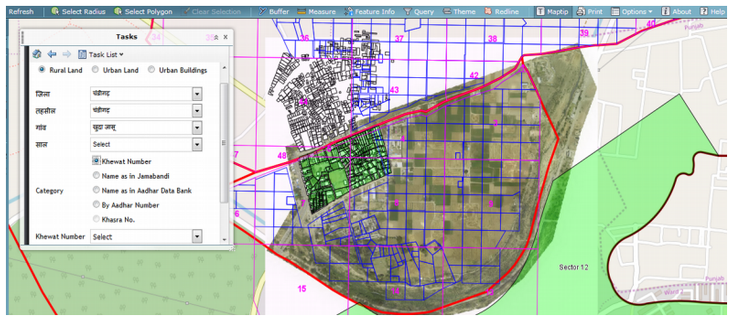
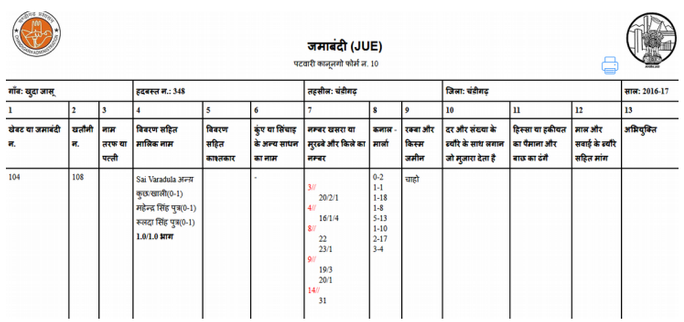
Land Title System using GIS, BIM, Block Chain

RURAL LAND:

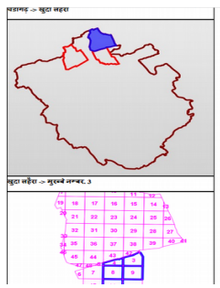


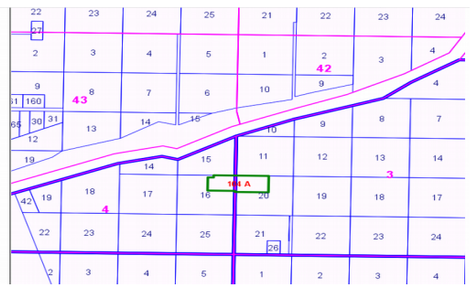


जमाबंदी (JUE)

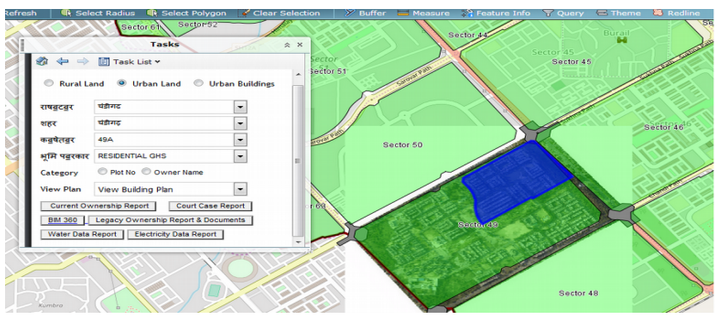
पटवारी कानूनगो फोर्म नं. 10

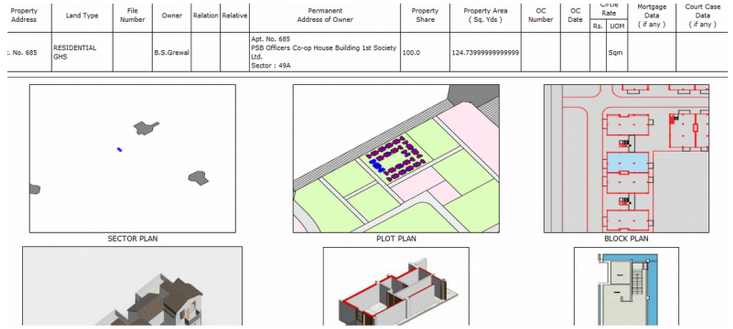
गाँव: खुटा जासू			हदबस्त नं.: 348			तहसील: चंडीगढ़			जिला: चंडीगढ़			साल: 2016-17
1	2	3	4	5	6	7	8	9	10	11	12	13
खेवट या जमाबंदी नं.	खतौनी नं.	नाम तरफ या पत्ती	विवरण सहित मालिक नाम	विवरण सहित काश्तकार	कुंए या सिंचाइ के अन्य साधन का नाम	नम्बर खसरा या मुरब्बे और किले का नम्बर	कलास - मासो	रक्बा और किस्म जमीन	दर और संख्या के ब्यौरे के साथ बसान जो मुआवा देता है	हिस्सा या हकीयत का पैमाना और बाज का दर्ज	मास और सवाई के ब्यौरे सहित मांग	अभियुक्ति
104	108		Sai Varadula अन्य कुरुक्षाली(0-1) महेन्द्र सिंह पुत्र(0-1) रूलटा सिंह पुत्र(0-1) 1.0/1.0 आम		-	3// 20/2/1 4// 16/1/4 8// 22 23/1 9// 19/3 20/1 14// 31	0-2 1-1 1-18 1-8 5-13 1-10 2-17 3-4	चाही				





URBAN BUILDING:



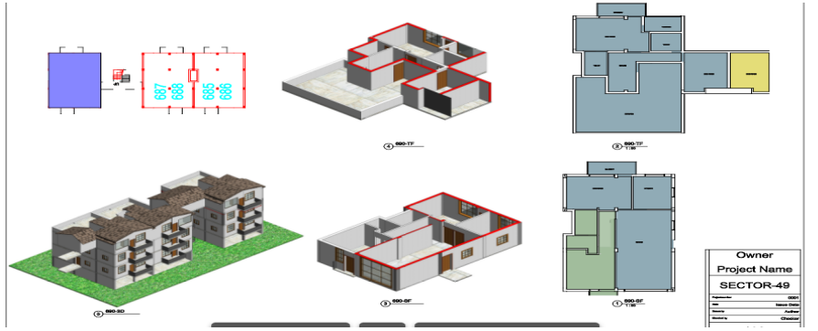


Property Address	Land Type	File Number	Owner	Relation	Relative	Permanent Address of Owner	Property Share	Property Area (Sq. Yds)	OC Number	OC Date	Circle Rate Rs.	Circle Rate UOM	Mortgage Data (if any)	Court Case Data (if any)
. No. 685	RESIDENTIAL GHS		B.S.Grewal			Apt. No. 685 PSB Officers Co-op House Building 1st Society Ltd. Sector : 49A	100.0	124.73999999999999				Sqm		

SECTOR PLAN

PLOT PLAN

BLOCK PLAN



PROJECT OBJECTIVES:

- To store Property Titles (Land-Rural Areas, Buildings, Plots-Urban Areas) registered with Sub Registrar Offices in Secure Database and Block Chain to prevent unauthorized tampering of Titles
- To provide a facility to Citizens to search, download Property Title Report along with Property Sketch online
- To Trace Title History displaying Sub-Divisions, Amalgamations of Land
- To mark the properties under dispute by integrating Land Title System with Court Information System so that Citizens are alerted about properties in dispute
- To mark the properties under lien by integrating Land Title System with Bank Information System so that Citizens are alerted about properties under mortgage

THE CHALLENGE:

Land Title Records are maintained by Departments such as Revenue, Municipality, Sub Registrar Office, which often have IT Systems which are not integrated, resulting in a situation, where Government is not in a position to comprehensively certify the ownership, extent of property to rightful owners.

Land Title Records also face the following issues:

- Cadastral Maps
  - Not Updated
  - Tattered
  - Blue Prints or Paper
  - At most scanned and digitized individually as DWG Files
  - No Centralized GIS System
  - Lack of Standards for creation and updation of Maps

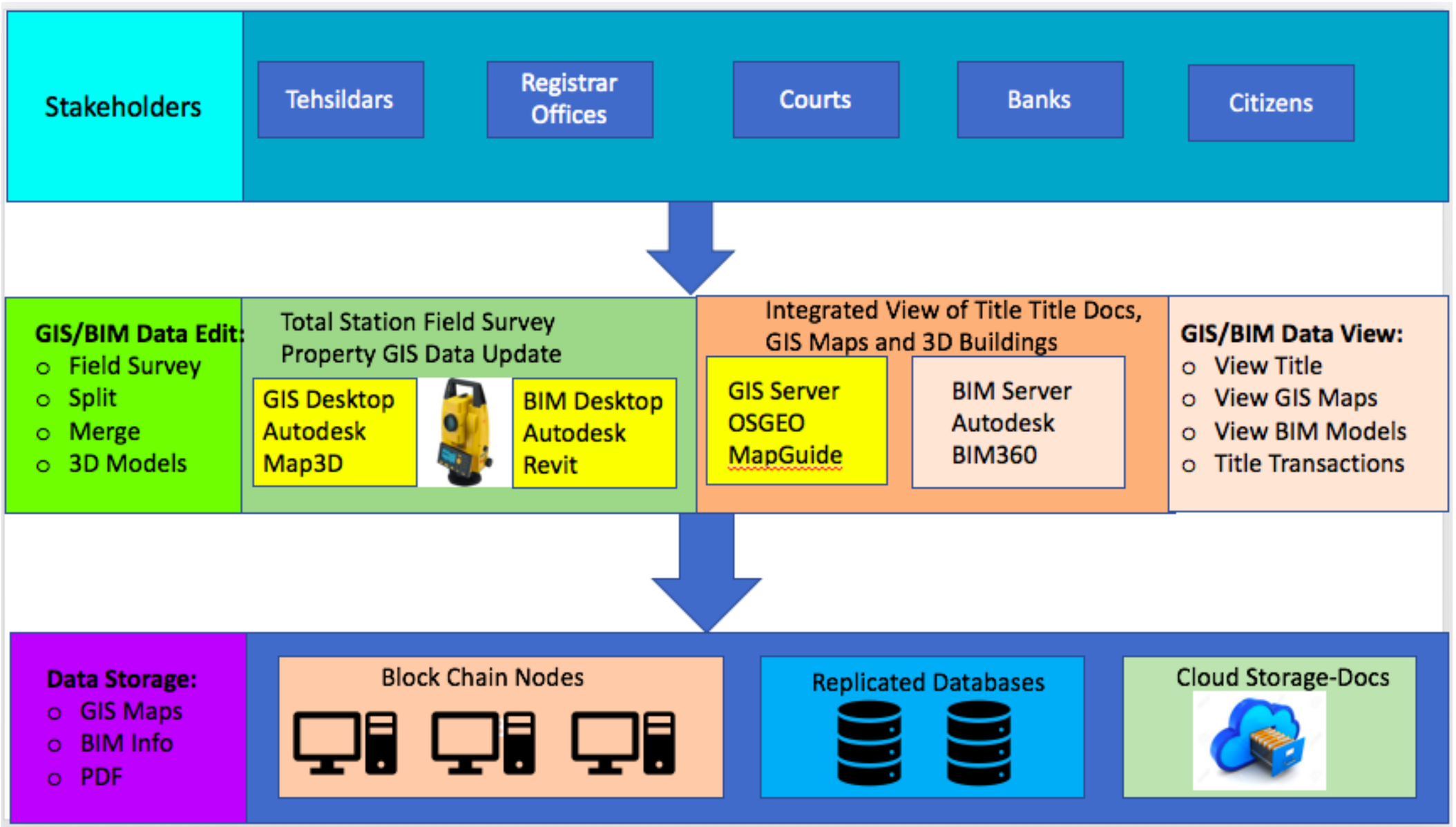
- Title Documents
  - Tattered
  - Paper, PDFs
  - Location and Extents mentioned in Title Documents do not match those on ground as Title Documents are registered without field survey
  - Same Land registered to multiple owners illegally
  - Some Title Documents are tampered leading to legitimate owners running behind courts to prove their title

- Lack of Integration of Title Information between Revenue, Municipality, Courts, Banks, Sub Registrar Offices
  - No Single Source of Truth and each Department claims their version of Title is correct
  - Lack of update of Cadastral Maps, each time land title is changed, showing different owners in Pattadar Passbooks and Title Deeds
  - No Standard Process Flows for recording, maintaining Title Information and sharing of the same between different Departments creating huge red tape

THE SOLUTION:

Step#	Description	Method
Step 1	Collect Point Cloud Data and Take Ortho Images	Aerial Survey
Step 2	Digitize Point Cloud Data to Geo-Referenced Drawing	Lidar Processing, Map Digitization
Step 3	Create GIS Maps with Standardized Layers and store data in Spatial Databases	GIS Data Model, GIS Stylization, GIS Publication
Step 4	Reconcile Title Data in Paper Format, Scanned PDFs, Databases and Attach Title Attributes to Spatial Entities	Updated GIS Parcel Data with Title Attributes
Step 5	Scan and Store Legacy Titles in Cloud	Encrypted Storage of Titles on Cloud
Step 5	Collect Disputed Title Data from Courts	Mark up Disputed Titles on GIS
Step 6	Collect Mortgaged Title Data from Banks	Mark up Lien Titles on GIS
Step 7	Store up to date Title Information using Distributed Ledger	Block Chain Storage of Titles to prevent frauds and unauthorized tampering of Titles
Step 8	Create Building Models in Revit for Building Permits submitted to Municipality	Generate BIM Data for Urban Buildings from 2018
Step 9	View and Display of Title Documents with Title Sketches and 3D Building Models	Citizens can search, view and download Title Data from single source
Step 10	Continuous Update of Title Sketches	Tehsildars to conduct Field Survey using Total Stations and updated Title Sketches whenever there is a Parcel Split or Amalgamation on change of Title

ARCHITECTURE:



COMPONENTS OF Land Title System:

COMPONENT	SOFTWARE
Storage of Documents, 3D Plans, 2D Plans	**Autodesk BIM360 DOCS**
Storage of GIS Maps	**Spatial Database Server**
Creation of GIS Maps	**Autodesk Map3D**
Creation of Building Plans-3D, 2D	**Autodesk Revit 2019**
Web Server	**Microsoft IIS**
BIM Server	**Autodesk BIM360**
GIS Server	**MapGuide**
Development / APIs	**Autodesk Forge, ASP.Net, HTML5, Java Script, PHP**

BENEFITS:

- Single Source of Title Document with Parcel Sketch, Building Plan if any
- Title Information stored in Block Chains thus Tamper Proof
- Integration with Courts and Banks thus less possibility of fraudulently selling Titles
- Integrated Processes of Lidar Scanning, Total Station Field Survey and Update of Data, Maps within days
- Reduction of Litigation in Courts
- Reduction of Frauds on Banks
- Citizens can search, view, trace and print Title Online without visiting multiple departments

- Improved efficiency of Revenue, Registration, Municipalities

ROAD AHEAD:

Regency InfoTech would like to incorporate the following as Phase II of Land Title System:

- Integrate Master Plans with Land Title System so that Citizens are aware of
  - Zone in which their Property falls in
  - Proposed Rod Widening affecting their Property
  - Purchasing Government Properties and Properties in Full Tank Level and Green Buffer Zones
- Provisions for Citizens to markup discrepancies and resolve issues online
- Capacity Building of Government Departments
- Citizen Education Programmes on Right to Title

For more information:

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http://www.regencyinfotech.com/landtitleinfosystem