

## Land Parcel Title Validation for Real Estate

**Sector:** Real Estate Construction

**Client:** Real estate ( Commercial and Residential )

**Users:** Legal Associates, Legal Managers (Internal Teams)

**Deployment:** Secure Internal Web Application

### 1. Problem Statement

The title validation process relied on manual calculations of large, complex logics to track land records, parchhas, deeds, inheritance, and ownership rights.

**This results in:**

- Heavy manual interpretation of title chains
- High dependency on individual legal expertise
- Difficulty tracking ownership continuity across generations
- Risk of share and area mismatches
- Limited visibility into title risk until late in the process

### 2. Business Objective

Create a **single, deterministic system** that:

- Digitises the existing Excel-based title process
- Visual models of ownership flow over time
- Enforce consistent legal validation rules
- Flags title risks early in the project stage
- Produce outputs identical to current reports

### 2. Solution Overview

**Title Tree Validator** is a browser-based, graph-driven title validation platform that models land ownership as a structured title tree.

#### Core Capabilities

- ✓ Portfolio-level title graph (Documents + ownership)
- ✓ Share and area calculations and data ingestion aligned to existing logic
- ✓ Automated risk detection (missing links, mismatches)
- ✓ Interactive title visualisation (Top-Down)

### 4. Why This Matters

- ✓ Converts legal reasoning into repeatable system logic
- ✓ Reduces dependency on individual judgment
- ✓ Improves confidence in title clearance decisions
- ✓ Scalability of title diligence process across portfolios

## Logical Interpretation to Visual, Auditable Title Validation

### How the System Works

---

#### 1. Structured Digitisation

- ✓ Existing calculation title sheets are recreated as structured nodes:
  - **Master Nodes:** Parchas, Deeds, Mutation & Succession records
  - **Person Nodes:** Owners, heirs, vendors, vendees

#### 2. Title Graph Creation

- Ownership history is modelled as a **directed title tree**
- Parent-child links represent sale, inheritance, gift, or partition

#### 3. Deterministic Validation Engine

- ✓ Automatic computation of:
  - Ownership shares (Hissa)
  - Area reconciliation across CS/RS/LR records
- ✓ Rule-based validation for inheritance and transfers

#### 4. Risk Identification & Review

- ✓ Flags:
  - Missing documents
  - Broken title chains
  - Share or area mismatches
- ✓ Risks reviewed, mitigated, and approved by Legal Managers

#### 5. Reporting & Export

- ✓ Auto-generated multi file format outputs
- ✓ Format exactly matches existing title search reports to minimise change management issues

### Key Business Outcomes

---

- ✓ **Reduced Manual Effort:** Significant drop in spreadsheet-driven calculations
- ✓ **Improved Accuracy:** Deterministic logic replaces subjective interpretation
- ✓ **Faster Reviews:** Visual title trees accelerate legal review cycles
- ✓ **Early Risk Visibility:** Issues identified before deal-critical stages
- ✓ **Audit-Ready:** Clear traceability from report back to source documents

### Strategic Value

---

- ✓ Institutionalised legal knowledge
- ✓ Enables portfolio-scale due diligence
- ✓ Creates a future-ready foundation for AI, GIS, and automation

### Outcomes

---

- ✓ Upto 40% reduction in time spent on rework & clarifications
- ✓ 80%+ visibility of title risks at early review stages
- ✓ 2x improvement in case throughput per legal associate
- ✓ 100% audit traceability from report to source document

Reduces title-risk exposure while accelerating land title due diligence. cutting manual effort, improving approval speed, and enabling faster, more confident project execution.