

# MODERNIZATION OF REAL ESTATE REGISTRATION IN BRAZIL IN LIGHT OF THE LADM: ADVANCES AND CHALLENGES FOR SPATIAL LAND GOVERNANCE

## Authors:

Alan Maragno | UDESC | [alanmaragno.adv@gmail.com](mailto:alanmaragno.adv@gmail.com)

Francisco Henrique de Oliveira | UDESC | [francisco.oliveira@udesc.br](mailto:francisco.oliveira@udesc.br)

Renan Furlan de Oliveira | UFSC | [renan.furlan@ufsc.br](mailto:renan.furlan@ufsc.br)

Jaap Zevenbergen | UT | [jazevenbergen@utwente.nl](mailto:jazevenbergen@utwente.nl)

# INTRODUCTION

✓ Brazil faces persistent challenges in spatial land governance due to its late property formalization. The process began with Budget Law No. 317/1843, which created the General Mortgage Registry, later expanded into the Real Estate Registry.

✓ The Public Records Law (No. 6,015/1973) modernized the system with individual property registries, but many still lack spatial accuracy, limiting integration between registries and cadastres.

✓ To overcome this, the National Council of Justice (CNJ) and the National Real Estate Registry Operator (ONR) adopted measures aligned with the LADM.

- **CNM (Provision 143/2023): unique parcel identifier;**

- **SIG-RI (Provision 195/2025): mandatory georeferenced polygons;**

✓ **Real Estate Registry Map:** public ONR platform integrating CNM and spatial data.

✓ These actions advance Brazil toward a transparent, secure, and interoperable land administration model consistent with international standards.

# THEORETICAL BASIS: REAL ESTATE REGISTRY EVOLUTION

- ✓ **Colonial origins:** Land distribution through *sesmarias* created disorganized property control.
- ✓ **1843:** *Budget Law No. 317* established the General Mortgage Registry, the first national property control system.
- ✓ **1973:** Public Records Law (No. 6,015) introduced individual property registration (matriculation system).
- ✓ **Persistent issue:** Lack of spatial data and integration between registries and cadastres.
- ✓ **2020:** Creation of **ONR (National Real Estate Registry Operator)** unified 3,500 offices nationwide, promoting innovation and digitalization.

# LADM AND BRAZILIAN CONTEXT

- ✓ **LADM (ISO 19152:2012, updated 2024–2025):** Conceptual model defining relationships between People – Rights – Restrictions – Responsibilities – Spatial Units.
- ✓ **Purpose:** Standardize land data semantics, support governance and interoperability.
- ✓ **Brazilian convergence:**
  - **CNM (2023):** Unique parcel identification aligns with *LADM's Spatial Unit package*.
  - **SIG-RI (2025):** Integration of georeferenced polygons matches LADM's Spatial Representation.
  - **ONR Map:** Public interface linking legal and geographic data.
- ✓ These advances mark Brazil's transition from analog to spatially enabled land governance.



# ANALYSIS AND DISCUSSION

✓ Integration between **CNM**, **SIG-RI**, and the **ONR Map**:

1 - CNM provides a unique national identifier for each parcel (ISO/IEC 7064 algorithm).

2 - SIG-RI mandates registration of georeferenced coordinates for properties.

**Registro**  
de Imóveis do Brasil  
2º OFÍCIO DE  
FLORIANÓPOLIS - SC

ESTADO DE SANTA CATARINA

2º OFÍCIO DE REGISTRO DE IMÓVEIS DE FLORIANÓPOLIS

RENAN DANTAS FERNANDES  
Oficial Registrador Interino

MARCELO SUP LIC Y VIEIRA FONTES  
Substituto Legal

**CNM: 104422.2.0191018-27**

MATRÍCULA  
- 191.018 -

FOLHA  
- 01 -

LIVRO Nº 2 - REGISTRO GERAL

Florianópolis 03 de setembro de 2024

Registration with the CNM



Registration of the polygon on the platform



### 3 - ONR Map integrates legal (registry) and spatial (polygon) data layers.

 **REGISTRO DE IMÓVEIS DA COMARCA DE BIGUAÇU - SC**  
**Maurício Passaia - Oficial Titular**  
**Livro Nº 2 - Matrícula Nº 60.019** **CNM Nº 108423.2.0060019-65** **FICHA 01**

**ABERTURA DE MATRÍCULA:** 18/04/2024.  
**IDENTIFICAÇÃO DO IMÓVEL:** um terreno com a área de **819,29m<sup>2</sup>** (oitocentos e dezenove vírgula vinte e nove metros quadrados), situado na Rua Pedro Henrique da Silva, n. 395, e na Rodovia Municipal Francisco Wollinger, bairro Jordão, na Cidade de Governador Celso Ramos, nesta Comarca de Biguaçu/SC, com a seguinte descrição: frente, face a Sudeste, em 1 (um) lance, partindo do vértice denominado '0=PP', georreferenciado no Sistema Geodésico Brasileiro, DATUM - SIRGAS 2000, MC-51°W, coordenadas Plano Retangulares Relativas, Sistema UTM: E= 737.232,926 m e N= 6.971.006,399 m, segue com o azimute de 219°33'13", na extensão de 15,11 metros até o vértice 'V1' (E=737.223,307 m e N=6.971.011,069 m), confrontando com a Rua Pedro Henrique da Silva. À direita, face a Sudoeste, medindo 5' (três) lances, partindo do vértice 'V1', segue com o azimute de 311°43'27", na extensão de 15,11 metros até o vértice 'V2' (E=737.205,010 m e N=6.971.011,069 m); daí segue com o azimute de 312°45'31,75 metros até o vértice 'V3' (E=737.181,697 m e N=6.971.032,626 m), confrontando com o imóvel matriculado sob o n. 2.080; daí segue com o azimute de 343°57'44", na extensão de 1,41 m até o vértice 'V4' (E=737.181,308 m e N=6.971.033,980 m), confrontando com terras de posse de Adils face a Noroeste, em 1 (um) lance, partindo do vértice 'V4', segue com o azimute de 65°12'51,20 metros até o vértice 'V5' (E=737.195,104 m e N=6.971.040,350 m), confrontando com a Rodovia Municipal Francisco Wollinger. À esquerda, face a Nordeste, medindo 50,82 metros, e partindo do vértice 'V5', segue com o azimute de 131°36'51", na extensão de 26,69 metros até o vértice 'V6' (E=737.215,060 m e N=6.971.022,623 m); daí segue com o azimute de 132°14'33", na extensão de 15,11 metros até o vértice '0=PP' (E=737.232,926 m e N=6.971.006,399 m), início da descrição, com o imóvel matriculado sob o n. 16.732, fechando assim o perímetro do polígono acima descrito. Inscrição imobiliária n. **02.11.007.0179.001**.

**Abaixo segue o croqui do imóvel acima descrito:**



LE COMO CERTIDÃO



### 4 - Parcel visualization in the land registry system

 **Mapa do Registro de Imóveis**  Mantido por



# CONCLUSION

- ✓ Brazil's Real Estate Registry modernization aligns with **LADM principles**, especially unique parcel identification and spatial representation.
- ✓ **CNM and SIG-RI** bridge legal and spatial information, reinforcing transparency and interoperability.
- ✓ The entire modernization process is **fully funded by registrars**, without any public investment, ensuring institutional sustainability.
- ✓ Despite regional inequalities and technical barriers, Brazil demonstrates significant progress toward a **data-driven, standardized, and internationally compatible** land administration model.



# ACKNOWLEDGEMENTS

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execução



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