure (APSSDI), Itanagar, do hereby propose to provide the services as specified in the tender Document No.

1. Financial and validity

- a. All the financials in our tender are in accordance with the terms and conditions as specified in the tender document. The financials and other terms and conditions are valid for a period of 90 calendar days from the date of opening the tender
- b. We hereby confirm that our tender financials are all inclusive

2. Earnest money deposit

We have enclosed EMD in the form of a demand draft for a sum of Rs...../- (Rupees..... only) in favour of Director, State Remote Sensing Application Centre, payable at Itanagar. The EMD is liable to be forfeited in accordance with the provision of the contract.

3. Deviations

We declare that all services will be performed in accordance with the tender document except for the variations and deviations all of which have been detailed out exhaustively in our bid document, irrespective of whatever has been stated to the contrary anywhere else in our bid.



4. Tender pricing

We further conform that the financials stated in our bid are in accordance with your instruction to SI included in the tender document

5. Qualifying data

We confirm that having submitted the information required by you in your information to SI, In case the SRSAC require any further information/clarification/ documentary proof in this regard before evaluation of our tender, we agree to furnish the same to your satisfaction.

6. Bid financial

We declare that our bid financial is(in words)..... for the entire scope of the work as specified in the tender document.

7. Contract performance guarantee bond

We hereby declare that in case the contract is awarded to us, we shall submit the contract performance guarantee bond

In case we fail to execute the agreement as aforesaid incorporating the terms and conditions governing the contract, SRSAC shall have power and authority to recover from us any loss or damages caused to SRSAC by such breach as may be determined by SRSAC, appropriating the EMD deposited by us and if the EMD is found to be inadequate, the deficit amount may be recovered from us and our properties movable and immovable.

We hereby declare that our tender is made in good faith, without collusion or fraud and the information contained in the tender is true to the best of our knowledge and belief.

We understand you are not bound to accept any proposal you receive.

Thanking You, Yours
faithfully,

Authorized Signature:
Name and Title
of Signatory:
Name of Firm:
Address:



FORM 8

Summary of Costs:

S. No	Particulars	Amount in Rs.	Amount in words
1			
2			
3			
4	GST (as applicable)		
5	Consolidated cost in Rupees		

(The bidder can include additional items if required)

Authorized

Signature:

Name:

Designation:

Name of SI with

seal firm:

Date:

NOTE:-

- 1 No cost will be borne by the SRSAC in case a job is repeated or rejected. If a job is repeated, it will be done at the own cost of the SI(s).
- 2 The above cost figure will not be subject to any escalation and the financial shall remain valid till completion of the project.
- 3 Financial bids are to be given in separate sealed cover.

(Signature of the Bidder)



Form 9: Breakdown of Financial per Activity

Please use the tables below for providing the detailed breakdown of costs. Table format may be suitably modified by addition of rows if necessary.

S.No.	Description	Total (Rs)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13	Total Taxes	
14	Consolidated cost in Rupees	

(Signature of the Bidder)



23. Form 10A: General Work Experience – Aerial LiDAR

S No	Name of Assignment	Client Name, Address & Contact Details for verification	Value in Rs Crore	Volume in sq km	Start Date & Completion Date	Scope of Work	Qualifying Project Checklist – Non-Complying projects shall be rejected.
1						1. Directly Performed by Applicant Company 2. Outsourced to Sub-contractor/ Partners	1. Is Project WO in name of applicant enclosed? (Yes/No) 2. Is Project DGCA Permission enclosed? (Yes/No) 3. Is Project Completion Certificate or CA certificate for 70% payment receipt enclosed? (Yes/No) 4. Is Project using Aerial LiDAR Technology? (Yes/No)
2							
	Total Qualifying Projects		<Insert Total for qualifying Projects>	<Insert Total for qualifyin			

24. Form 10B: General Work Experience – Mobile LiDAR

S No	Name of Assignment	Client Name, Address & Contact Details for verification	Value in Rs Crore	Volume in km	Start Date & Completion Date	Scope of Work	Qualifying Project Checklist – Non-Complying projects shall be rejected.
1						1. Directly Performed by Applicant Company 2. Outsourced to Sub-contractor/ Partners	1. Is Project WO in name of applicant enclosed? (Yes/No) 2. Is Project Completion Certificate or CA certificate for 70% payment receipt enclosed? (Yes/No) 3. Is Project using Mobile LiDAR Technology? (Yes/No)
2							
	Total Qualifying Projects		<Insert Total for qualifying Projects>	<Insert Total for qualifying Projects>			

25. Form 10C: Specific Work Experience – Aerial LiDAR for Urban Projects

S No	Name of Assignment	Client Name, Address & Contact Details for verification	Value in Rs Crore	Volume in sq km	Start Date & Completion Date	Scope of Work	Qualifying Project Checklist – Non-Complying projects shall be rejected.
1						1. Directly Performed by Applicant Company 2. Outsourced to Sub-contractor/ Partners	1. Is Project WO in name of applicant enclosed? (Yes/No) 2. Is Project DGCA Permission enclosed? (Yes/No) 3. Is Project Completion Certificate or CA certificate for 70% payment receipt enclosed? (Yes/No) 4. Is Project using Aerial LiDAR Technology? (Yes/No) 5. Is Project Area a city? (Yes/No)
2							
	Total Qualifying Projects		<Insert Total for qualifying Projects>	<Insert Total for qualifying Projects>			

26. Form 10D: Specific Work Experience – WebGIS Projects

S No	Name of Assignment	Client Name, Address & Contact Details for verification	Value in Rs Crore	Start Date & Completion Date	Scope of Work	Qualifying Project Checklist – Non-Complying projects shall be rejected.
1					1. Directly Performed by Applicant Company 2. Outsourced to Sub-contractor/	1. Is Project WO in name of applicant enclosed? (Yes/No) 2. Is Project Completion Certificate or CA certificate for 70% payment receipt enclosed? (Yes/No) 3. Is Project using WebGIS Technology? (Yes/No)
2						
	Total Qualifying Projects		<Insert Total for qualifying Projects>			

27. Form 11: Financial Capacity

Financial Year	Turnover in Rs Cr
2020-21	
2019-20	
2018-19	

Note: Attach CA Certificate along with Financial Statements

28. Form 12A: Equipment Capacity – Aerial LiDAR Equipment

S No	Make & Model	Leased/Owned	Specifications	Checklist
1				1. Is Invoice Attached? (Yes/No) 2. Is Invoice in name of Applicant Company? (Yes/No) 3. Is Permanent Import/Custom Duty paid copy attached? * (Yes/No) 4. Does the equipment confirm to PRR of 300 kHz or better? (Yes/No) 6. Is lease agreement attached in case of Leased equipment? (Yes/No)
2				

Note: * Without Custom Duty Paid Copy, the equipment will be considered as Leased Equipment.

29. Form 12B: Equipment Capacity – Mobile LiDAR Equipment

S No	Make & Model	Leased/Owned	Specifications	Checklist
1				1. Is Invoice Attached? (Yes/No) 2. Is Invoice in name of Applicant Company? (Yes/No)
				3. Is Permanent Import/Custom Duty paid copy attached? * (Yes/No) 4. Does the equipment confirm to required specifications? (Yes/No) 5. Is lease agreement attached in case of Leased equipment? (Yes/No)
2				

Note: * Without Custom Duty Paid Copy, the equipment will be considered as Leased Equipment.

30. Form 12C: Equipment Capacity – Aircraft

S No	Make & Model	Leased/Owned	Specifications	Checklist
1				1. Is NSOP Attached? (Yes/No) 2. Is lease agreement attached in case of Leased equipment? (Yes/No)
2				

31. Form 13A: List of Key Experts

S No	Name	Position	Qualification	Summary of Work Experience (Years/Similar Projects/ Hours)	Nationality

32. Form 13B: CV of Key Experts

(Note: CV of each Key Experts to be involved in the proposed service should be submitted)

Proposed Position: _____

Name of
Consultant: _____

Name of Staff: _____

Profession: _ _____

Date of Birth: _ _____

Years with
Consultant/Entity
: _____

Nationality: _____

Membership in
Professional
Societies: _____

Detailed Tasks
Assigned: _____

Key Qualifications: [Give an outline of staff member’s experience and training most pertinent to tasks on assignment. Describe degree of responsibility held by staff member on relevant previous assignments and give dates and locations. Use about half a page.]

Education: _____

[Summarize college/university and other specialized education of staff member, giving names of schools, dates attended, and degrees

obtained. Use about one quarter of a page.]

Employment Record: _____

[Starting with present position, list in reverse order every employment held. List all positions held by staff member since graduation, giving dates, names of employing organizations, titles of positions held, and locations of assignments. For experience in last ten years, also give types of activities performed and client references, where appropriate. Use about two pages.]

Languages: _____

[For each language indicate proficiency: excellent, good, fair, or poor in speaking, reading, and writing.]

Certification:

I, the undersigned, certify that to the best of my knowledge and belief, these data correctly describe me, my qualifications, and my experience.

Date: _____

[Signature of staff member and authorized representative of the consultant]

Day/Month/Year

Full name of staff member: _____