

HARSAC

How Geo-Spatial Technology Using for Land Record Reforms Under NLRMP in Haryana



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HARSAC

- Registered Society under DST, GoH
- Established: 1986
- Projects Completed : 115
Ongoing : 25

VISION

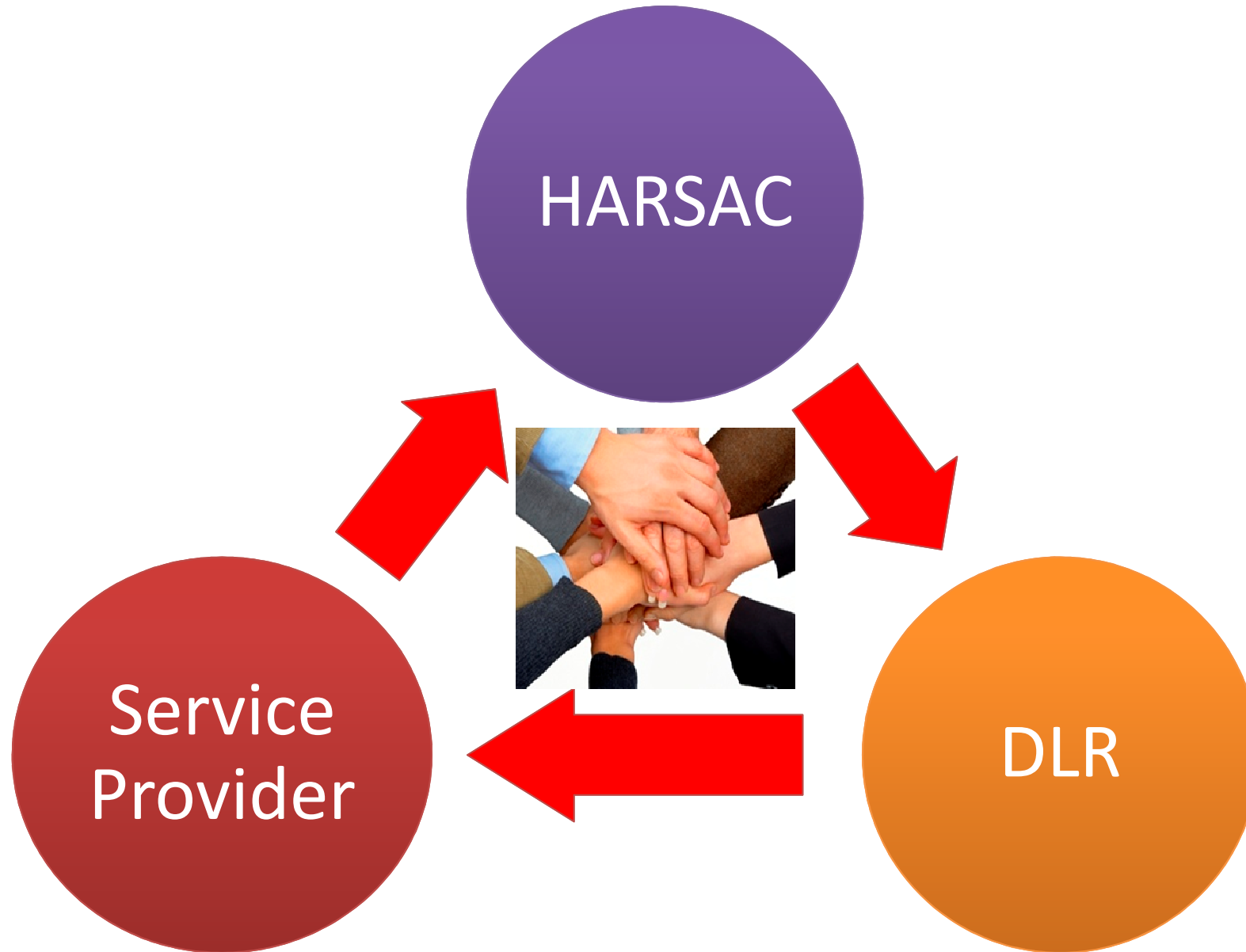
- Promoting G- Governance in the state of Haryana

MISSION

- Act as a Nodal Agency for Geospatial Applications
- Management of Natural Resources
- Promoting Education & Training in RS & GIS



ROAD MAP FOR NLRMP IN HARYANA



HARYANA REVENUE SYSTEM

- Statistics

Survey and Settlement 1907-13

Re-Survey for Consolidation 1957-61

- Area **44,212 Sq. Km.**
- Villages **7085**
- Musavies **65000**
- Min. Parcels **1.05 Cr**

44,212 Sq. Km.

65,000
1.05 Cr

- Fairly evolved Land Record System

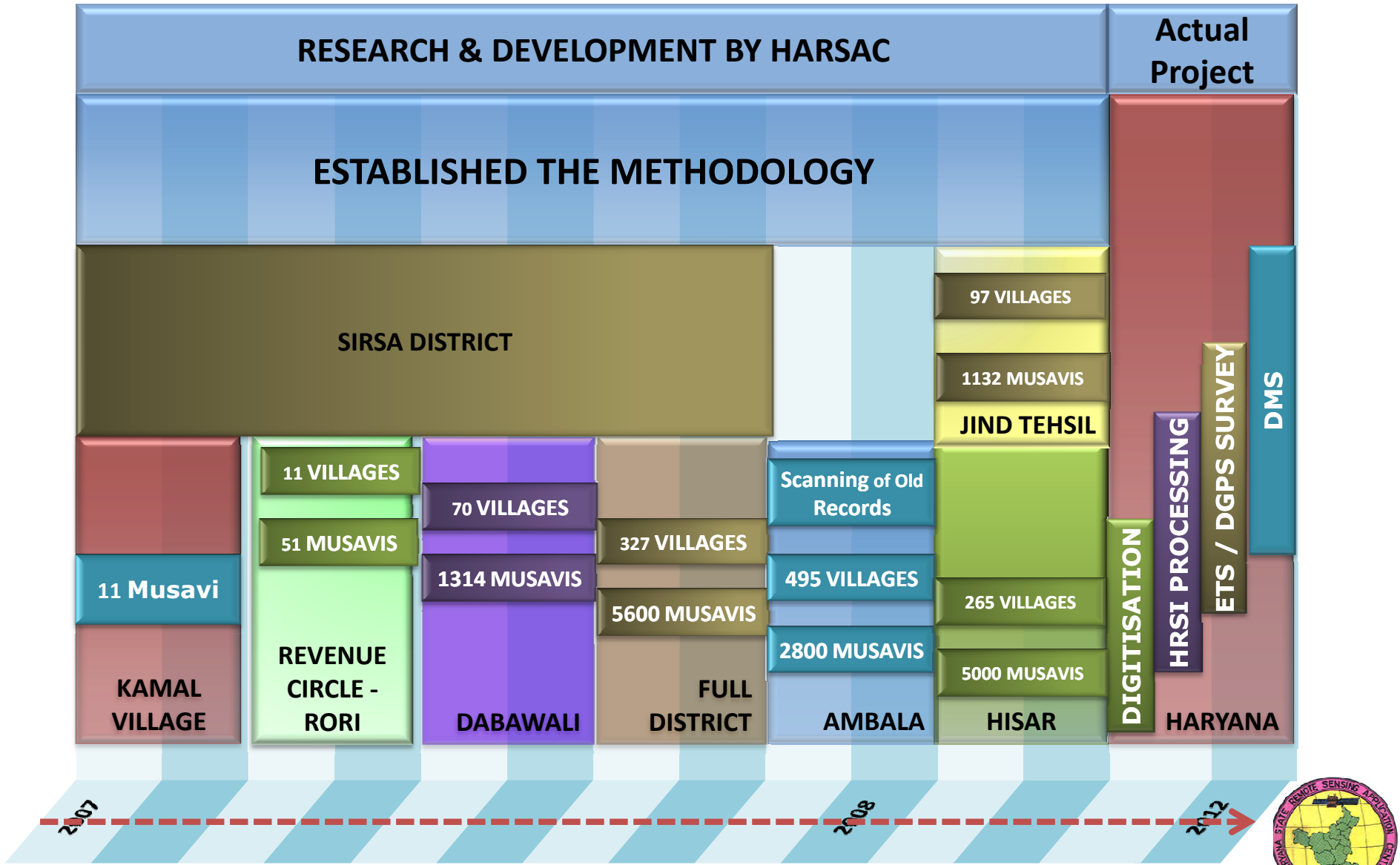
- Divided into uniform grids of 1 acre each called Kilas
- Each 25 Kila grid is called a Murraba
- 1 Kila = 40*36 Karam
- 1 Karam = 5.5 feet

1 Kila = 1 Acre				



HARSAC INITIATIVE – MODERNIZATION OF LAND RECORDS

◆ NLRMP INITIATED

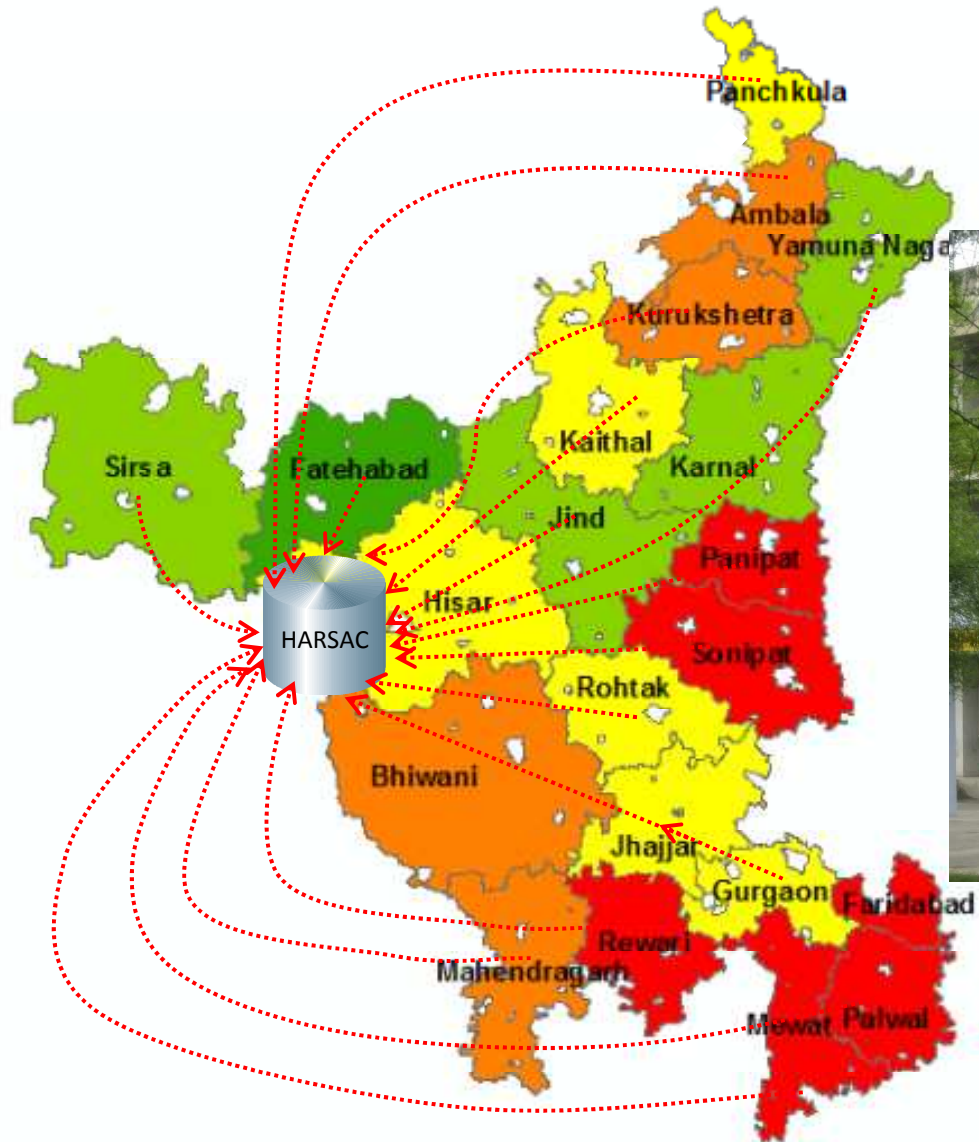


SCOPE OF WORK

Village / Tehsil Map Creation	Mosaicing	Document Retrieval System	
Geo-database	Ortho-rectification		ETS survey
	DTM Extraction	Metadata Creation	
Print for Patwari Updation and Validation	Geo-referencing		DGPS Survey
Geo-Linking with RoR	Satellite Triangulation	Printing of Documents	
Digitization of Musavies	Data Acquisition with <10 ONA	Scanning of Old Documents	Monumentation
Scanning of Musavis			
DIGITIZATION	HRSI PROCESSING	DOCUMENT SCANNING	SURVEY / RE-SURVEY

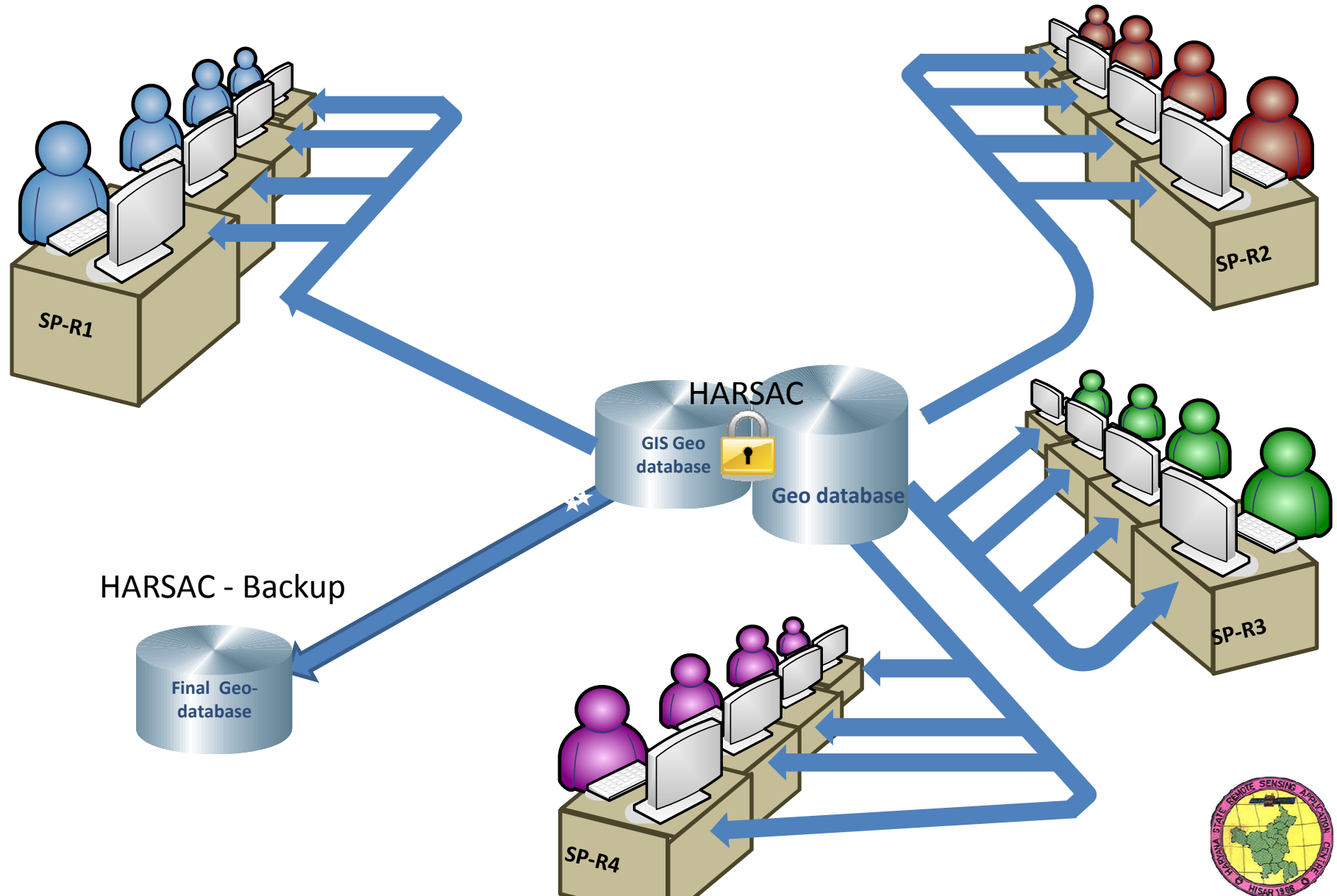
NLRMP

HARYANA BUSINESS PROCESSING UNIT (H-BPU)



NLRMP

HARYANA BUSINESS PROCESSING UNIT



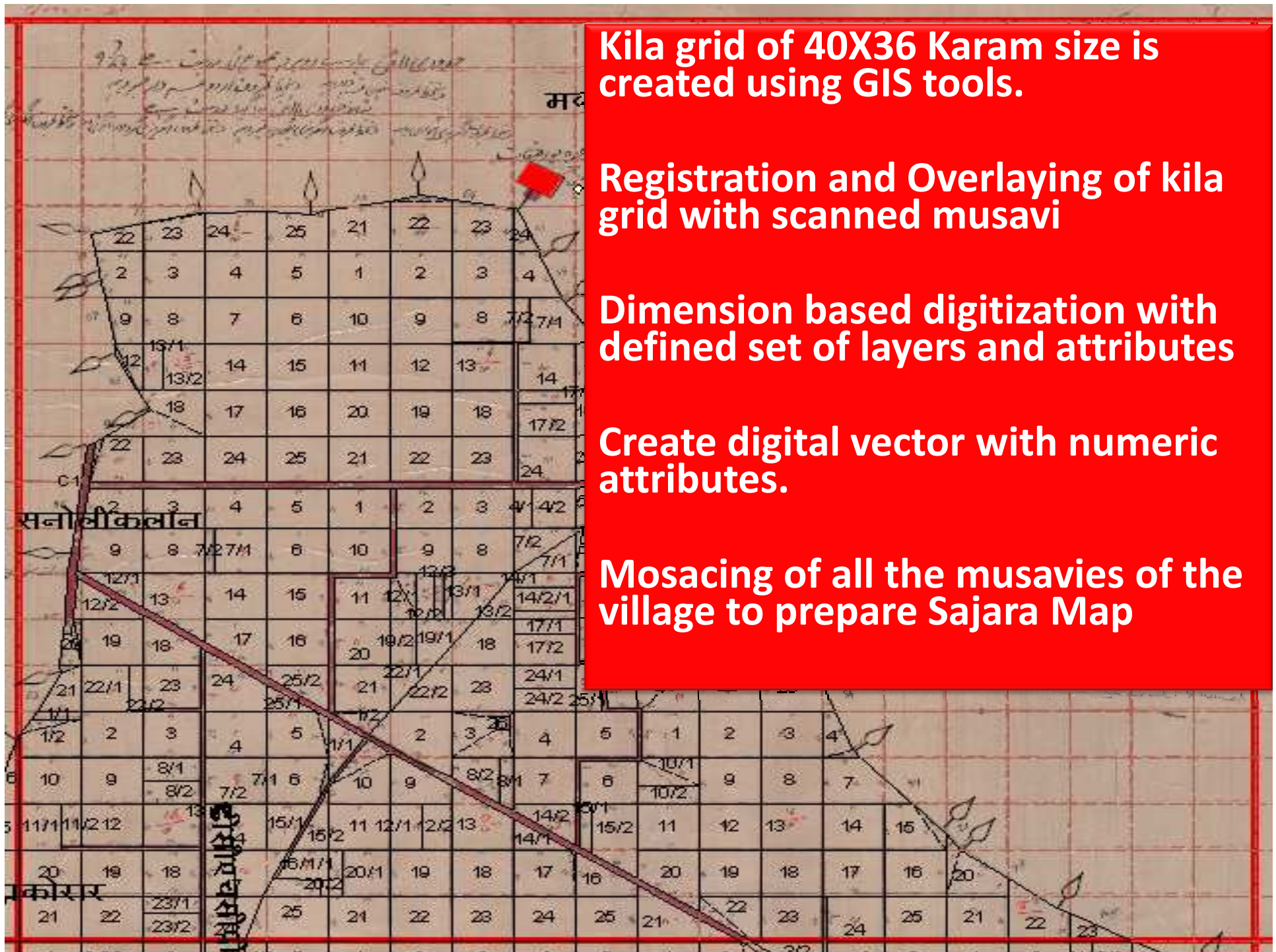
Kila grid of 40X36 Karam size is created using GIS tools.

Registration and Overlaying of kila grid with scanned musavi

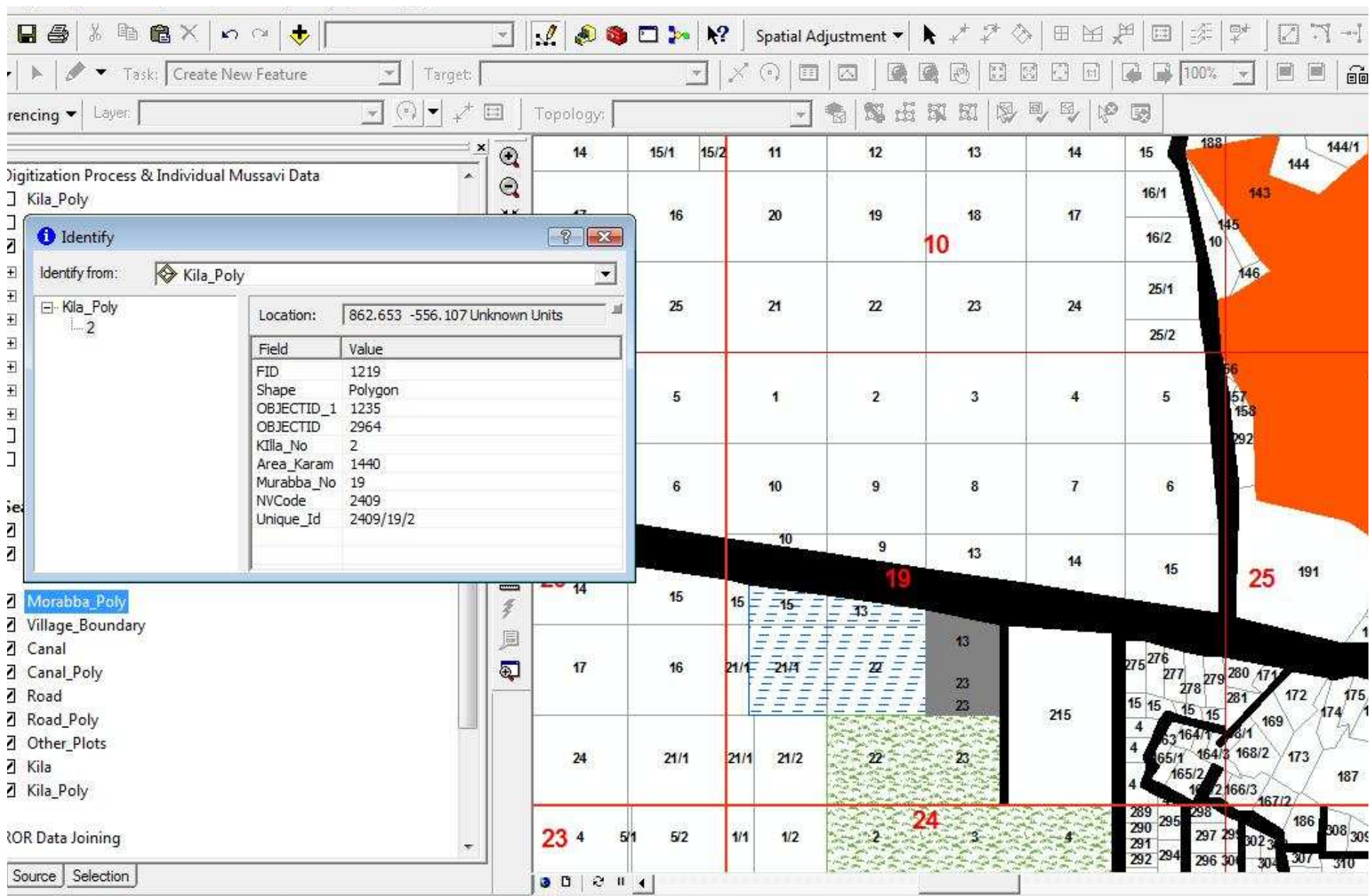
Dimension based digitization with defined set of layers and attributes

Create digital vector with numeric attributes.

Mosacing of all the musavies of the village to prepare Sajara Map



NLRMP Haryana - Methodology



IMPORTING & QUALITY CHECK OF DIGITIZED DATA INTO GEODATABASE

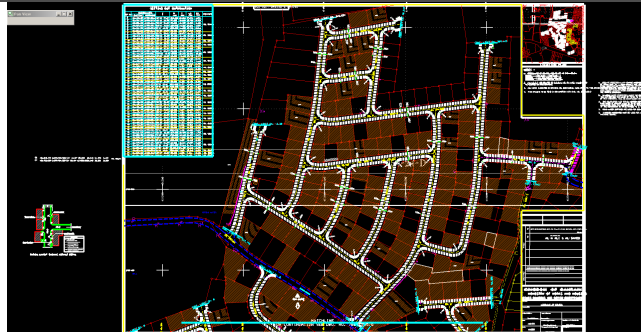


- Select one or more for loading
 - Application will
 - Validate the drawing to the SDD structure
 - Extract village / tehsil / district name
 - Validate the attributes are as per SDD structure
- | |
|--------------------|
| PRJ2009-C-189-0023 |
| PRJ2009-C-189-0024 |
| PRJ2009-C-189-0039 |
| PRJ2009-C-189-0040 |
| PRJ2009-C-189-0041 |
| PRJ2009-C-202-0144 |
| PRJ2009-C-202-0145 |
| PRJ2009-C-202-0162 |
| PRJ2009-C-202-0163 |
| PRJ2009-C-202-0164 |
| PRJ2009-C-202-0416 |
| PRJ2009-C-202-0417 |
| PRJ2009-C-202-0418 |
| PRJ2009-C-202-0422 |



IMPORTING & QUALITY CHECK OF DIGITIZED DATA INTO GEODATABASE

LOAD REPORT
Date: 20 Sep 2012 at 9.30 am
Project: PRJ2009-C-202
Successfully Loaded Sheets:
- 0144
- 0164
Failed Sheets:
- 0162

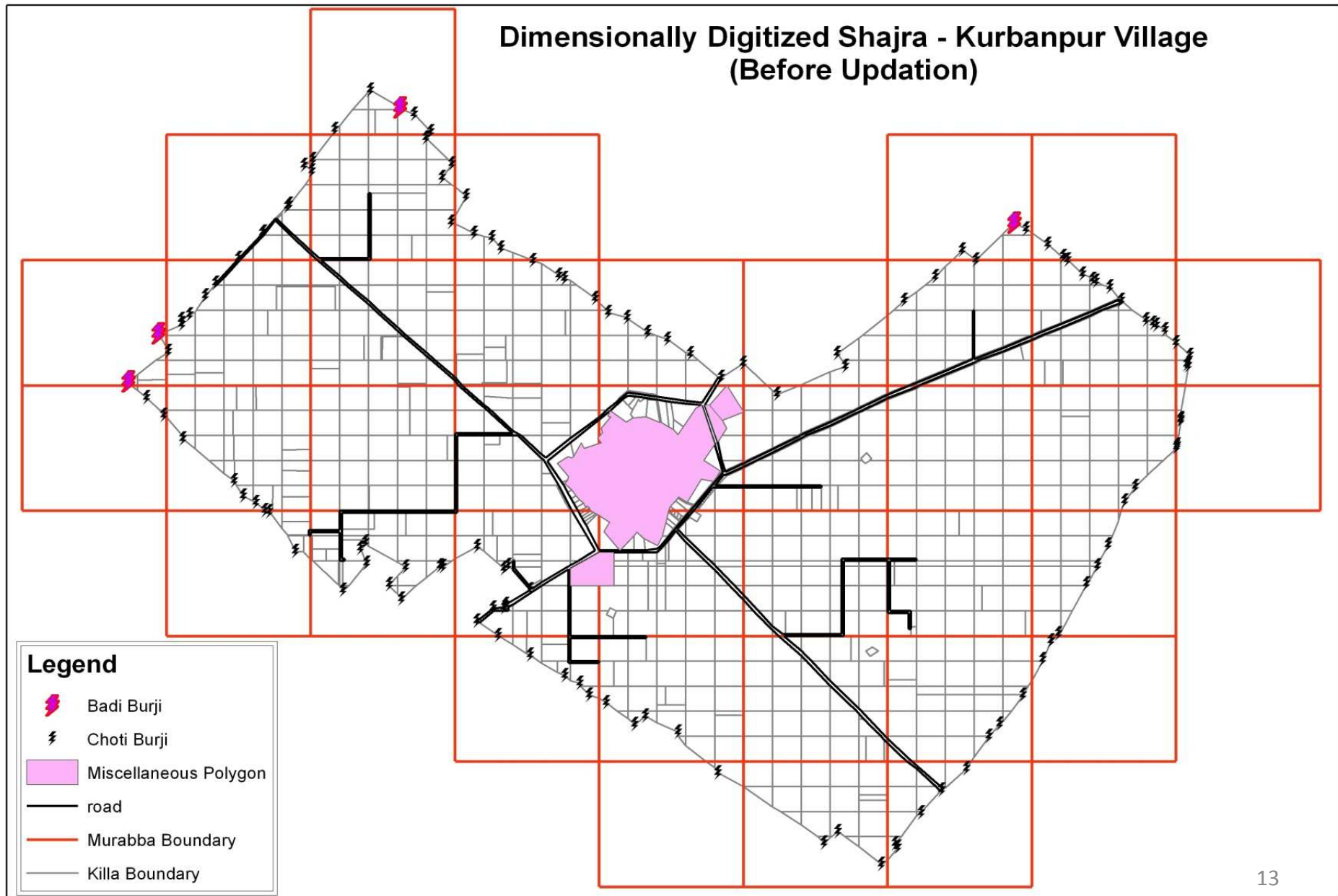


Now, the application will:

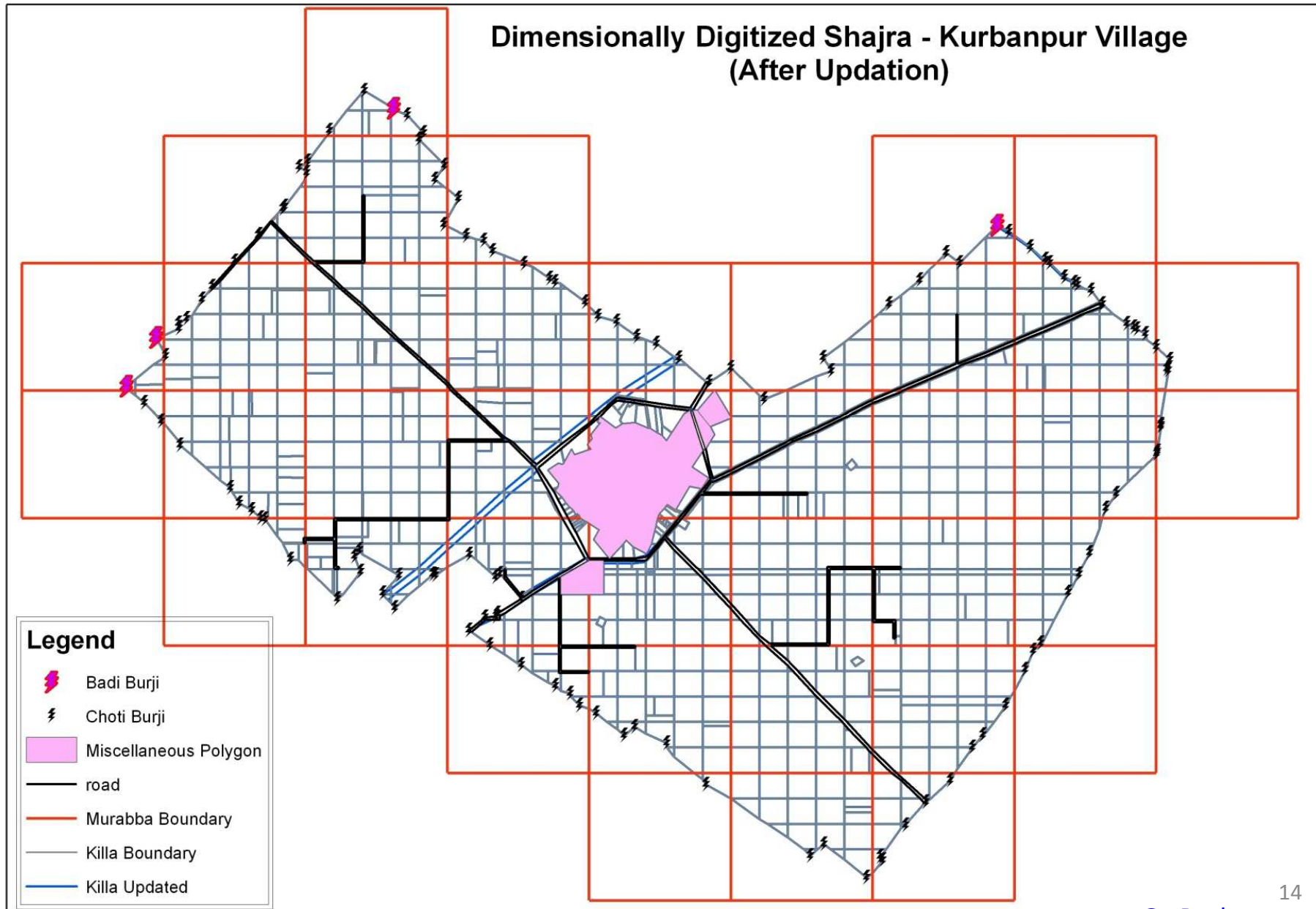
- Split the data out into various parts (e.g. geographic features, table records, etc.)
- Append them to the appropriate layers and tables in the database
- Update all project management records



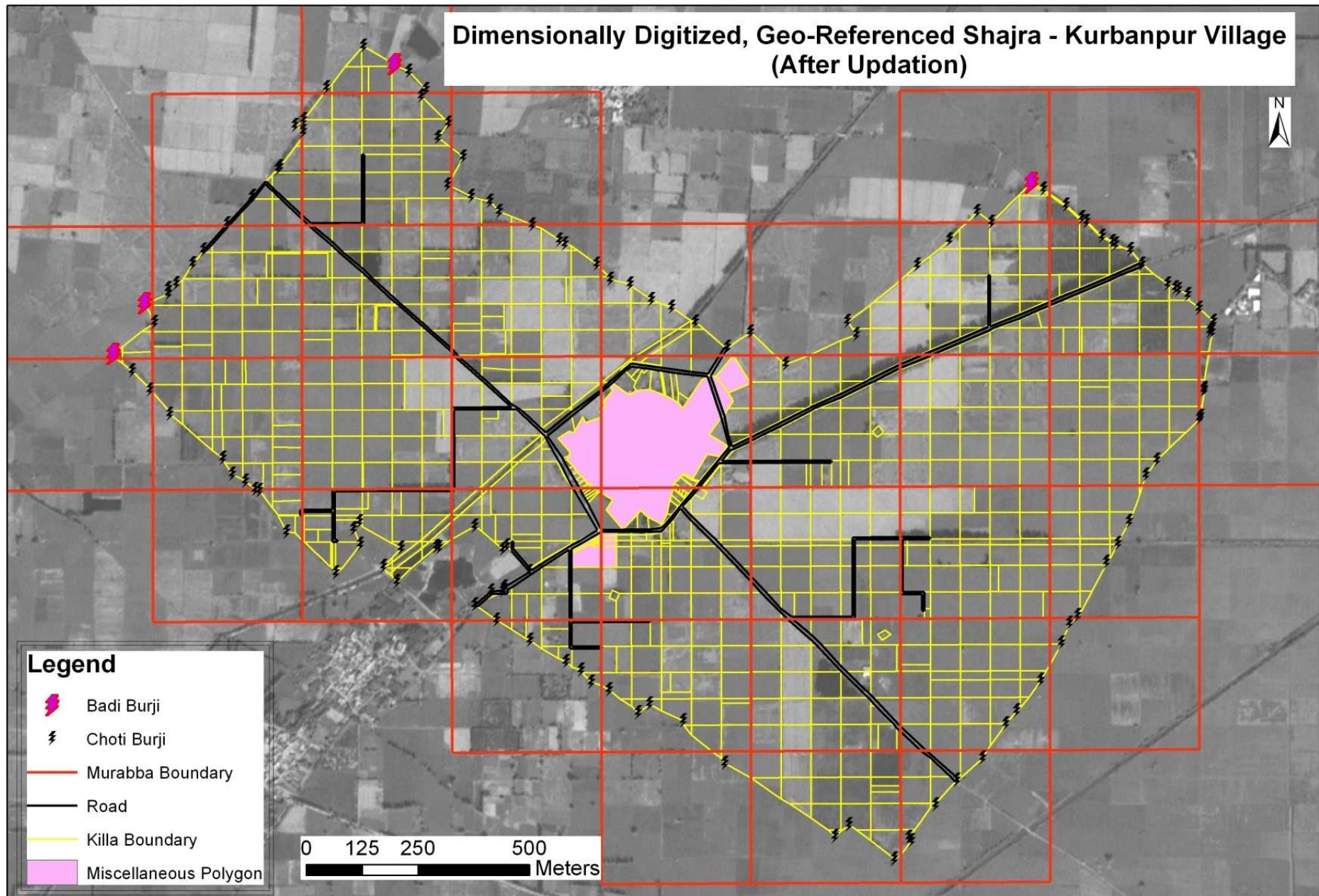
Digitized Sajara before Updation



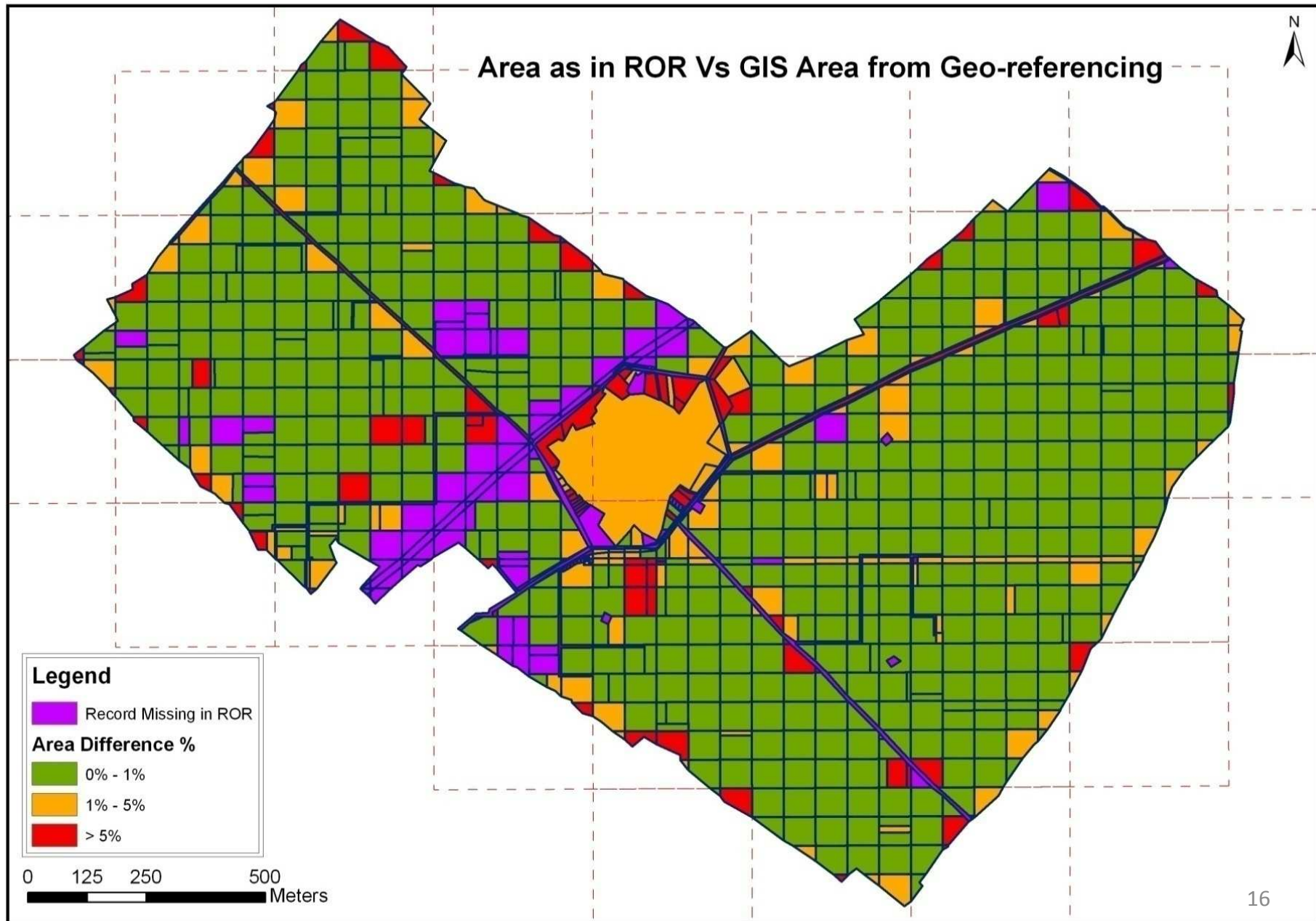
Digitized Sajara after Updation



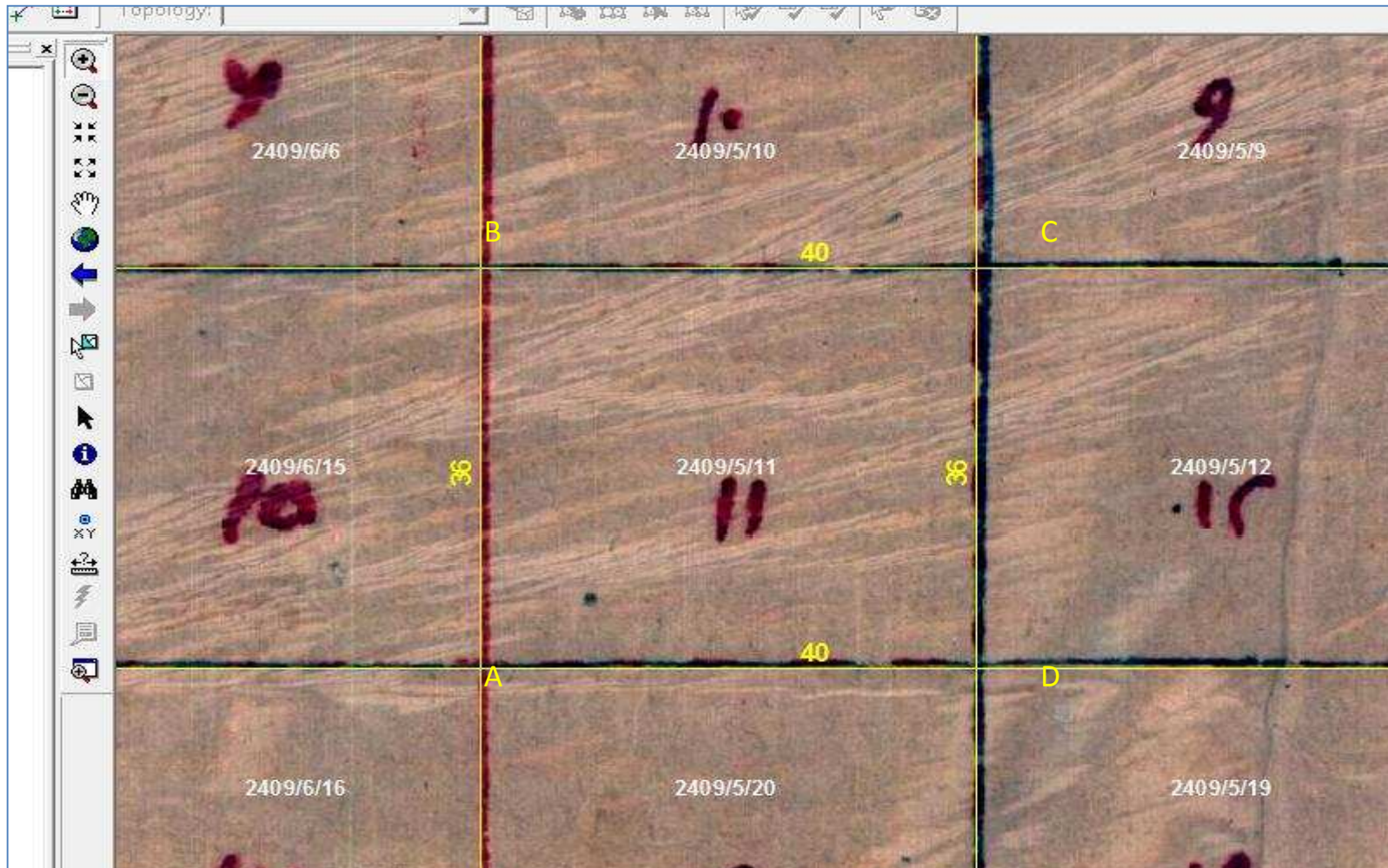
GEO-REFERENCING AND OVERLAYING WITH HRSI



Analysis of Area Differences

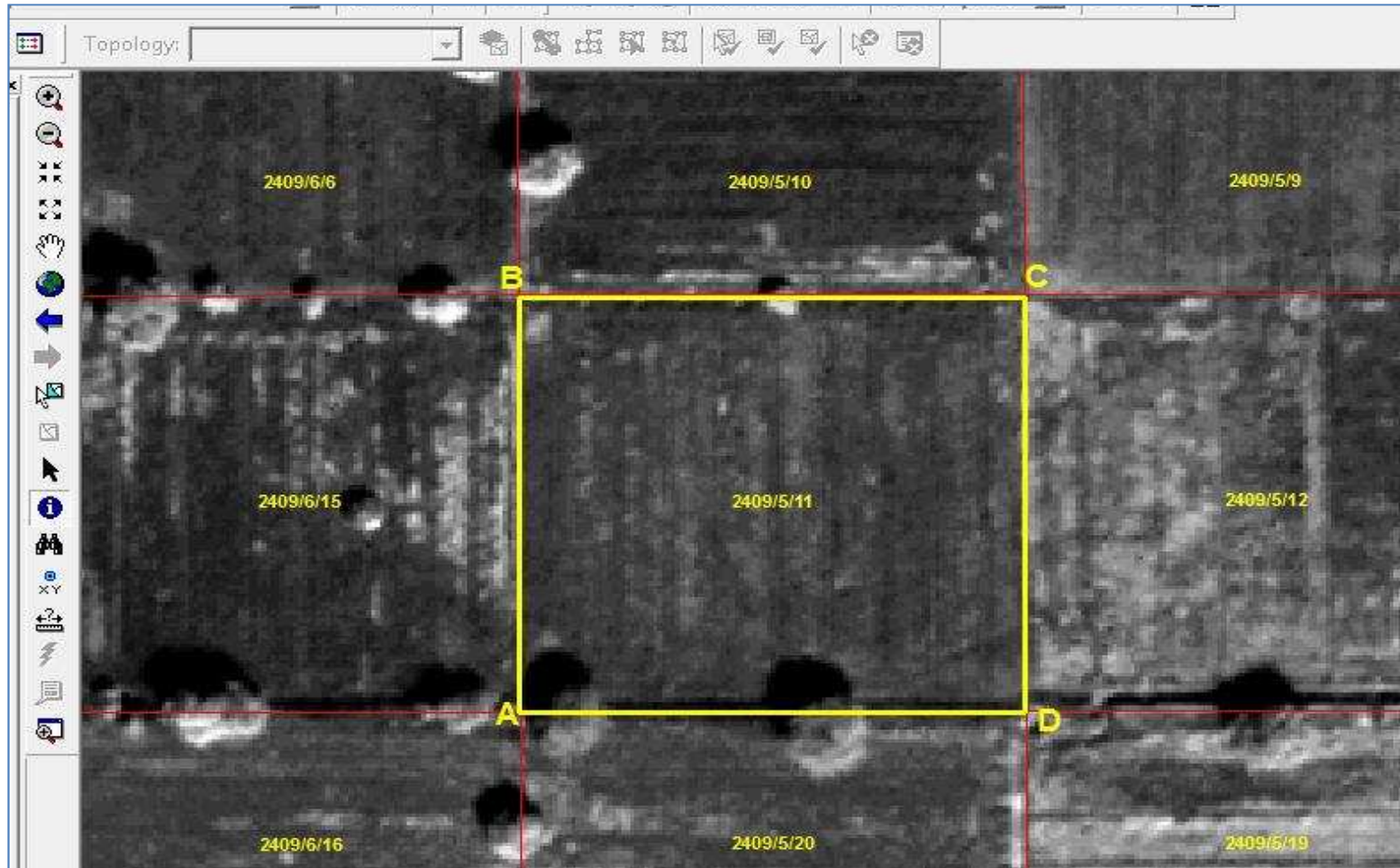


ERROR ASSESSMENT: MUSSAVI WITH GEO-REFERENCED VECTORS



	Mussavi dimension(m)	Vector After geo-reference (m)	Difference due to geo-reference (m)	Difference in (%)
AB	60.35	60.37	0.02	0.03
BC	67.06	66.91	0.15	0.22
CD	60.35	60.37	0.02	0.03
DA	67.06	66.91	0.15	0.22

ERROR ASSESSMENT: MUSSAVI WITH GEO-REFERENCED IMAGE



	Mussavi dimension(m)	Digitization from geo-reference Image	Difference (m)	Difference (%)
AB	60.35	60.01	0.34	0.56
BC	67.06	66.84	0.21	0.32
CD	60.35	60.16	0.19	0.31
DA	67.06	66.87	0.19	0.28

MONUMENTATION-PLANNING

- To create a state wide network of monuments HARSAC has finalized the distribution of monuments as

– SOI Master Control Points: 35 Nos.

– Primary Network- 20 kms interval:
121 points

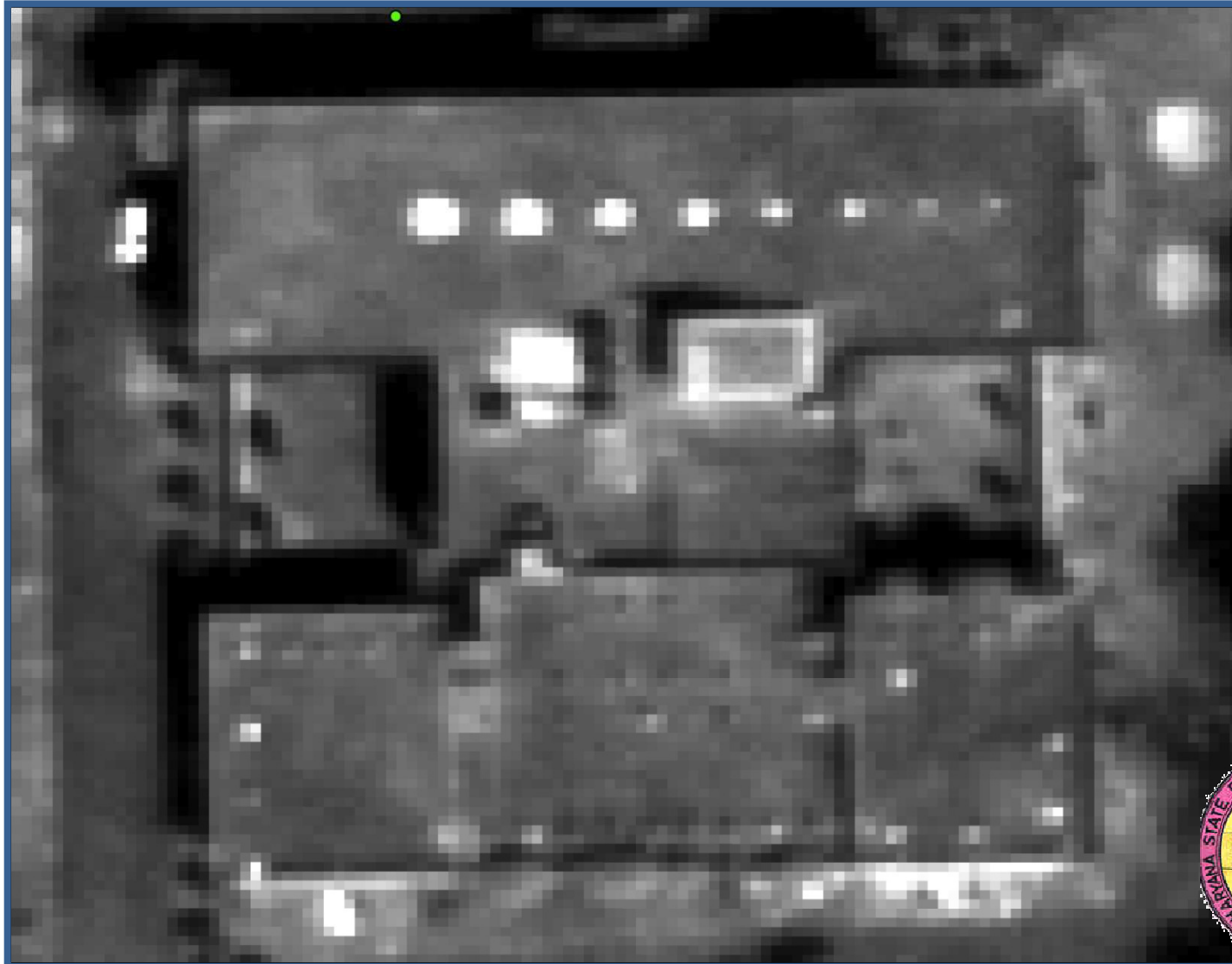
– Secondary Network- 8 kms interval
589 points

– Tertiary Network – on shehda points (Village tri-
junctions): Approximately 20,000

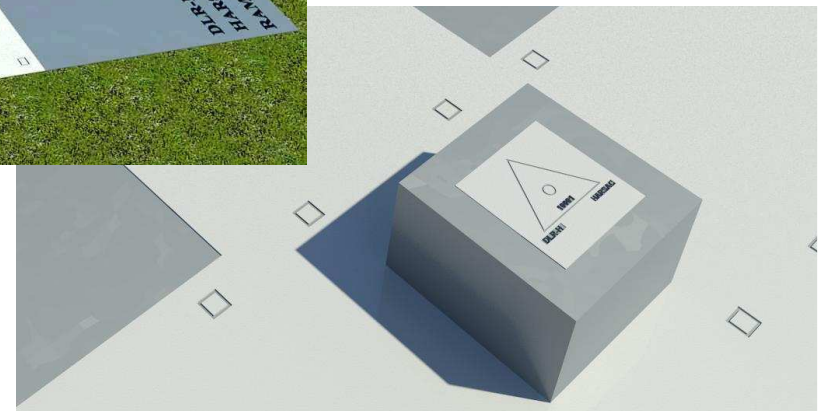
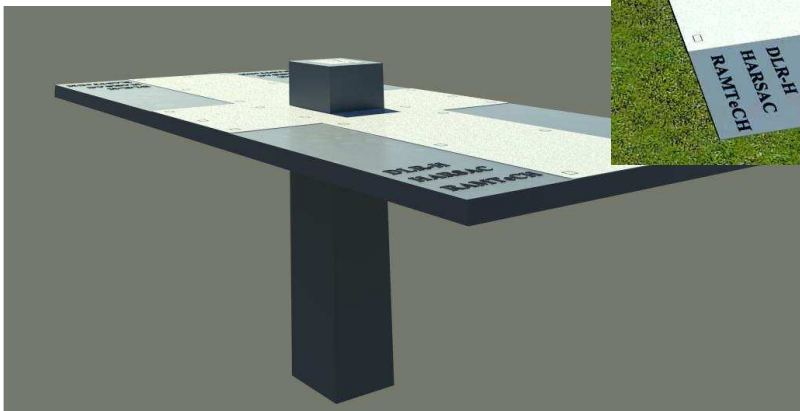
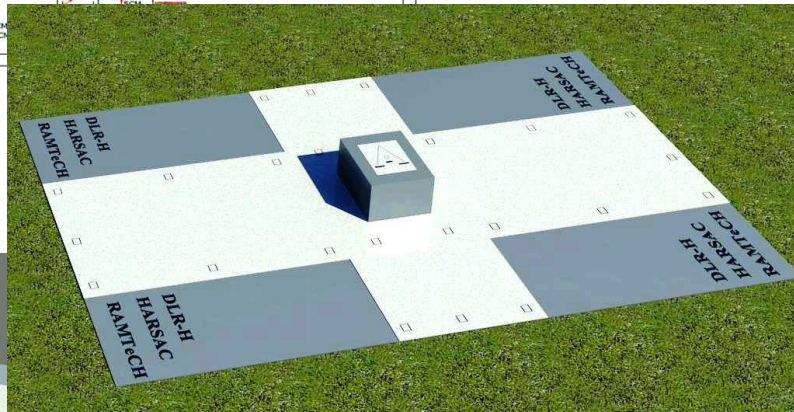
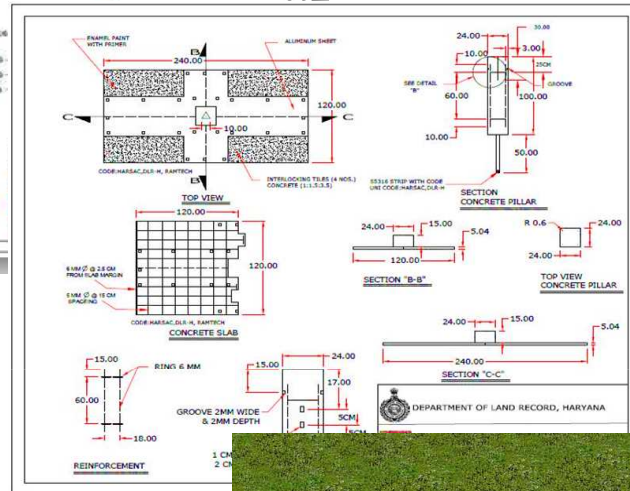
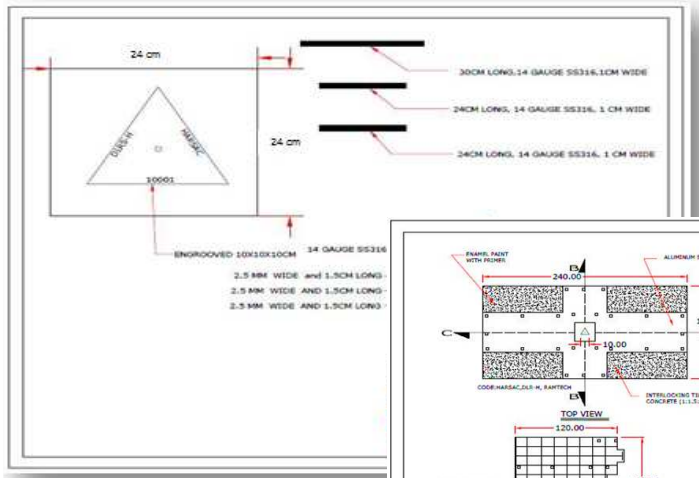
– Auxiliary Points – To be placed for survey wherever
sufficient controls are not available

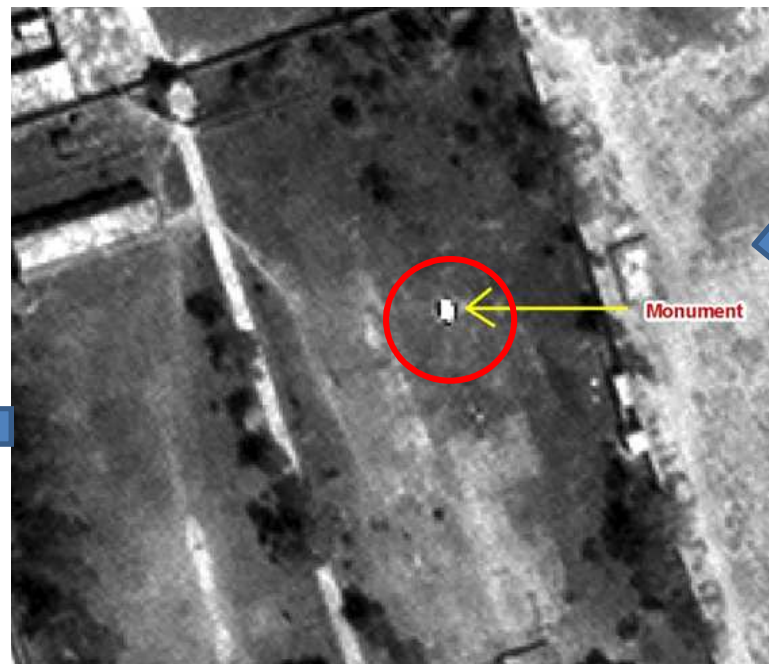
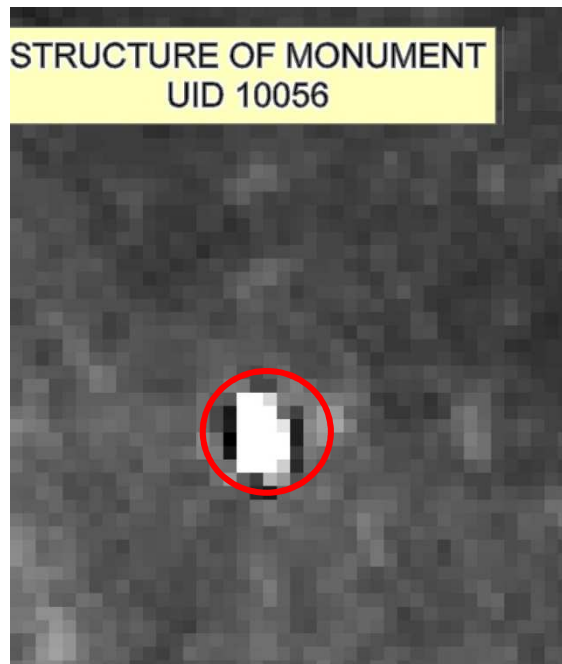
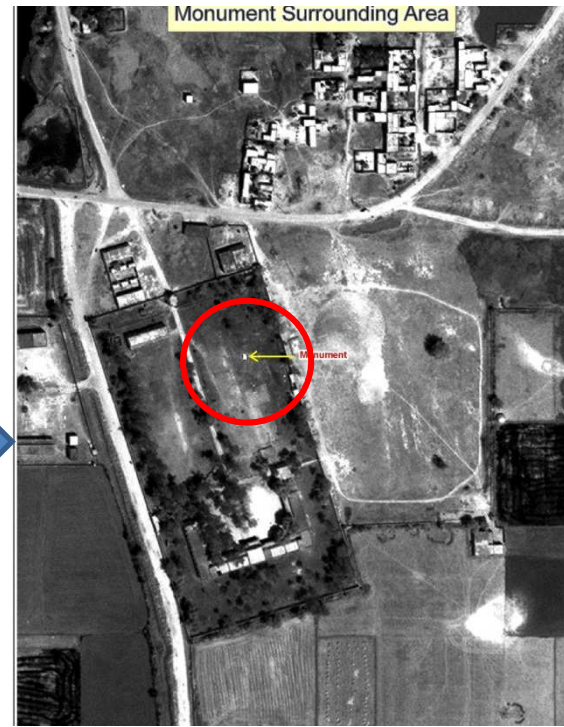


Image Acquisition: 24th March 2011 (Viewing Scale 1:250)



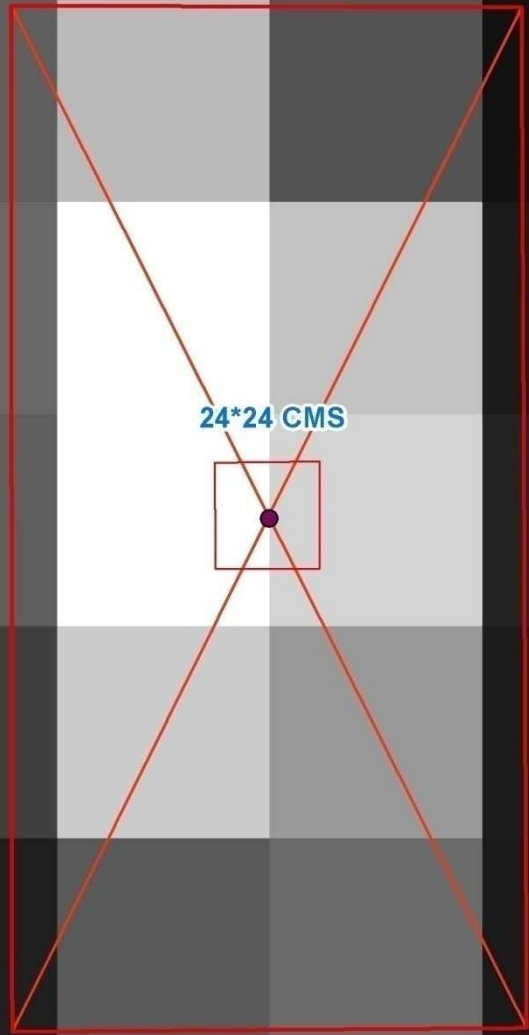
MONUMENTATION - DESIGN



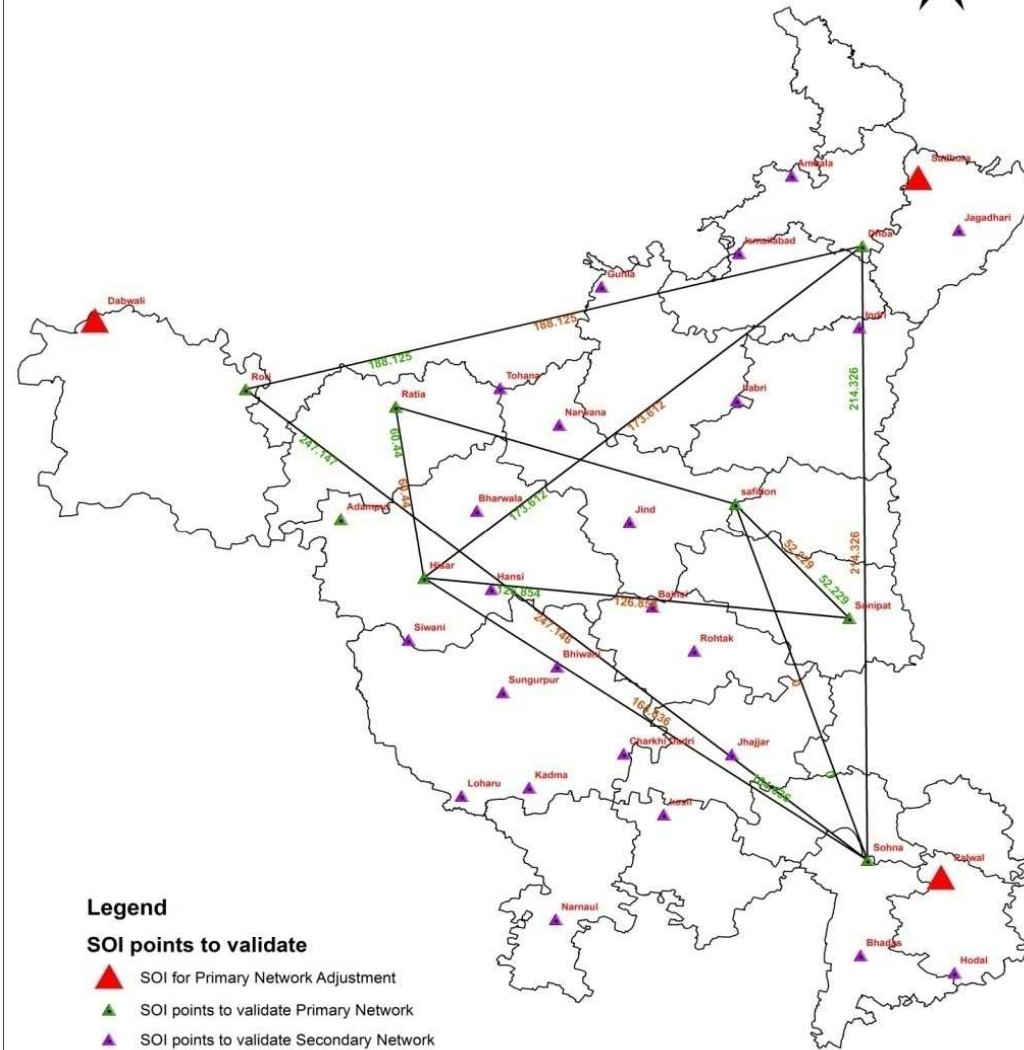


**STRUCTURE OF MONUMENTATION
UID 10056**

240*120 CMS








SOI Control Points Network

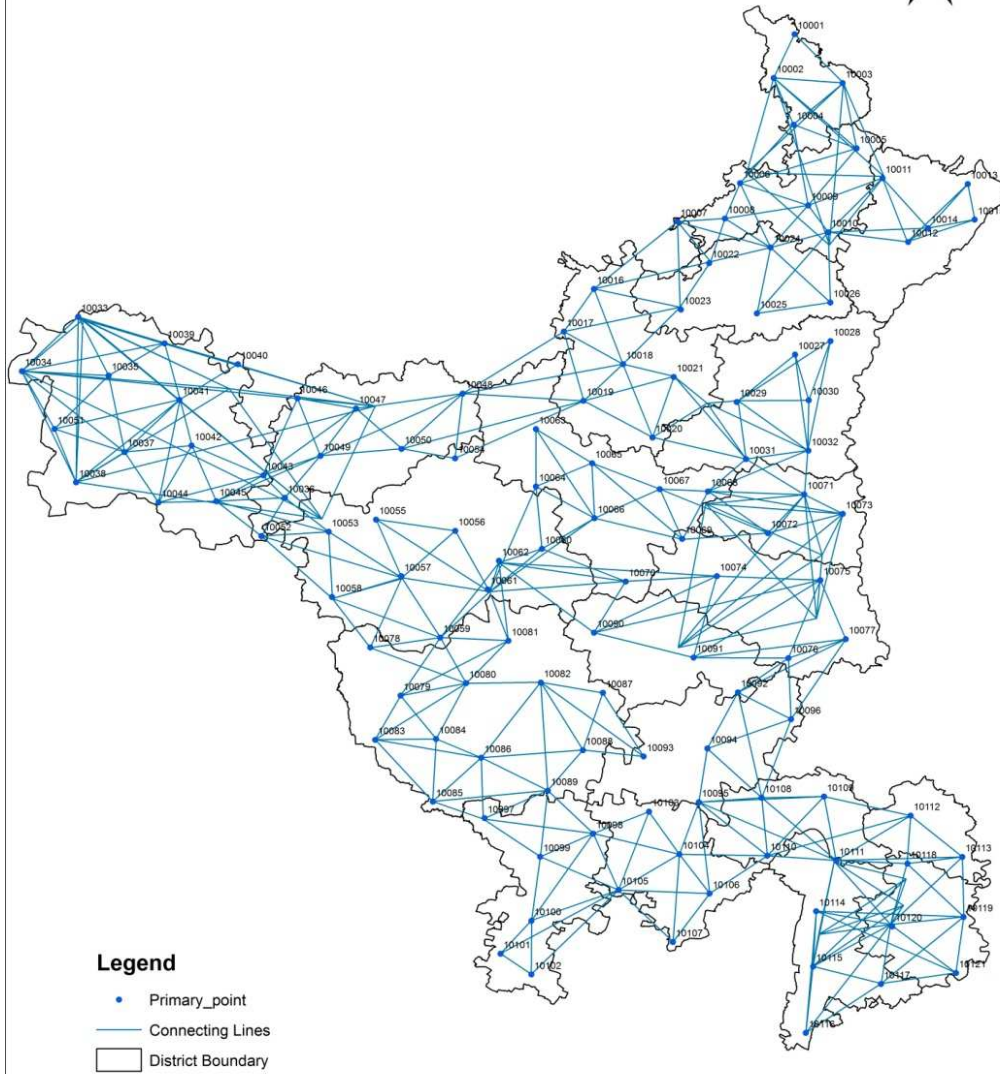


Legend

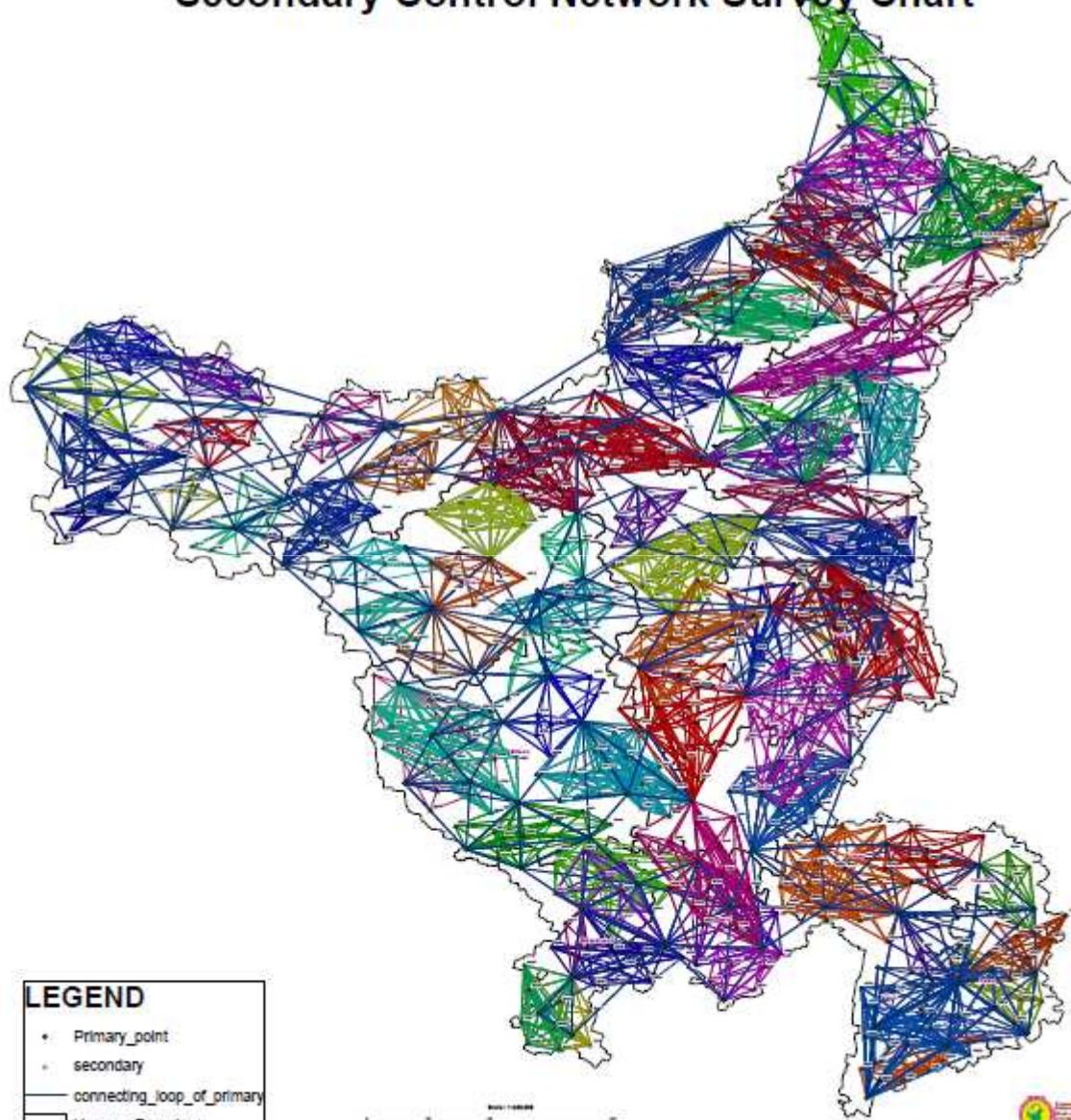
SOI points to validate

-  SOI for Primary Network Adjustment
-  SOI points to validate Primary Network
-  SOI points to validate Secondary Network
-  District Boundary
-  base length

Primary Control Points Network



Secondary Control Network Survey Chart





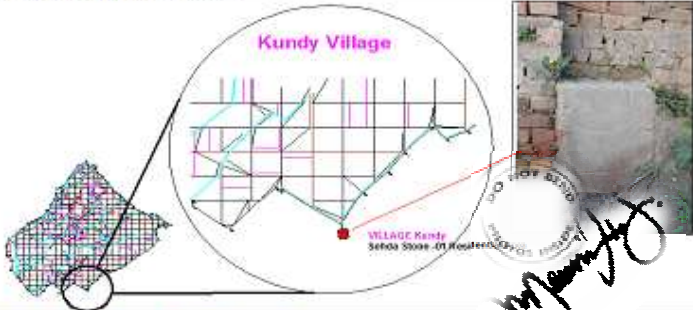
LEGEND

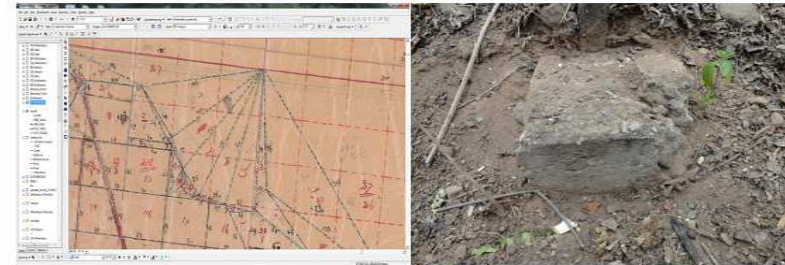
- Primary_point
- secondary
- connecting_loop_of_primary
- Haryana Boundary



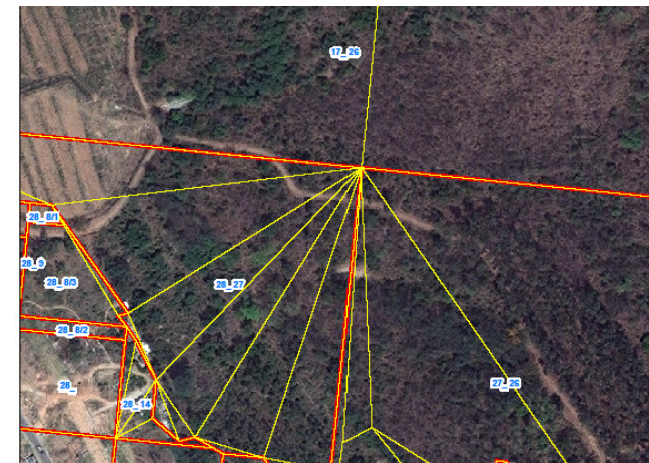
Validation & Certification by DRO Officials

National Land Record Modernization Program-Haryana

Identification of Old Sehda Monument	
 Identification of Old Sehda Monument 	
1	Name of Project: Modernization of Land Record for 20 District of Haryana
2	Primary Control Point Code:
3	Locational Information
Name of District: Panchkula Name of Tehsil / Village: Panchkula/ Kundi	
Name of Department:	
Name of Building:	
Date of Installation	
From To	
Name of the Surveyor:	
4	Monumentation Site Inspection Detail
Photograph Taken (Panoramic View) <small>(specify Number/serial No. of Photograph in Camera)</small>	
Monument Specification	
Remarks	
Yes / No	
Monument Specification	
As per the approved drawing	
5	Schematic Sketch of the Location/ Site
	
6	Contact Details of Contact / Authorized person
Name of Authorized person / Contact	



Murba Stone Identified on Musavi and Ground



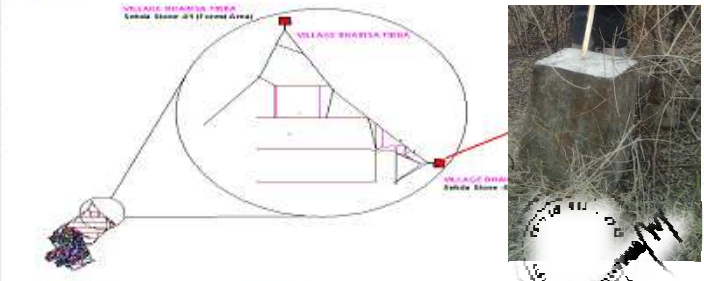


Validation & Certification by DRO Officials

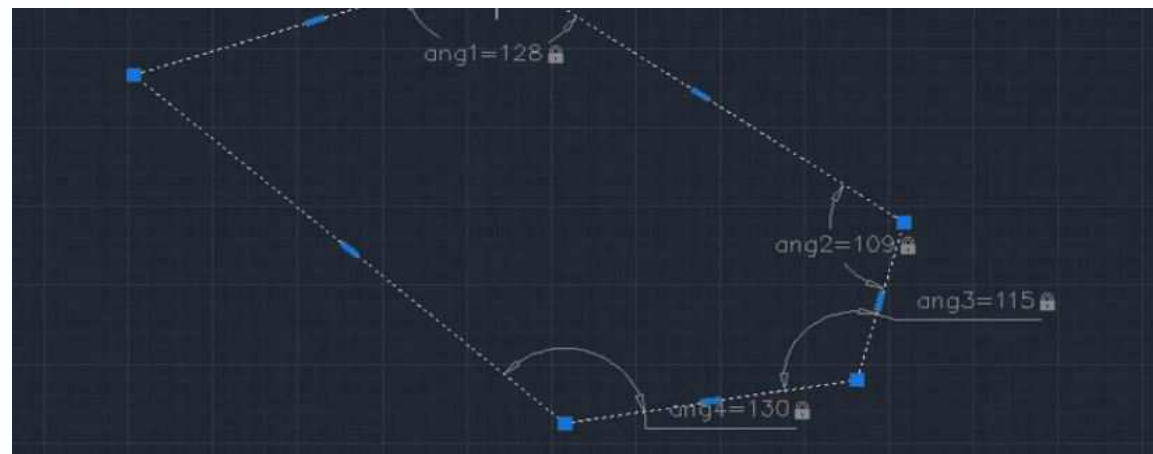
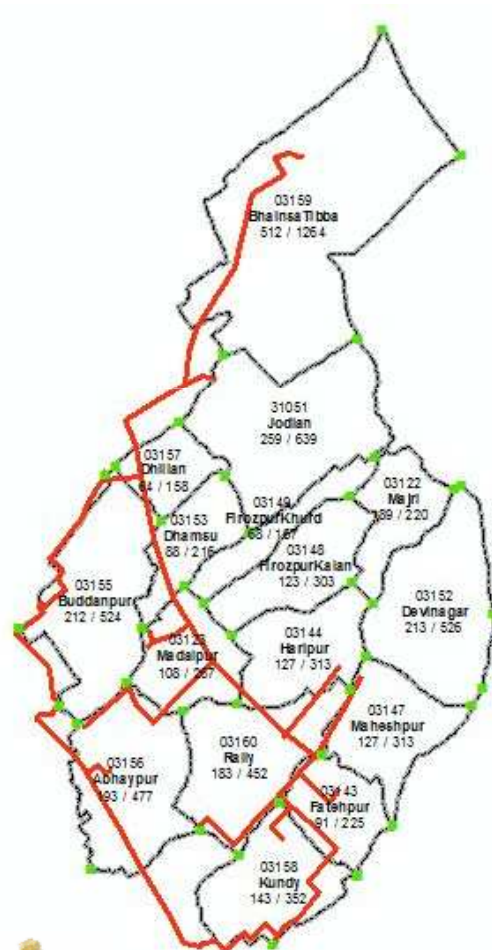
National Land Record Modernization Program-Haryana



Identification of Old Sehda Monument

 Identification of Old Sehda Monument 		
1	Name of Project Modernization of Land Record for 20 District of Haryana	
2	Primary Control Point Code:	
3 Locational Information		
Name of District	Panchkula Name of Tehsil / Village Panchkula/ Bhainsa Tibba	
Name of Department	Defence Area	
Name of Building		
Name of the Surveyor	Date of Installation	
	From	To
4 Monumentation Site Inspection Detail		Remarks
Photograph Taken (Panoramic View) (see only Number/serial No. of Photograph in Camera)		Yes / <input checked="" type="checkbox"/>
Monument Specification		
Monument Specification		As per the approved drawing
5 Schematic Sketch of the Location/ Site		
		
6 Contact Details of Contact / Authorized person		
Name of Authorized person / Contact Person at Tehsil / Village		

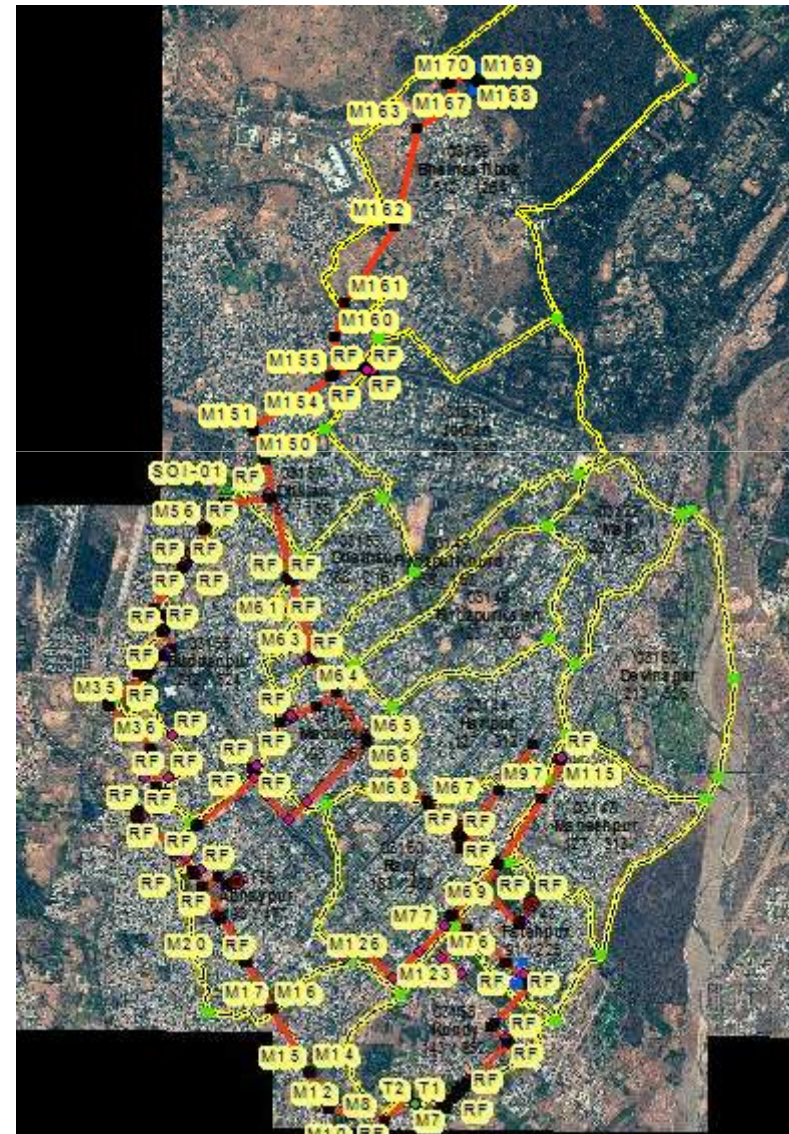
- Traverse around Priority Villages of Panchkula using ETS &
- Correction of Traverse Closing Error.



- Traverse around Priority Villages of Panchkula using ETS
- Special Care is taken while selecting GCP on ground so that it can be easily located on Satellite Data.

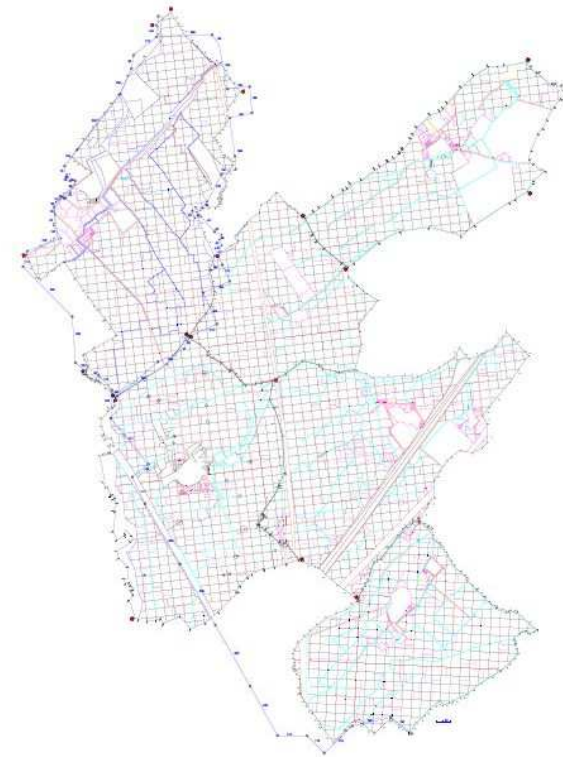


- Geo-referencing of High Resolution Satellite Data Using Auxiliary Point ESTABLISHED during ETS Traverse.
- Check Points are also established during Traverse



Mosaic of Villages

- All villages after Updation are Mosaiced
- A list of Co-ordinates were generated from Geo-referenced Mosaic.
- These Co-ordinates were then fed in ETS and Transferred on Ground using Stake-Out method.



Feat#	Lnk	Code	Remarks	Easting	Northing
191	191	GPS-5	DGPS Point	675797.847661	3394953.036790
190	190	M101	Traverse Point	675731.839573	3394930.292260
189	189	M100	Traverse Point	675650.547171	3395006.368460
188	188	M99	Traverse Point	675521.636355	3394917.781130
187	187	M98	Traverse Point	678230.034237	3396078.398050
186	186	M97	Traverse Point	677955.143758	3395705.517060
179	179	GPS-4	DGPS Point	678222.921949	3394762.528850
178	178	M96	Traverse Point	678113.212624	3394615.292300
177	177	M95	Traverse Point	678127.384317	3394602.005660
176	176	TTTBM-1	TBMs	677264.221799	3393130.193250
175	175	M94	Traverse Point	677433.101121	3393295.684600
174	174	TM1	TBMs	677519.865273	3393090.810960
173	173	M93	Traverse Point	677461.316383	3393280.571600
172	172	M92	Traverse Point	677535.711660	3393129.762350
168	168	M91	Traverse Point	677561.104768	3393174.708460
166	166	M90	Traverse Point	677609.008008	3393222.862730
165	165	M89	Traverse Point	677609.234303	3393240.979030
164	164	M88	Traverse Point	677642.771356	3393274.426450
163	163	M87	Traverse Point	677674.440624	3393280.094160
160	160	M86	Traverse Point	677696.745081	3393314.899890
157	157	M85	Traverse Point	677786.695568	3393371.299960

- Entire Data is downloaded from ETS
- Traverse Line Drawing is generated from this data
- Closing error is analyzed and eliminated using AutoCAD Civil.



Musavi

277
—
03





Handwritten text in a cursive script, possibly a list or account, with some underlined words.

29

Handwritten text

Handwritten text

12.3.29

Handwritten symbol

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EXISTING WAY OF KEEPING RECORD





ABOUT US

Haryana state has taken a lead in the modernization of land records in the state by digitizing the cadastral maps for better land management in the state. Under the newly launched centrally sponsored program called National Land Record Modernization Programme (NLRMP) being funded by Ministry of Rural Development, GOI,.....

[Read more](#)

OUR SERVICES

The Scheme of Computerization of Land Records was started in the State in the year 1990-91 when Rewari district was taken up as a pilot district for computerizing land records.

[Read more](#)

UNDER THE PROVISION OF



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Password:

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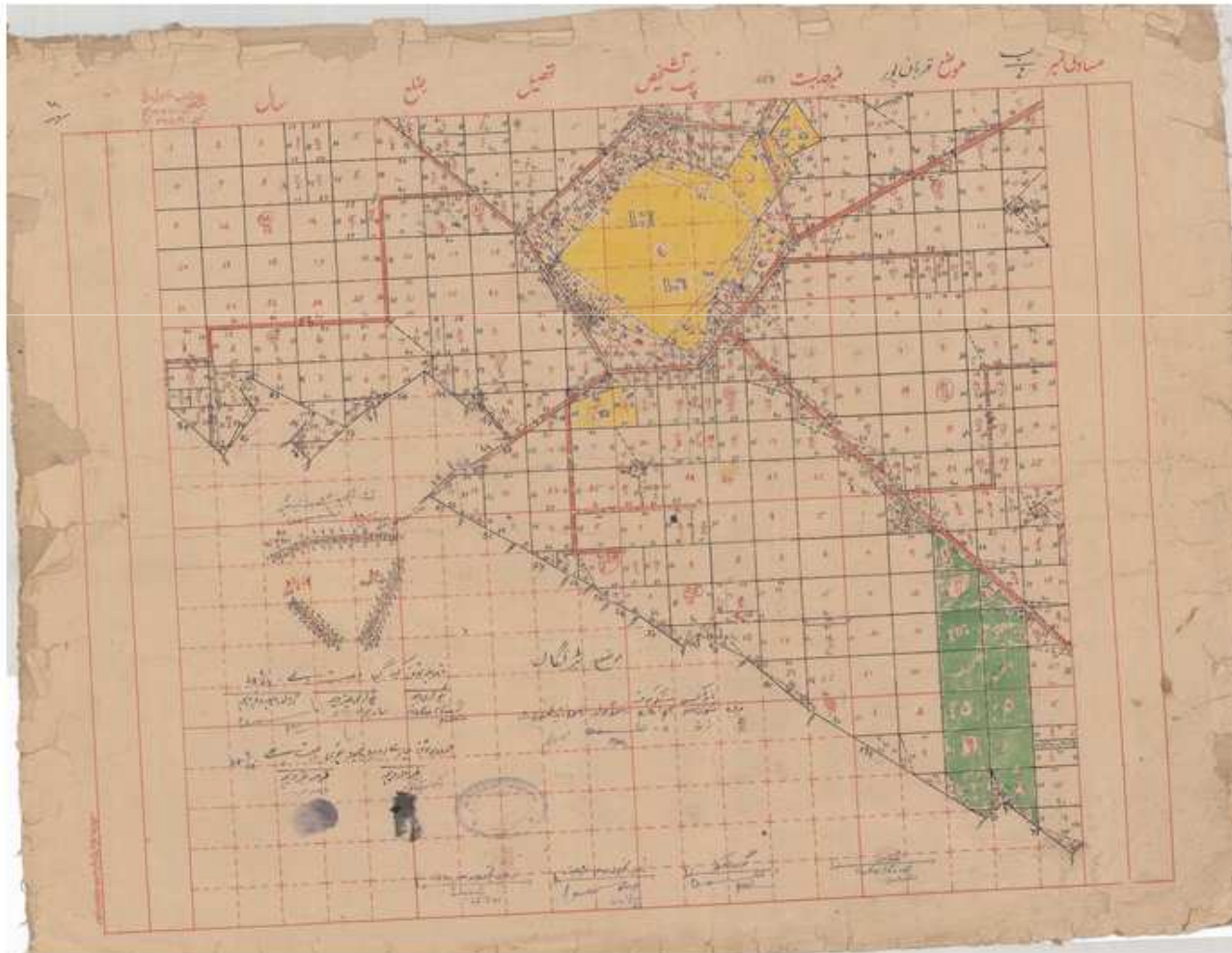
NLRMP Haryana –DMS Application

Identify Khasra Details in Hindi - After clicking on required Khasra

The screenshot shows the NLRMP Haryana DMS Application interface. On the left, there are filters for Document Type (Jamabandi), District (Ambala), Tehsil (Ambala), Village (Kurbanpur), Period, Murabba, and Khasara. A 'Show' button is visible. Below these filters is a 'Data Layers' section with checkboxes for 'Mis_poly' and 'Road'. The main area displays a map view with a grid of Khasra plots. A red box highlights a specific plot (Khasra 25). A pop-up window titled 'Identify' is open, showing a table of details for the selected Khasra plots.

नाम	पिताजी का नाम	दादाजी का नाम	Murabba	Khasra	Khewat	Khatoni	Kanal	Marla
महिन्द्र सिंह	सायन सिंह	तुलसी	5	25	66	101	8	0
जगीन्द्र सिंह	सायन सिंह	तुलसी	5	25	66	101	8	0
जसबीर सिंह	चरण सिंह	तेजा सिंह	5	25	66	101	8	0
महिन्द्र सिंह	गुरनाम कौर	सायन सिंह	5	25	66	101	8	0
जोगिन्द्र सिंह	गुरनाम कौर	सायन सिंह	5	25	66	101	8	0

[Go Back](#)



District

Tehsil

Village

Document

Period

Musavis

[Show Document](#) [Print](#)

[Previous Page](#) [Next Page](#)

107	5-7	718	107	5-7	718	107	5-7	718	107	5-7	718
	7-18	718		7-18	718		7-18	718		7-18	718
	8-1	718		8-1	718		8-1	718		8-1	718
	7-4	718		7-4	718		7-4	718		7-4	718
	7-17	718		7-17	718		7-17	718		7-17	718
	5-16	718		5-16	718		5-16	718		5-16	718
	6-1	718		6-1	718		6-1	718		6-1	718
	1-12	718		1-12	718		1-12	718		1-12	718
	3-5	718		3-5	718		3-5	718		3-5	718
	2-16	718		2-16	718		2-16	718		2-16	718
	2-13	718		2-13	718		2-13	718		2-13	718
	18	718		18	718		18	718		18	718
	107-13	718		107-13	718		107-13	718		107-13	718



Storage System for NLRMP

NLRMP Data is Invaluable

- Land Records
 - One of the most important record in the state
- Fundamental blocks for developing NLRMP Database
 - Satellite Imagery / Aerial Imagery / ETS
 - DGPS Control Points
 - Digital Elevation Models
 - Orthorectified Dataset
 - Scanned Documents
 - Vector Maps
 - GIS Database (includes all)
- Significant Value Addition by Implementing agency
 - Almost Double the Investment

Storage Solution – Some Thoughts

- Imperative to protect this “Invaluable Data”
- Digital Information Storage
 - Comprehensive
 - Latest Technology
 - Fast Retrieve
 - Expandable
 - Should Use Commodity Hardware
 - Provide adequate security, backup & disaster recovery
 - Integrated with Metadata
 - For easy search & discovery
 - Integrate with Spatial Data Infrastructure
- Ensure Longevity of Digital Information

PROOF OF CONCEPT

– All Service Providers completed an end-to-end Proof of concept

– Problems Identified in respective villages

– Solved in consultation with Revenue officers of respective Tehsils

– Khewat wise with latest Jamabandi was distributed to each owner

– Later on a Jalsa-E-Aam was conducted in PoC village

– Grievances were solved

Jalsa e- Aam Kurbanpur



January 30, 2013

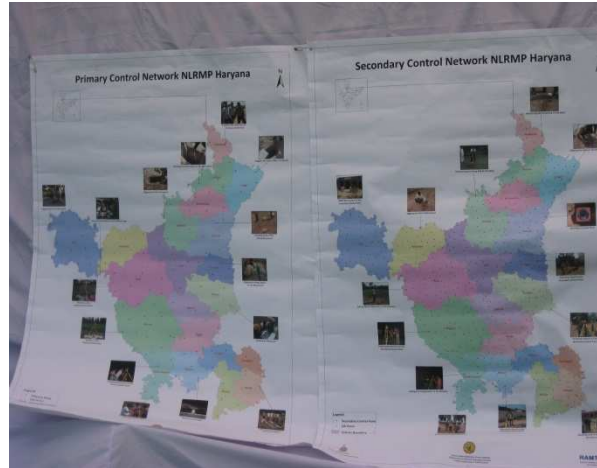
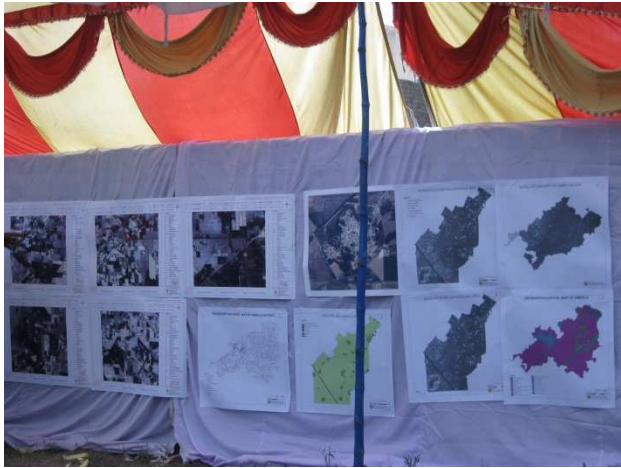
JALSA-E – AAM

Village Bhandhaheri Distt. Hisar





Map Gallery



January 30, 2013





ठीक है जो भी है हमने तो सुविधा चाहिए बस....

इब बुढापे में भी कम्प्युटर सिखना पड़ेगा....

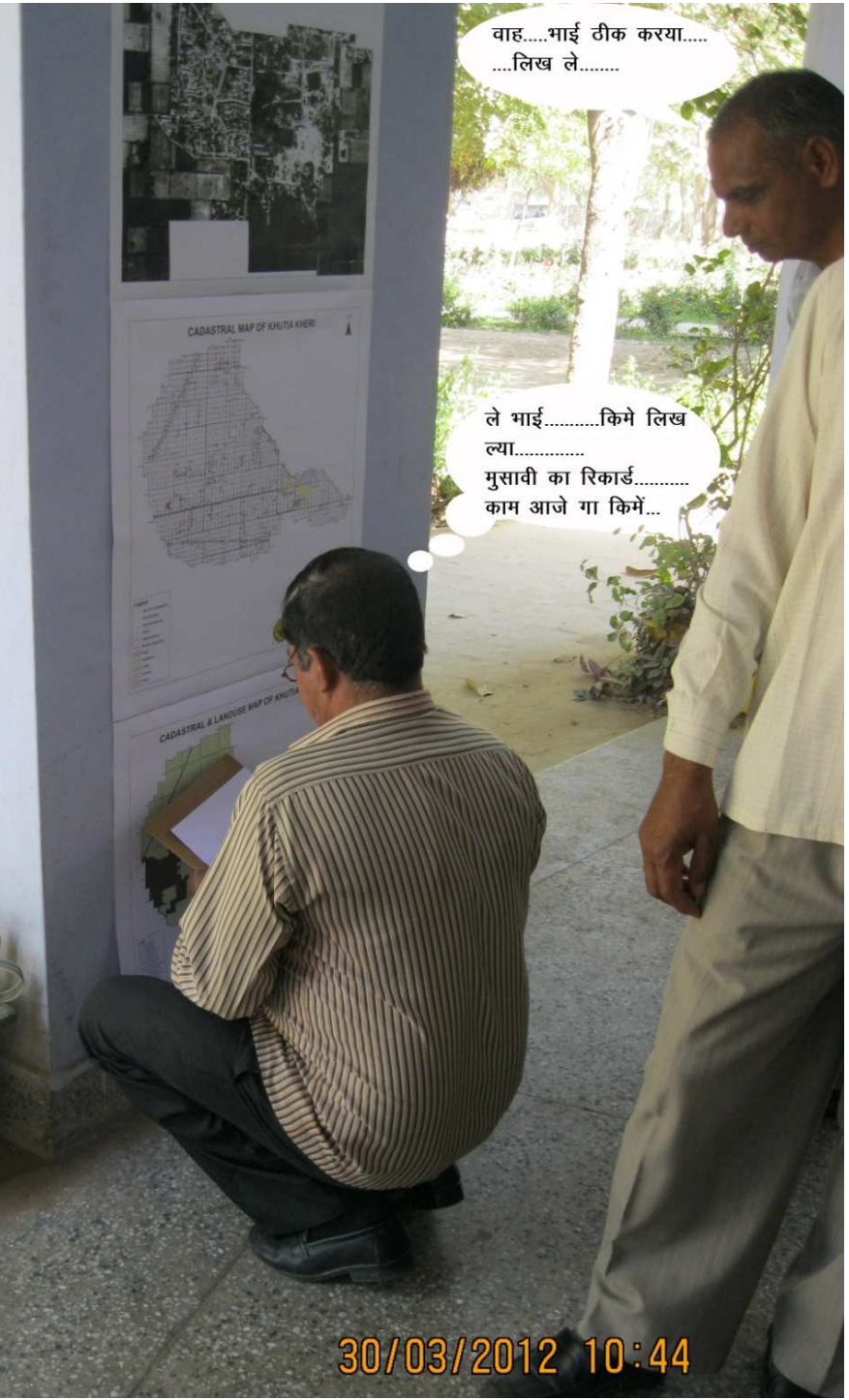
दिमाक तो लगाना पड़ेगा भोत दोखी चीज हे आ तो...

30/03/2012 10:51



ले भाई..... अपना तो पूरा फायदा हो गया.....
सारा का सारा रिकार्ड मिल गया जमीन का वाह.....

30/03/2012 10:47



वाह.....भाई ठीक करया.....
....लिख ले.....

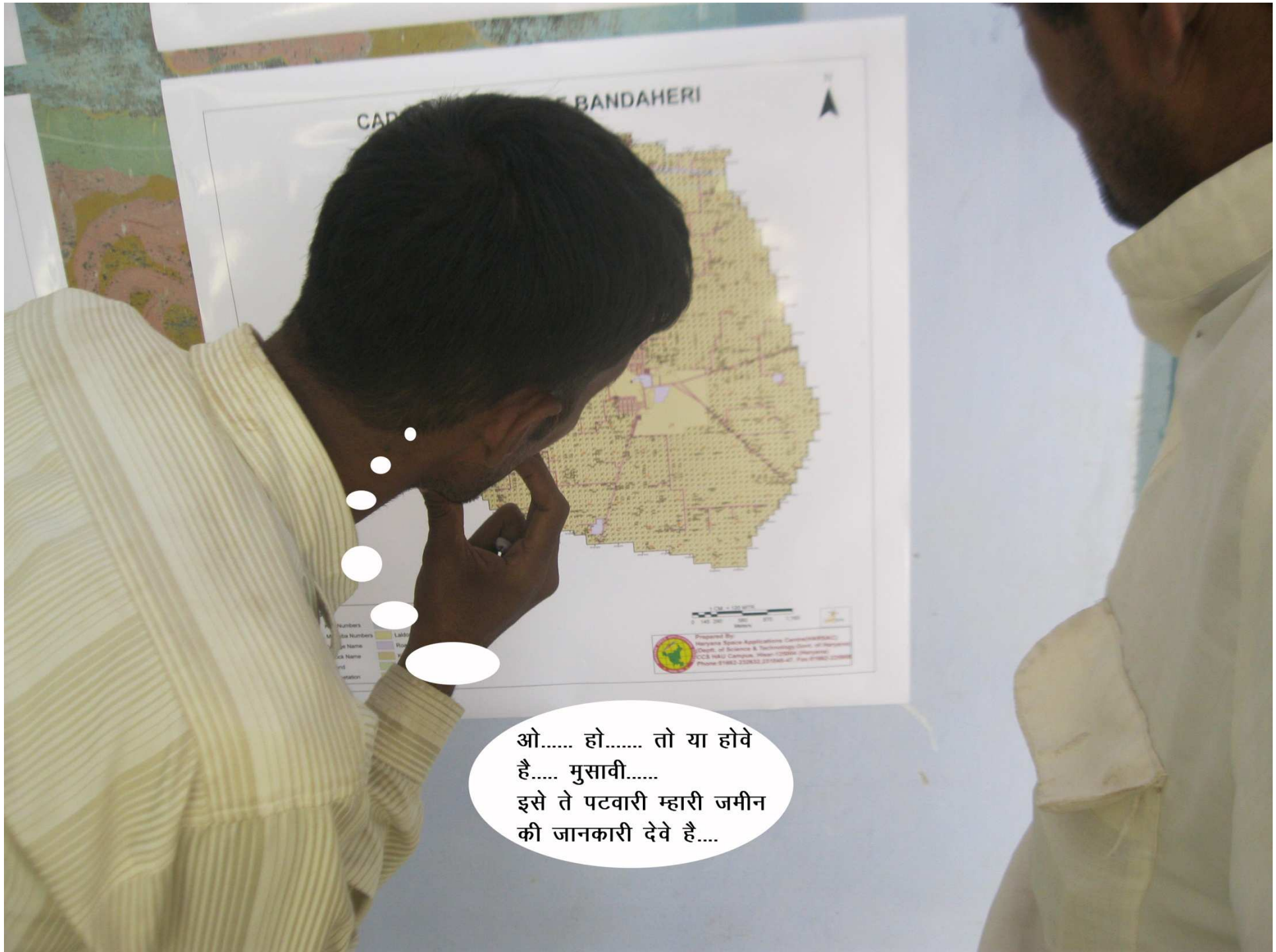
ले भाई.....किमे लिख ल्या.....
मुसावी का रिकार्ड.....
काम आजे गा किमें...

30/03/2012 10:44

अरे यो सेटेलाइट के बला
हैं.....
अर ये नक्शे से के है.....

कीमे हो भाई..... आपना
काम जे गा आसान हो....
और आपा ने के लेना हैं.....

30/03/2012 10:32



ओ..... हो..... तो या होवे
है..... मुसावी.....
इसे ते पटवारी म्हारी जमीन
की जानकारी देवे है....



के देखो हो पटवारी
साब.....

ओ कालो-कालो ज्को
है ओ सारो पानी है....
जोहड़ हो सके हैं...

30/03/2012 10:32



हा जी वो तालाब हैं....
आपने सही पहचाना

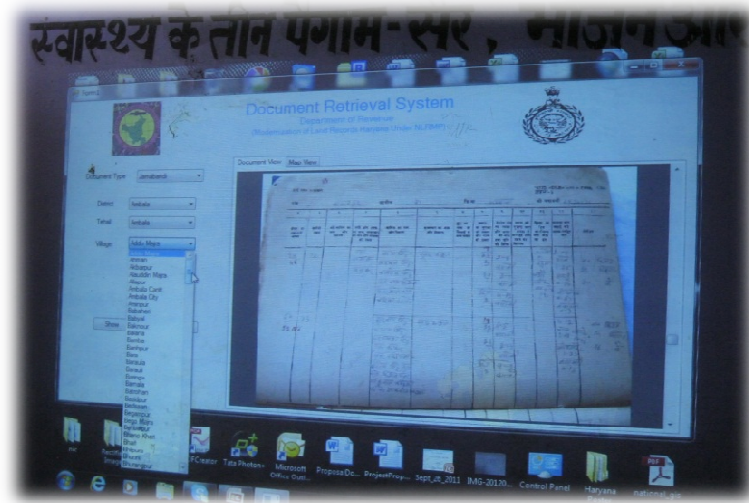
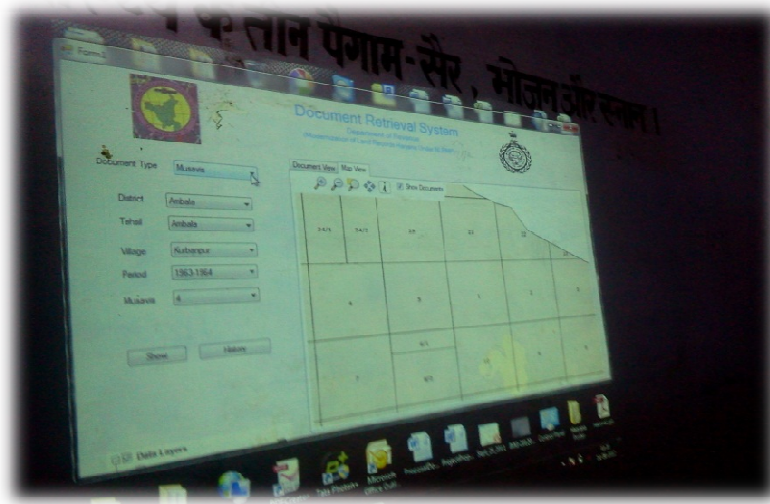
क्या वो जो काला हिंसा
है वो
पानी का तालाब हैं.....?

हा.... ओके...
मैं भी जरा देख लु के और क्या-क्या
जानकारी है इसमे....

आप वो जो देख रही हैं
वो गांव का आबादी वाला
क्षेत्र है.....

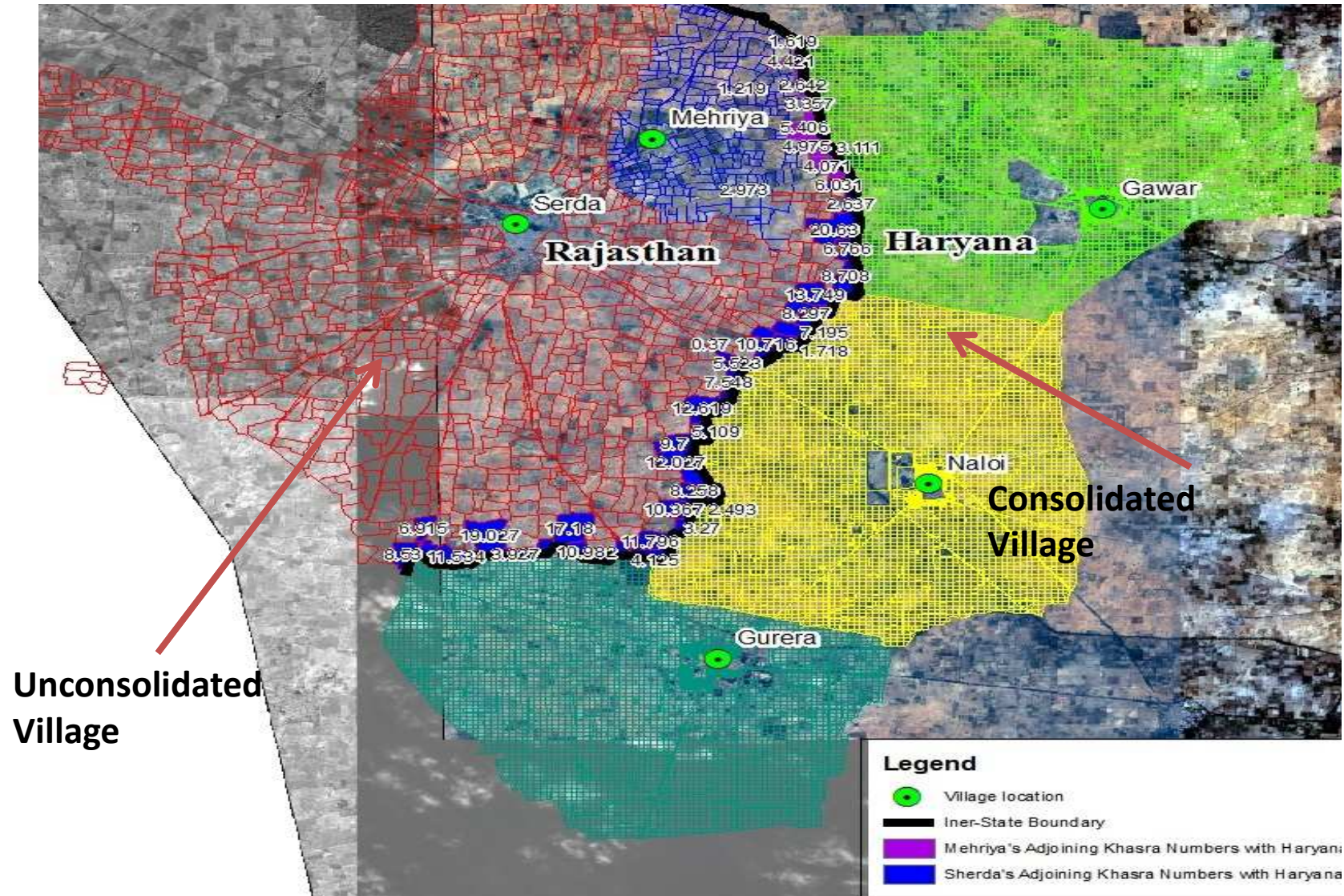


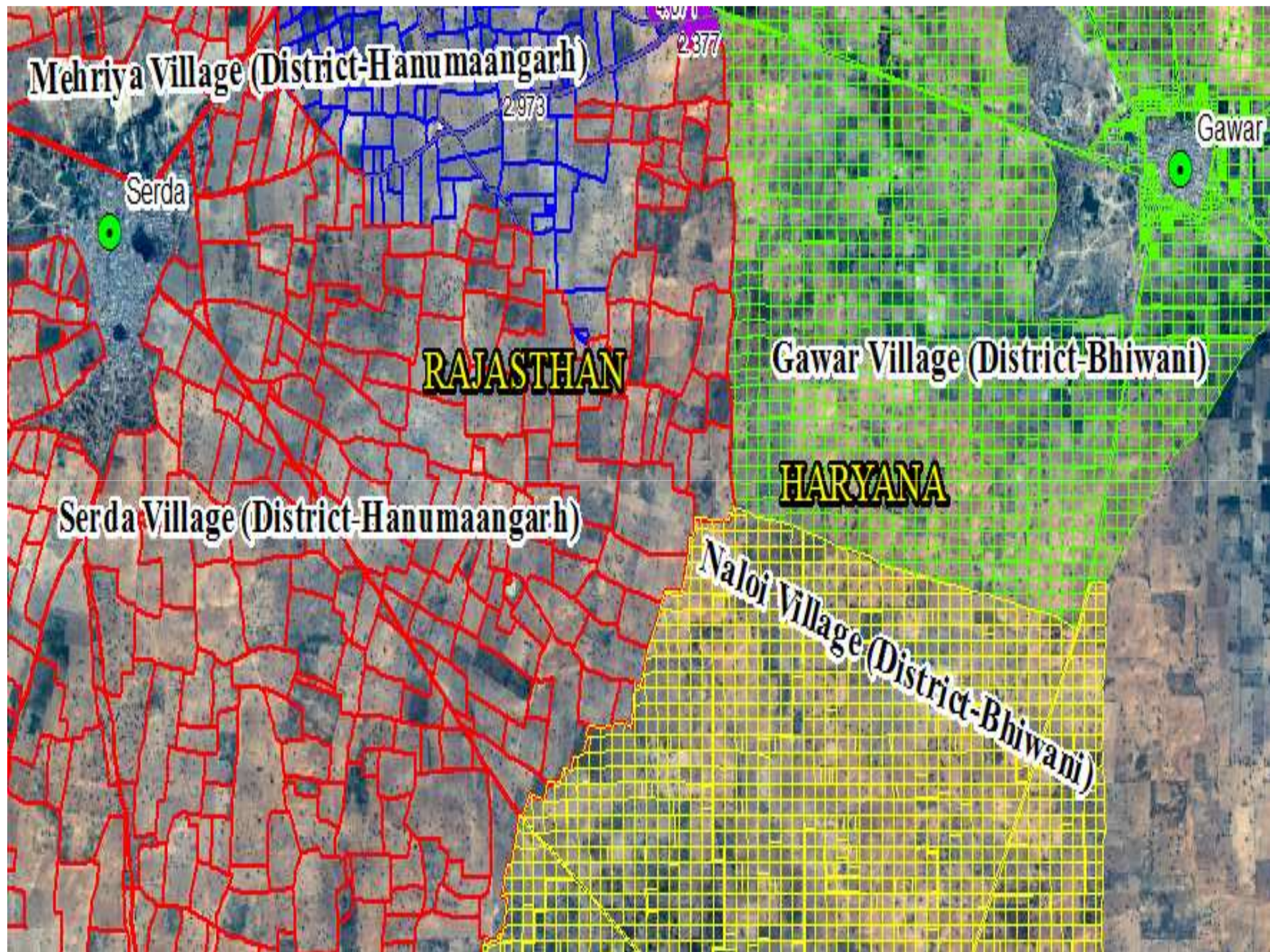
DMS Introduction to Villagers

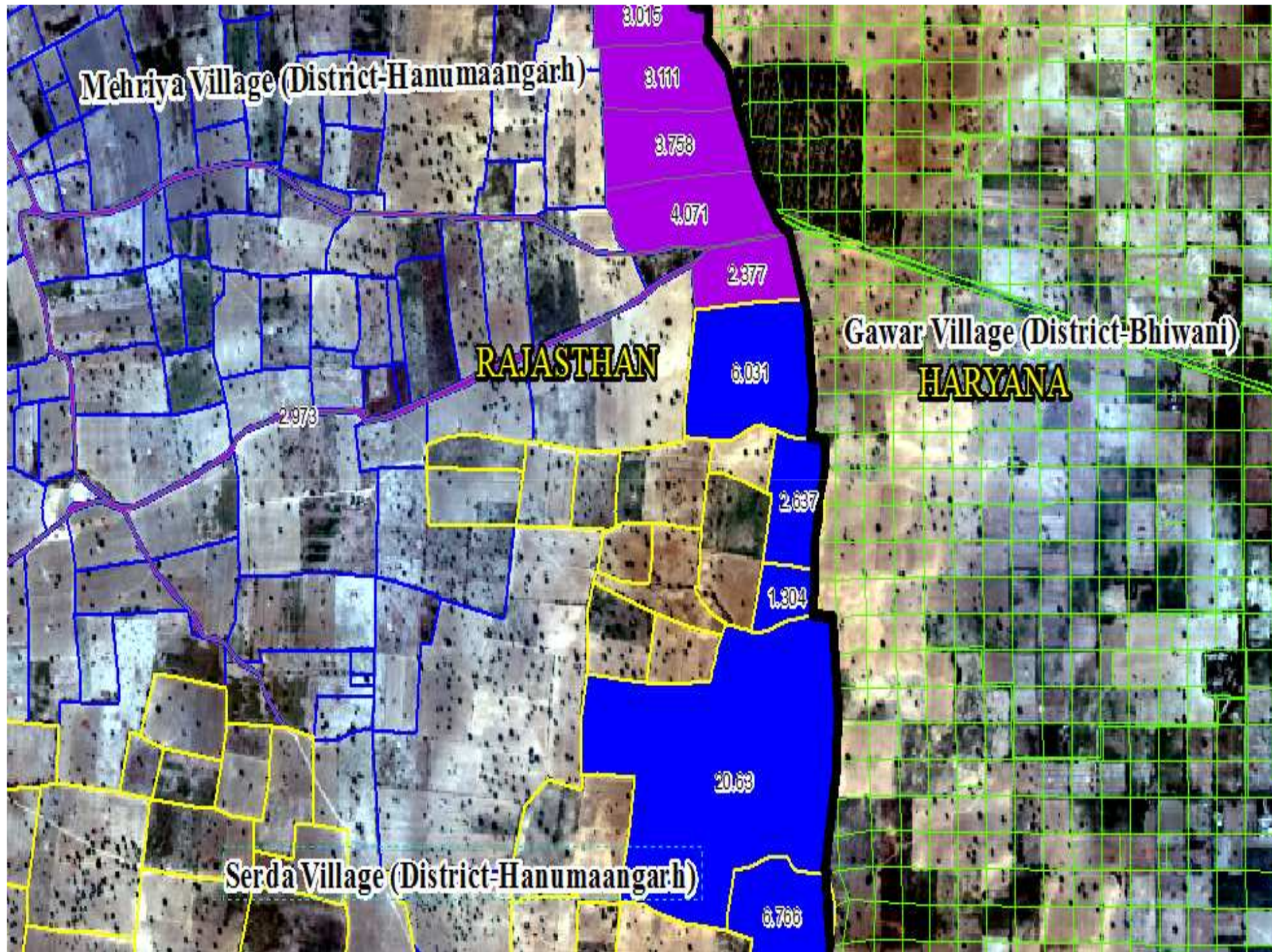


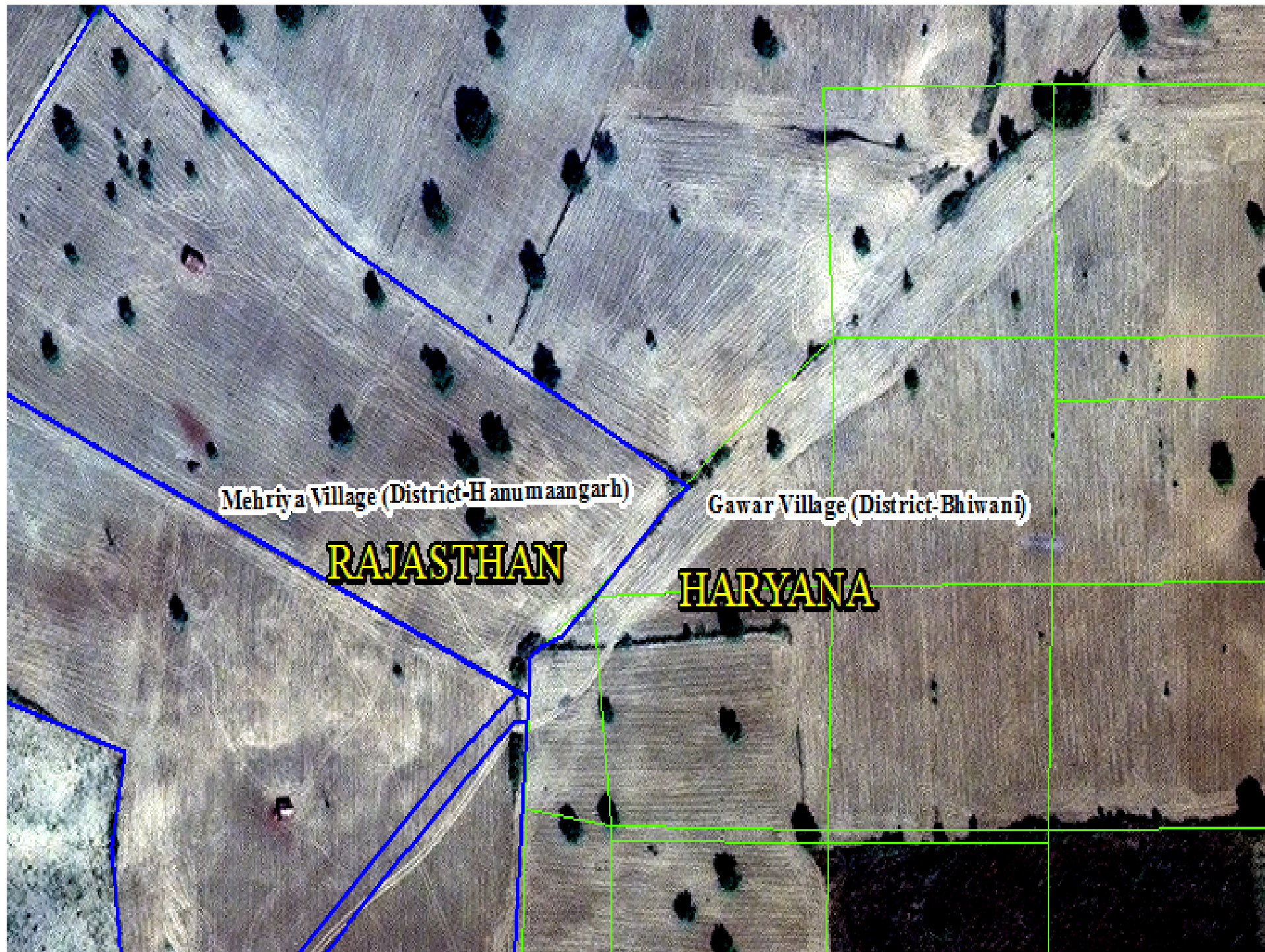
January 30, 2013

INTERSTATE CADASTRAL MAPPING ACCURACY ASSESSMENT









Mehriya Village (District-Hanumaangarh)

Gawar Village (District-Bhiwani)

RAJASTHAN

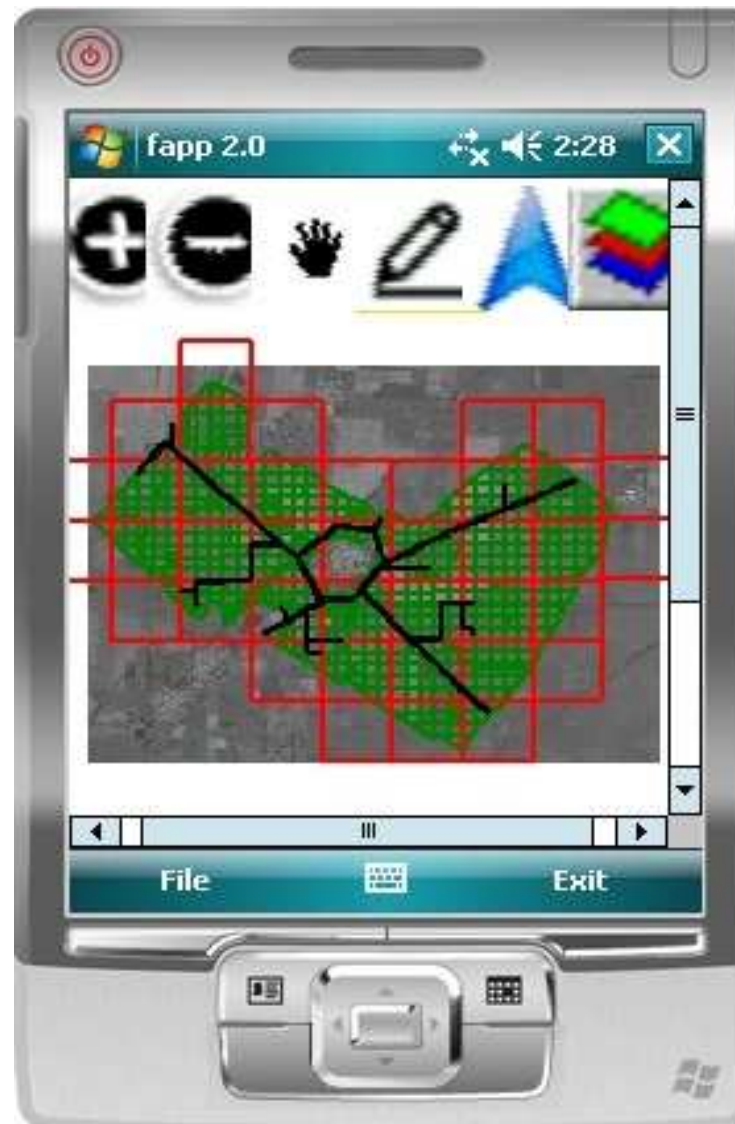
HARYANA

INTERSTATE COMPARISON OF AREA

Village- Mehriya				Tehsil- Bhadra			District-Hanumaangarh	
Total Area in hect. as per ROR	Total Area from scale based Map(sajra)	Area Difference in hect. (ROR-Map)	Area Difference in % (ROR-Map)	Total Area in Hect. From Satellite Data	Area Differnce in hect. (ROR-Image)	Area Difference in % (ROR-Image)	Area Difference in hect.(Map-image)	Area Difference in % (ROR-image)
663.23	660.451	2.779	0.419009997	657.195	6.035	0.909940745	3.256	0.493

Village- Sherda		Tehsil- Bhadra		District-Hanumaangarh			Division-Bikaner	
Total Area in hect. as per ROR	Total Area from scale based Map(sajra)	Area Difference in (ROR and Map)	Area Difference in % Hec (ROR	Total Area in Hect. From Satellite Data	Area Difference in Hec (ROR and Image)	Area Difference in % (ROR and Image)	Area Difference in Hec (Map and Image)	Area Difference in % (Map and Image)
4401.54	4365.18	36.36	0.82607451	4370.09	31.450	0.715	4.910	13.504

Future-ICT Patwari in Haryana



Advantages of Using Stereo HRSI for NLRMP

- Large area coverage and timely availability. This saves time and minimizes ground work .
- Accurate geo-referencing of image and cadastral maps using the reflecting benchmark points surveyed using DGPS.
- Overlaying of the digital cadastral maps on HRSI provides information of the gaps in the village boundaries.
- Using the stereo satellite data and photogrammetry process, issues like relief distortion and scale correction is addressed.
- Helps in Identification of Sehda stone location for tertiary survey.

**Small
Efforts
May
Lead to
Big
Results**



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