



सत्यमेव जयते

GOVERNMENT OF INDIA
DEPARTMENT OF LAND RESOURCES
MINISTRY OF RURAL DEVELOPMENT



UN-GGIM

UNITED NATIONS
COMMITTEE OF EXPERTS ON
GLOBAL GEOSPATIAL
INFORMATION MANAGEMENT

Regional Seminar on “Effective Land Administration & Management: An INDIAN Context”



Kunal Satyarthi
Joint Secretary
Government of India

26th November, 2024
Bharat Mandapam, New Delhi, India

Land Records and Digitization: FACTS

Land - ***finite natural resource*** – Main source of livelihood, pride, emotions and socio-economic value and the only asset for most citizens

Welfare services & benefits of ***government schemes*** primarily depend on land records

To avail ***services/benefits*** based on land rights and for transaction of land (Sale/purchase/mutation etc.) a prospector has to **visit various offices/ numerous times**

Inter-sectoral/ departmental/ services *significance*
(Revenue, Registration, Banks, Courts etc.)

Land Records and Digitization: FACTS (Contd.)

Land Administration and management is *diverse* - language, culture, regions, topography, nomenclature, measurement, formats

Land and its management fall in the *domain of the States*, Central Government is implementing DILRMP (financial and technical support) (Entry Nos. 18 and 45 in **State List of Constitution of India**)

Digitisation of land records with accurate and updated information and its easy online access to the public (Ease of living and Ease of business)

Single source of authentic information about land (encumbrances, disputes etc) is required



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Past to Present

Asymmetrical
Land
Management
System

British Period

After
Independence
1947

2008-09
Upgradation of Land
Records(ULR)
NLRMP

DILRMP
2016
For Rural Agricultural

100% Central
Funding

SVAMITVA
2021
For Rural Habitations

DILRMP is extended to Urban
Areas for creating Land Records

NAKSHA Pilot 2024
Urban Habitations
Land Records

36 States/UTs

28 States

8 Union Territories

785 Districts

7128 Sub-Districts

7256 Development Blocks

664580 Villages

- 648595 Inhabited Villages
- 15216 Un-inhabited Villages
- 769 Forest Villages

Rural

- 665 District Panchayats
- 6706 Block Panchayats
- 255198 Village Panchayats
- 640740 Rural Villages
- 262569 Rural Localbodies
- 16152 Traditional Localbodies
- 14 District Level
- 2288 Block Level
- 13850 Village Level

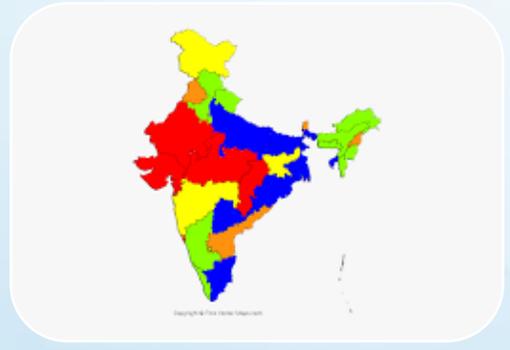
Urban

- 253 Municipal Corporation
- 1904 Municipality
- 2418 Town Panchayats
- 14252 Urban Villages
- 4906 Urban Localbodies

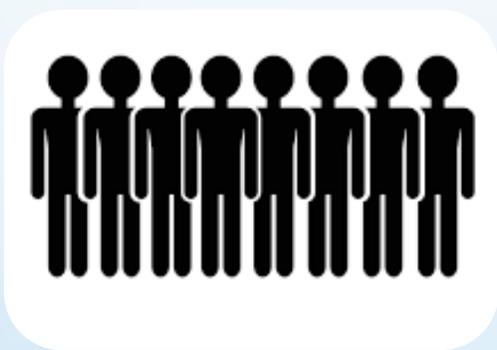
Other Organizations and Departments

- 2318 Center
- 1689 States/UTs
- 566

Source: <https://lgdirectory.gov.in/>



Geographic Area :
3.28 Million sq.km



Population :
1.4 Billion



GDP : \$3.73 trillion
(Apx)



Federal Structure:



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Digital India Land Records Modernization Programme (DILRMP)

Years of implementation (2021-26)

- Covers all rural agricultural land in villages across the Country
- Financial Outlay- Rs. 875 crores (Rs. 8,750 Million)



Nodal Department GoI	Nodal Department at States	Technology Partner
Department of Land Resources	Revenue Department	National Informatics Centre (NIC)



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Major Components of DILRMP

Computerization of Land Records

Computerization of Registration

Project Management Unit (PMU)

Computerization of Revenue Courts



Consent-based linkage of Aadhaar with Record of Rights

Survey/ Resurvey

Modern Record Rooms

Training & capacity building, IEC and Evaluation Studies



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Digital India Land Records Modernization Programme (DILRMP)



95%

Computerization of
Record of Rights
(RoRs)



94.9%

Computerization of
Registration



87.6%

Integration of SROs
with Land Records



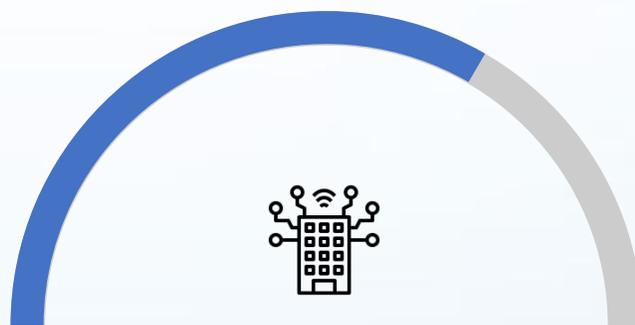
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Digital India Land Records Modernization Programme (DILRMP)



83.4%
Digitization of
Cadastral Maps



85.66%
Modern Record
Rooms

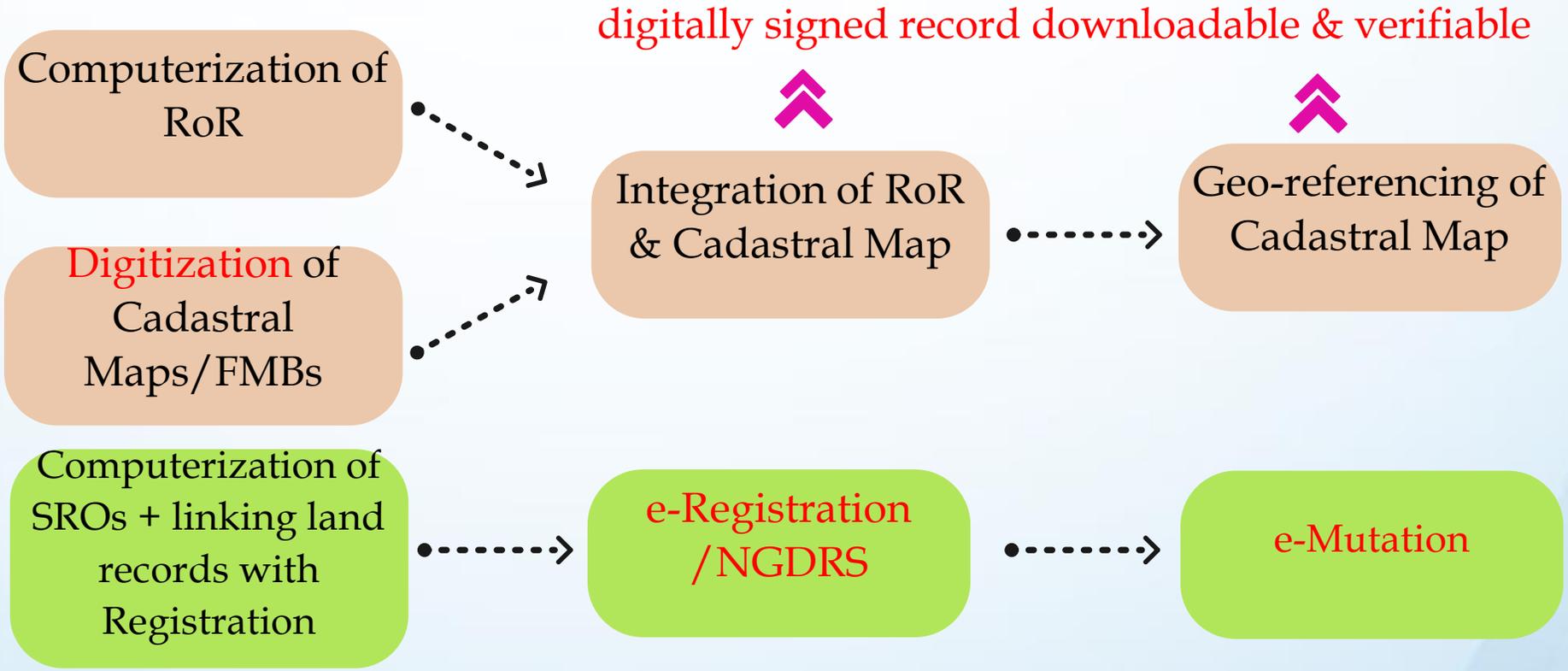


63.5%
Issuance of
Digitally signed
RoRs

Stages of Land Records Digitization & Registration

Generation of Bhū-Aadhar
or ULPIN

Land records Digitization Stages
Registration Process Stages





Bhu-Aadhar or Unique Land Parcel Identification Number (ULPIN)

- **14 digit Alpha-Numeric** Unique ID for each land parcel
- Based on **geo-coordinates of vertices** of land parcel
- **Standardization**, Tracking of all land transactions
- Ease in Governance: Seamless sharing and **Cross validation of land records**
- Utility across Sectors/ Agencies/ Authorities/courts
- Enables **multi service delivery**





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Bhu-Aadhar or Unique Land Parcel Identification Number (ULPIN)

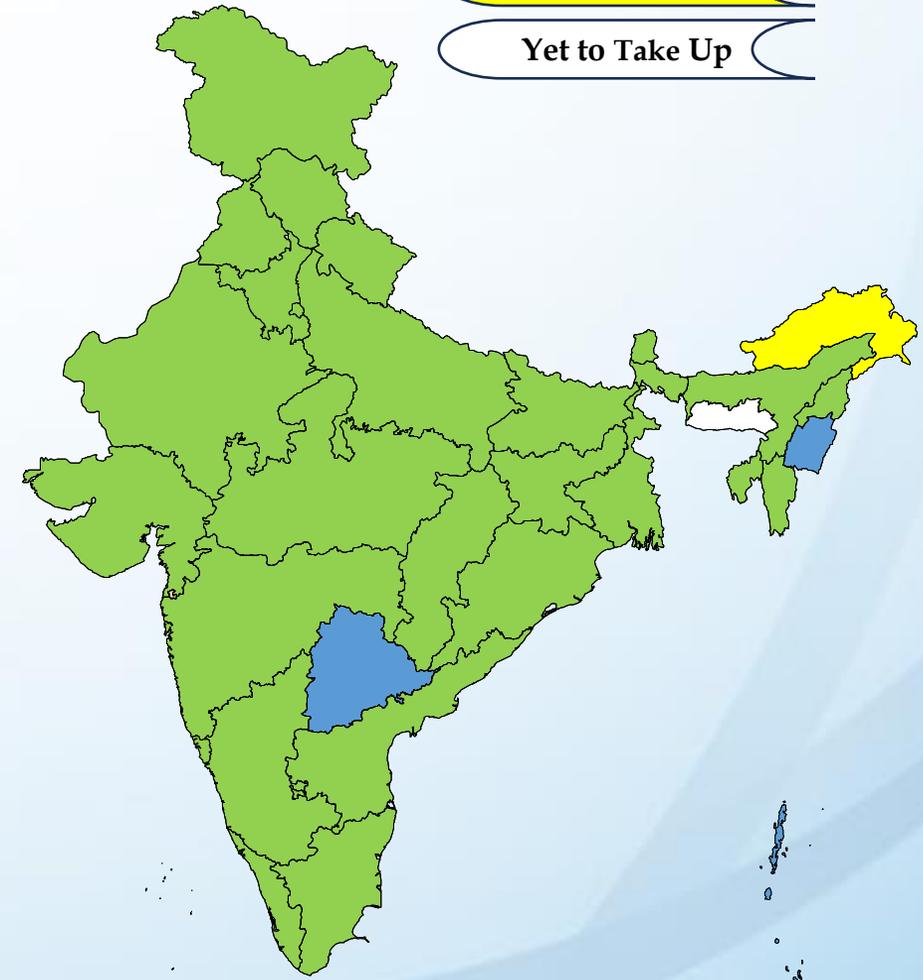
Rolled Out

Pilot

Under Process

Yet to Take Up

- **149+ Million** Bhu-Aadhaar assigned
- **29 States/UTs** have adopted Bhu-Aadhar or ULPIN



Status	States/UTs	Total Nos.
Rolled Out	Andhra Pradesh, Jharkhand, Goa, Bihar, Odisha, Sikkim, Gujarat, Maharashtra, Rajasthan, Haryana, Tripura, Chhattisgarh, Jammu & Kashmir, Assam, Madhya Pradesh, Nagaland, Mizoram, Tamil Nadu, Punjab, Dadra and Nagar Haveli & Daman and Diu, Himachal Pradesh, West Bengal, Uttar Pradesh, Uttarakhand, Kerala, Ladakh, Chandigarh, Karnataka and Delhi	29
Pilot	Puducherry, Andaman & Nicobar, Manipur, Telangana	4
Under Process	Arunachal Pradesh	1
Yet to Take Up	Meghalaya and Lakshadweep	2



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E-Registration or National Generic Document Registration System (NGDRS)

Rolled Out

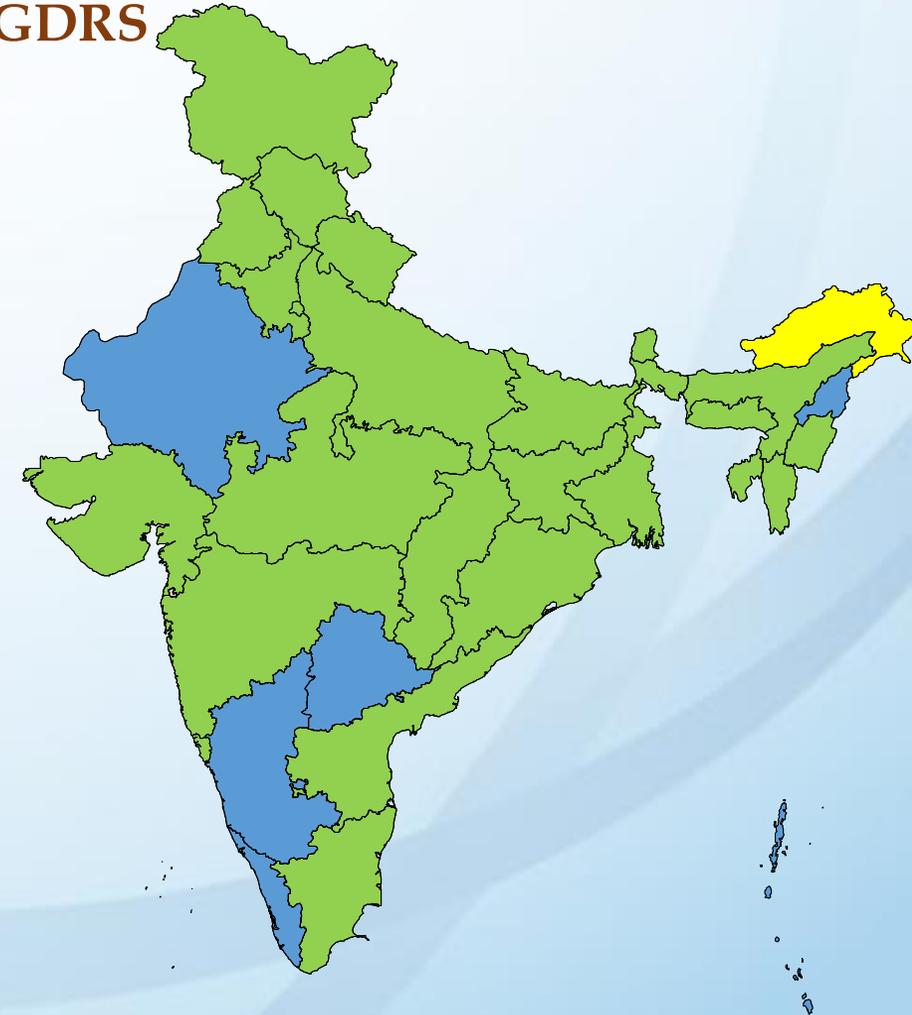
Pilot

Yet to Adopt

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➤ **30** States/UTs have adopted the NGDRS/Linked with NGDRS

Status	States/UTs	Total Nos.
Rolled Out	Andaman & Nicobar Island, Goa, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Ladakh, Punjab, Tripura, Maharashtra, Mizoram, DNH & DD, Manipur, Assam, Bihar, Chhattisgarh, Meghalaya and Uttarakhand	30
Linked with NGDRS	Andhra Pradesh, Haryana, Chandigarh, NCT Delhi, Gujarat, Madhya Pradesh, Odisha, Sikkim, Tamil Nadu, Uttar Pradesh, Puducherry, Telangana and West Bengal have started sharing registration related data with national portal of NGDRS- www.ngdrs.gov.in through API /UI	
Under Process	Arunachal Pradesh	1
Yet to Adopt	Rajasthan, Karnataka, Lakshadweep, Nagaland and Kerala	5





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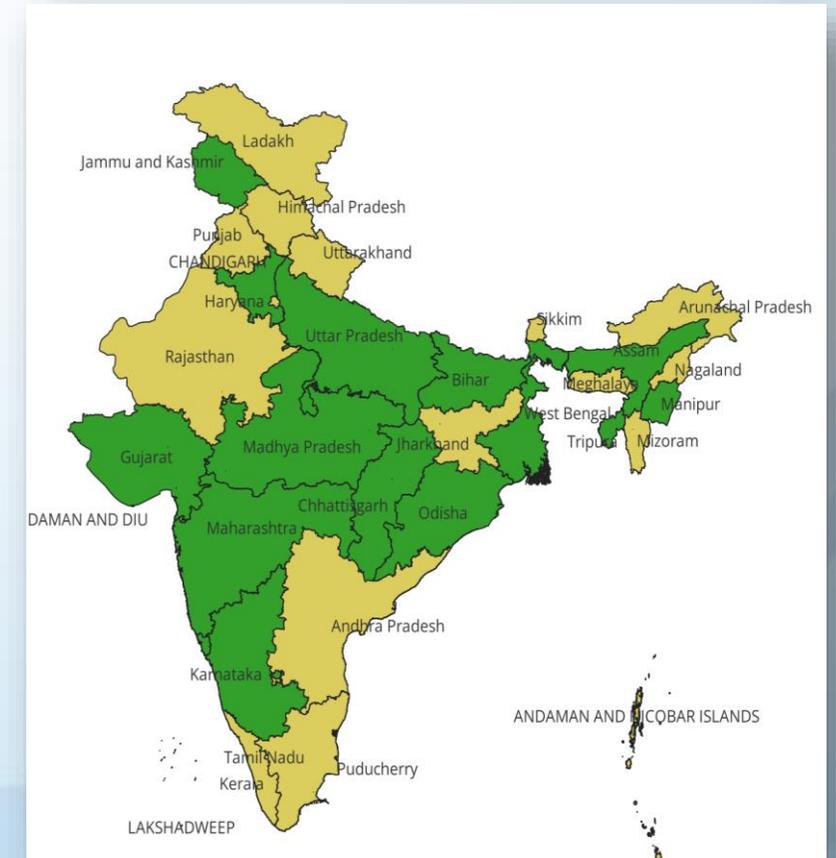
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Transliteration of Land Records to break linguistic barriers

Transliteration tool is available on the respective websites on land records of **17 States/UTs** viz. Assam, Bihar, Chandigarh, Chhattisgarh, Goa, Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Manipur, Odisha, Puducherry, Tripura, UP, West Bengal and J&K

Link of the State / UT websites are given below:

State	URL
J&K	https://landrecords.jk.gov.in/Reports/JMReport
Maharashtra	https://bhulekh.mahabhumi.gov.in
Gujarat	https://anyror.gujarat.gov.in
Bihar	http://biharbhumi.bihar.gov.in/Biharbhumi/
Puducherry	https://nilamagal.py.gov.in/
Haryana	https://jamabandi.nic.in/land%20records/NakalRecord.aspx
Goa	https://dslr.goa.gov.in/
Chandigarh	https://revenue.chd.gov.in/Nakal.aspx
UP	https://upbhulekh.gov.in/public/public_ror/Public_ROR.jsp https://upbhulekh.gov.in/public/public_ror/Public_ROR_Ansh_new.japani
MP	https://mpbhulekh.gov.in
Tripura	https://jami.tripura.gov.in/EODB/citizen_search.aspx
Chhattisgarh	https://bhuiyan.cg.nic.in





भूमि संसाधन विभाग
DEPARTMENT OF
LAND RESOURCES

NAtional **K**nowledge-based land **S**urvey of urban **H**abitations **(NAKSHA)**

Creating Land Records In Urban Areas



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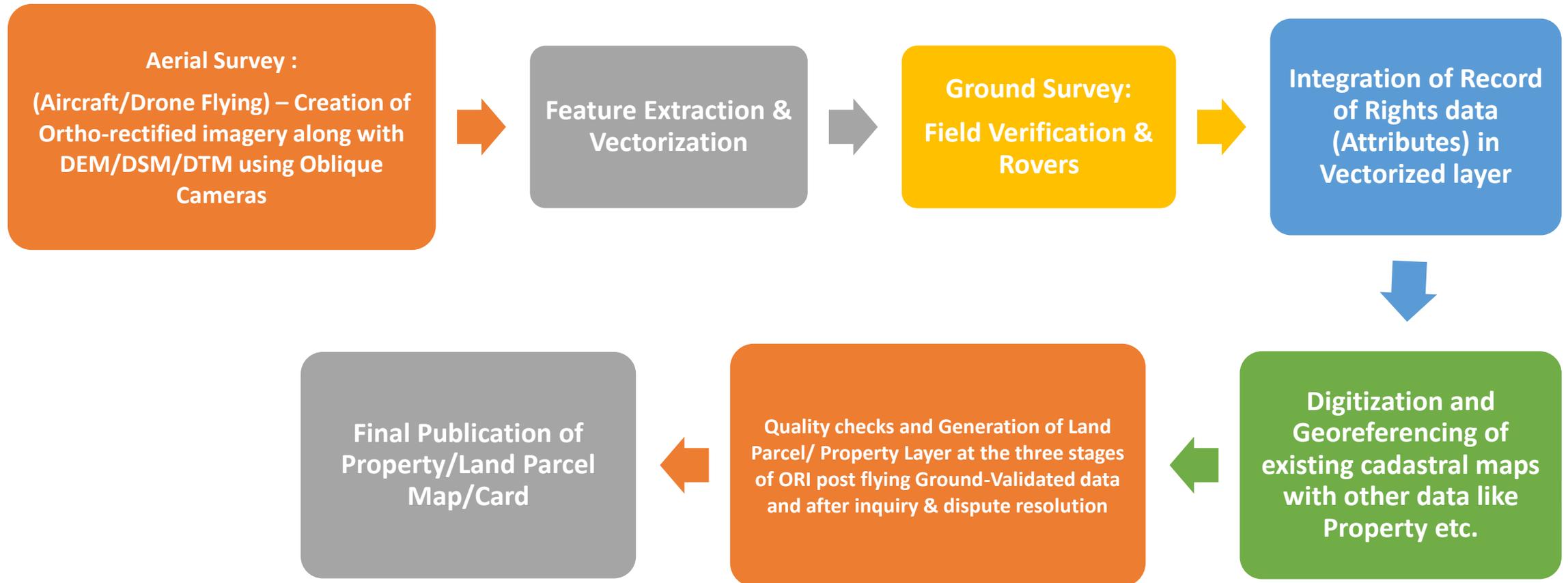
NAKSHA PILOT PROGRAMME (2024-25)

NAKSHA aims to provide the 'Land Records' in urban areas and issuance of Urban Land Records to the owners.

- to ensure that urban land records are accurate and up-to-date
 - empowering urban citizens, improving ease of living
 - enabling better property tax collection, utilities, disaster management & urban planning
 - Creation of WebGIS infrastructure
- Covers more than **150 ULBs** in the Country
 - Financial Outlay- Rs.193.8 crores (**Rs. 1,938 Million**)

Nodal Ministry, GOI	Nodal Department at States	Technology Partner
Department of Land Resources	Revenue / Urban Development/ Local Self Government Department	Survey of India

NAKSHA: Flow chart





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NAKSHA: Methodology

Aerial Survey

1

2D **Nadir** Camera with 2D feature extraction

2

Oblique angle camera (5 cameras) and data acquisition for creation of 3D reality Model and creation of 3D GIS dataset

3

Oblique angle camera (5 cameras) with **LiDAR Sensor** for creation of 3D reality Model and creation of 3D GIS dataset



पंचायती राज मंत्रालय
भारत सरकार

Ministry of Panchayati Raj
Government of India

स्वामित्व SVAMITVA

(Survey of Villages and Mapping with
Improved Technology in Village Areas)

**Survey of Villages And
Mapping with
Improved Technology
in Village Areas**

(SVAMITVA)



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SVAMITVA SCHEME

SVAMITVA aims to provide the 'Record of Rights' to village household owners in rural abadi areas and issuance of Property cards

Nodal Ministry	Nodal Department at States	Technology Partner
Ministry of Panchayati Raj	Revenue Department/ Panchayati Raj Department	Survey of India

Scheme (FY 2020-25)

- Covers all eligible inhabited villages across the Country
- Establishment of 567 CORS network
- Financial Outlay- 566.23 crores (Rs. 5,662 Million)
 - Creation of accurate land records
 - Creation of survey infrastructure and GIS maps





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Continuously Operating Reference Stations (CORS)



भारतीय सर्वेक्षण विभाग
Survey of India
विज्ञान और प्रौद्योगिकी विभाग
Department of Science & Technology

Pan India CORS services launched - August 2023

<https://cors.surveyofindia.gov.in/>

User Statistics



5684 Registered Users
12 Million + Hours Data

Densification of the
CORS Network is
under process,
especially in the
urban and hilly
areas.

CORS Network - 1042 stations
established by Survey of India

Merging of



CORS infrastructure
established by other
agencies with National
Network



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Drone Based Survey in Rural Areas

SVAMITVA Programme of Govt. of India

Based on the very high-resolution Ortho-rectified images generated from the Drone survey, property parcels are digitized and Record of Rights are issued in the rural inhabited areas.



Creation of accurate land records



Enabling the Citizens to use their property as a financial asset



Decision on Property Tax



Creation of Survey Infrastructure and GIS maps



Support Gram Panchayat Development Plan (GPDP)





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Drone Based Survey in Rural Areas

SVAMITVA Programme of Govt. of India

Project Implementation Work Flow



MoU signing between SOI and State



Gram Sabha & IEC activities



Marking of Properties



Ground Control Points



Drone Survey



Data Processing & Feature Extraction



Objection Process/Dispute Resolution



Property Card Distribution



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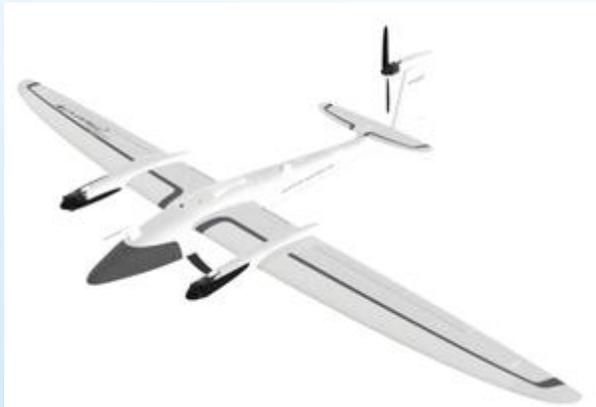
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Drone Based Survey in Rural Areas

SVAMITVA Programme of Govt. of India



Quadcopter



Fixed Wing with VTOL capability

400 + SoI Drones

100 + Drone as a Service

Every Minute an SoI Drone takes off

300,000 + villages completed

160,000,000 + images

4 PB + Geospatial Data Generated



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Inhouse data Processing



100+ high end/Mid-level systems
No of images \approx 500-1000 per village
Data size \approx 5 GB per village



Processing on cloud



Data transfer from Field to Office
- Physical transfer or online
- Direct uploaded on to the cloud



Challenges

- Survey / Resurvey methodology and Technology
- Mismatch between traditional & new measurement
- Community land ownership in North East States
- Non-Availability of the surveying and digitization expertise (agencies) locally
- Requirement of highly skilled manpower, specially IT/GIS professionals
- Long gestation period, voluminous work, time consuming processes
- Lack of Network Support and low bandwidth



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Way Forward

- **Citizen Centric** Approach and Public Engagement
- Simplification and **revisit of regulations**
- IEC, Training, Incentivization and Capacity Building
- **Saturation of digitization & georeferencing**
- Focus on georeferencing and second & third generation reforms like e-Registration, Bhu-Aadhaar or ULPIN, Transliteration & Translation of LR and GIS based Land Governance
- Technology based solutions (AI/ML) and effective public service delivery
- **Conclusive titling and de-materialization of land & property**
- Strong connectivity infrastructure
- **Whole of Government and Role based approach**
- **Minimum Government, Maximum Governance**



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Thank You

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