

# **Department of Revenue & Disaster Management**

**Govt. of Haryana**

**Expression of Interest  
Invited for**

**Digitization & Updating of Cadastral  
Maps(Mussavis) and Complete Document  
Management of Old Records.**

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## Section 1: Introduction

Haryana is one of very few states, where property Registration and the Land Records Administration work have been merged with a single department and a **single Revenue officer** “designated as **Tehsildar / Naib-Tehsildar**” functions as **Sub-Registrar** while handling the work of **property registration** and he functions as **CRO** while handling the work of **Land Records Administration**.

The workflow based Property Registration Information System (**HARIS**- Haryana Registration Information System) and Land Records Management system (**HALRIS** - Haryana Land Records Information System) were developed by NIC-HSU, implemented, standardized and stabilized across the state. The computer printed copies of RORs are issued with the seal and signatures of Patwari posted at the HALRIS Centres. Two-dimensional bar code is also being used to secure the computer generated RORs.

After development & implementation of dynamically integrated Property Registration System (HARIS) and Land Records Management system (HALRIS) in Haryana, NIC Haryana has further dynamically integrated the HALRIS # HARIS Bridge (Textual data of Jamabandi Records) and Spatial (digitized Cadastral Maps) data, using customized Bhu-Naksha Software.

The HARIS # HALRIS # Bhu-Naksha linkage provides a complete integrated solution for the management of Land Records and Property Registration work in the State as per major goals & objectives of NLRMP.

Now under the centrally sponsored scheme, National Land Record Modernization Programme (NLRMP), this project is envisaged for Digitization and Updation of existing Cadastral maps and complete document management of old records.

This project is to be implemented by the Department of Revenue, Disaster Management.

## Section 2: Objectives

1. Digitization of cadastral maps using existing Musavis, High Resolution Satellite Imagery (HRSI) and integration with Records of Rights (RoR) in GIS layers depicting Geographic information (the property co-ordinates, the actual measurements as per ground reality and musavi), attributes information (based on RoR Survey Performa), its interlinking with optimum precision.
2. To generate integrated, Geo-referenced village/tehsil/District mosaic of cadastral maps.

3. The citizens should be able to obtain the drawing of their land alongwith dimensions, area (as on ground and also as per RoR), attributes and neighborhood details.
4. The property maps should be able to integrate with the Record of Rights and web application.
5. To enable better planning of resources.
6. To enable better monitoring of Govt. lands such as shamlat lands.
7. To identify the encroachments on public/private properties.
8. Help in Disaster Management.
9. Additional benefits like identification of properties for crop compensation, crop insurance, encumbrances etc.

The Expression of Interest is invited from interested and eligible parties to present best possible methodology and technology to achieve the above mentioned objectives of the project.

### **Section 3: Scope of work**

The process of creation of Cadastral Information System (CIS) will involve Geo-referencing of High Resolution Satellite Image (HRSI), Digitization/redrawing of Mussavis, Field Verification, Public Validation, Attribute addition, linking with RoR and fixing Sehadda stones. After the successful completion of this job, the vendor should provide support for 3 years for maintaining record, updation, imparting training etc.

The detail scope of work is given below and will subject to change based on feed back from vendor.

#### **Digitization:**

Revenue department will provide the existing musavies and vendor agency will scan the musavies and give the hard copy to the revenue department for updating. Revenue department will return the updated copy of the Musavi to the vendor agency for digitization. Digitized musavies will be geo-referenced with the help of High-resolution satellite imagery (HRSI). Vendor will also do the ground truthing of digitized musavies using the ETS/GPS.

## Methodology for digitization

1. Scanning of the village map to create a computer image of the map, which is known as a **raster map**. The maps to be scanned at 300 dpi Colour (as per requirement) mode for normal cases, and 400 dpi on 24-bit color for damaged or destroyed musavies whose boundaries are not clear.
2. The next step involves going over the outline of the village boundary on the computer image of the map with the mouse and marking the outlines of each plot. This process, known as **vectorisation**, provides the coordinates of each point on the map.
3. A printout of this vectorised map is given to the Revenue Department by the digitizing agency (which could be the vendor if the work is outsourced) for thorough checking with the original cadastral map. The Revenue Department checks the vectorized map on a glass table with the original map placed below it. This process is known as the **table check**. Every line and point on the two maps has to match. The correctness of the digitized map is certified by the Revenue Department. If any error is detected, the same has to be rectified by the vendor/digitizing agency.
4. The software used in the digitization process creates a number of files. Each of these files pertains to a GIS-based layer and each layer consists of three files. The GIS data are organized in layers. Each layer contains a subset of information that would be present on a regular map, such as (1) geographic information (where something is located), (2) attributes information (what is located at a specific location), and (3) its interlinking information. These three sets of information are represented in three physical files in the computer. All the files are put in a storage device (e.g., a CD) and given to the

Revenue Department for checking. If any error is detected, the same has to be rectified.

5. The GIS layers are of three types: point layers, line layers & area layers. Symbols used to record the legends to mark the objects such as wells, temples etc. are to be incorporated in all the three layers, i.e., point, line and area layers.
  
6. Once the Revenue Department has cleared the vectorised map and the files, the digitizing agency proceeds to add each of the handwritten information on the original map except the signature at the bottom given out neatly typed.

**Following points must be addressed during the digitization: -**

- a) The missing (the features present on the ground but not on Mussavis) and invalid (the features present in Mussavis but not on the ground) features should be digitized and reflected in separate layers.
  
- b) Updated geo-referenced Mussavis should show the roads/canals/water bodies/railway lines as existing, missing or invalid features in separate layers.
  
- c) The property dimensions and area should be shown in the metric system as well as the traditional system.
  
- d) Vendor will also generate the field book of the village from the digitized musavies.
  
- e) The details of the plots should be shown in the attribute table (Area as per RoR, Ownership details etc) along with actual ground dimensions. Comparison of area and dimensions should be done.
  
- f) Encroachments, excess areas and measurement discrepancies should be highlighted (different color scheme) in the Mussavis.
  
- g) **The precision in linear and area measurements should be 99%. Accuracy of 30 cm on ground should be achieved.**
  
- h) **Linkage with ROR:** The vendor will provide the digitized musavies in the form of Shape files as per the format specified by the NIC. These shape

files must contain the attribute data required to integrate with the HALRIS (Haryana Land Records Information System) of NIC. Separate shape files should be provided for each layer digitized by the vendor. If some discrepancies are there between the ROR data and digitized musavies then vendor will do the ground survey for removing the discrepancies.

- i) **Sehda Stone:** There should be one revenue stone (including Sehdas) per sq.Km as per the location of GCPs. The vendor will assign a unique ID and location coordinates to every revenue stone (including Sehadass). The data about the exact geo-referenced coordinates of Sehadass & other revenue stones should be communicated to the Revenue department. The Sehadass and revenue stones should be inscribed with unique code for access of coordinates.

**Document Management of Old Records:**

- a) Scanning of Misal Hakiyat copy of Jamabandi
- b) Scanning of all the deeds registered during last 12 years
- c) Cataloguing and indexing of all the scanned documents
- d) Storage of scanned documents in soft format
- e) Security of scanned documents
- f) Software for indexing and retrieval of scanned documents

**Others details:**

The agency should provide the mosaic output in shape file or geo-database format for each village, each tehsil and district on DVD in duplicate.

Geo-referenced raster data of musavis also should be provided on DVD with proper codification and index. Retrieval software should be provided.

The bidder will be bound by the guidelines issued under National Land Records Modernization Programme (NLRMP) available at their website <http://www.dolr.nic.in>.

**Note:**

**1. Vendor agency should provide the option on supply of HRSI/Aerial Photography data on its own or by the Revenue department.**

**2. Revenue department reserves the rights to restrain the scope of work at any time.**

## **Section 4: Terms & Conditions**

### **Deliverables:**

1. The deliverables consists of geo-referenced soft copy of scanned mussavis on DVD.
2. Final maps of village mosaics on DVD with all attributes as mentioned in the document.
3. Final maps of tehsil mosaics on DVD for each district
4. Final maps of district mosaic on DVD for each district
5. DGPS coordinates of Sehada and revenue stones along with codes
6. The Mussaviwise printout on polyester matt paper

### **General Conditions:**

- a) The Revenue department will monitor the work progress of vendor Agencies and vendors will send a fortnightly report to the Revenue department.
- b) The Agency will provide GIS/MIS reporting on case-to-case basis. For instance like how many fields are affected due to change in the course of a river? The field-wise detail of the total area involved in a village wherein there are measurement discrepancies or encroachments should be reported.
- c) Technically qualified bidders will be given one village each for digitization and mosaic creation. Based on the evaluation of output further points will be allotted.
- d) After conducting independent studies, the short listed vendors would attend a one-day workshop, to finalize the System Requirement Specifications in discussion with the Revenue department.
- e) After final technical qualification the qualified bidders will be given Request for Proposal (RFP) document for submitting their price bid.
- f) The Agency should setup its office within the district/tehsil, after due approval of the Revenue department and abide by the regulations as determined by the Remote Sensing data policy as laid down by the NRSC, Department of Space, and Govt. of India. The Agency will setup its

hardware and Software as required and will adhere to rules and regulations. The agency should give an undertaking to this effect.

**Time Duration:**

- a) A time schedule for deliverables and work progress should be prepared by mutual discussion with the client within a week of the allocation of the work.
- b) The work should commence within a month of signing the agreement and allocation of the work.

## **Section 5: Roles & Responsibilities**

### **Role of the Revenue department**

Revenue department will coordinate and provide the support of Patwaris for field verification and public validation. The department will issue necessary public notification.

In addition department will also provide the following support:

- I. Supply Survey of India triangulation coordinates to Agency.
- II. Supply the existing Mussavis to vendor.
- III. Field verifications of updated Mussavis as provided by Vendor.
- IV. To bring about legal changes wherever required enabling updating of records as per ground reality/field Validation.
- V. Revenue department will form an internal committee to review the project progress.

**Annexure – I**

Forwarding Letter

**The Director Land Records  
Bay no. 25-26  
Sector 4  
Panchkula**

**Subject: EOI for Digitization and Updating of Cadastral Maps (Mussavis) & Complete document management of Old Records**

Dear Sir,

1. With reference to your E O I document dated ---.---.2009, I/we, having examined the EOI document and understood its contents, hereby submit my/our application for getting short-listed for above services. The application is un- conditional.

2 All information provided in the Application, Appendices and Annexure is true and correct and all documents accompanying this application are true copies of their respective originals.

3 I/ We acknowledge the right of the Authority to reject our application without assigning any reason or otherwise and hereby waive our right to challenge the same on any account whatsoever.

4 I/We certify that in the last three years, I/ we neither failed to perform on any assignment, as evidenced by imposition of a penalty or a judicial pronouncement or arbitration award, nor been expelled from any assignment or contract nor have had any contract terminated for breach on our part.

5. I/We agrees and undertakes to abide by all the terms and conditions of the EOI document.

In witness thereof, I/We submit this application under and in accordance with the terms of the EOI document.

Yours faithfully,

(Signature of the Authorized Representative)  
(Name and designation)  
Name and seal of the Firm