

Modelling Brazilian Indigenous Tribes Land Rights with ISO 19152 LADM

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Presentation Summary

- Motivations for the research on Indigenous Land Rights;
- Present status in Brazil;
- Brazilian definitions / legal sources for core LADM classes;
- Dynamic modelling for Nodal Agencies and Demarcation procedure;
- Indigenous Forest Rights class diagram;
- Spatio-Temporal dimensions of Indigenous Rights;
- Conclusions and Recommendations.

Motivations for the research on Indigenous Land Rights



- **Pressing political and socio-economic issue in Brazil:**
 - Violent land disputes with non-indigenous;
 - Slow and bureaucratic process of land adjudication;
 - Deforestation process.

- **Previous experience of (part of) the team:**
 - Act on Indigenous Forest Rights in India;
 - Modelling including LADM based.

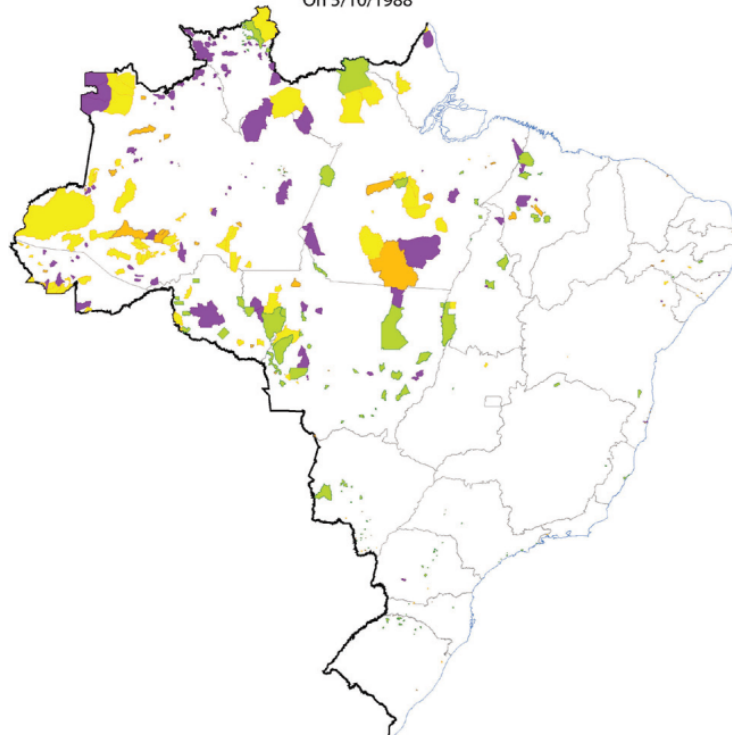
Present status in Brazil



- Profound economic changes in recent decades reached the Amazon Basin;
- A total of 896,917 people declared to be indigenous (Census 2010);
- Indigenous lands are spread across Brazil, but concentrated around the Amazon;
- Democracy and the Federal Constitution of 1988 brought an increase in approved and regulated indigenous lands (Figure 1).

Present status in Brazil (2)

Legal and Administrative Situation Before the Federal Constitution
On 5/10/1988



Stage of Recognition	Number of Areas	Extent (ha)
In Identification	58	8.781.400
Identified or with Restricted Use	87	31.959.348
Declared	95	18.735.940
Approved, Reserved, or Registered in the CRI and / or SPU	162	19.133.366
total	402	78.610.055

Legal and Administrative Situation of Indigenous Lands
On 31/06/2009



Stage of Recognition	Number of Areas	Extent (ha)
In Identification	110	57.479
Identified or with Restricted Use	32	2.542.033
Declared	61	9.808.404
Approved, Reserved, or Registered in the CRI and / or SPU	431	98.262.450
total	634	110.670.366

Figure source: Marcio Santilli, 2010

Definitions / Legal sources for LADM core classes



- **LA_GroupParty:** identification of ethnic groups according criteria (“Estatuto do Índio”) based on ILO Convention 169;
 - According Census 2010, there are 305 ethnic groups with 274 different languages;
 - But, isolated indigenous are unknown (estimates are that the majority lives in Amazon).
- **LA_Party:** Nodal agencies assuming roles in land -- administration and management.
 - Agencies and their cadastral systems were identified in order to define the broader picture of Land Administration in Brazil.

Definitions / Legal sources for LADM core classes (2)



- The modelling focus on those agencies / systems playing a key role in registering indigenous lands:
 - National Foundation for Indigenous Affairs (FUNAI) / STI;
 - Secretary of Federal Assets (SPU) / SIAPA;
 - Land Registry Office / No centralized, federal, system.
- The key procedure for the dynamic modelling is the ***indigenous lands demarcation*** (including registration), presented as use case and activity diagrams.

Definitions / Legal sources for LADM core classes (3)



- **LA_SpatialUnitGroup***:
 - Tribal Land: These are inalienable and unavailable according federal constitution. A total of 428 (in 672) are now fully regularized;
 - There are different types of Habitat within indigenous federal lands (Reserve, Park, Agricultural Colony and Federal Territory);
 - The land demarcation simply surveys the boundaries of the indigenous land.
- * But simpler cases can be modelled as individual Spatial Units

Definitions / Legal sources for LADM core classes (4)

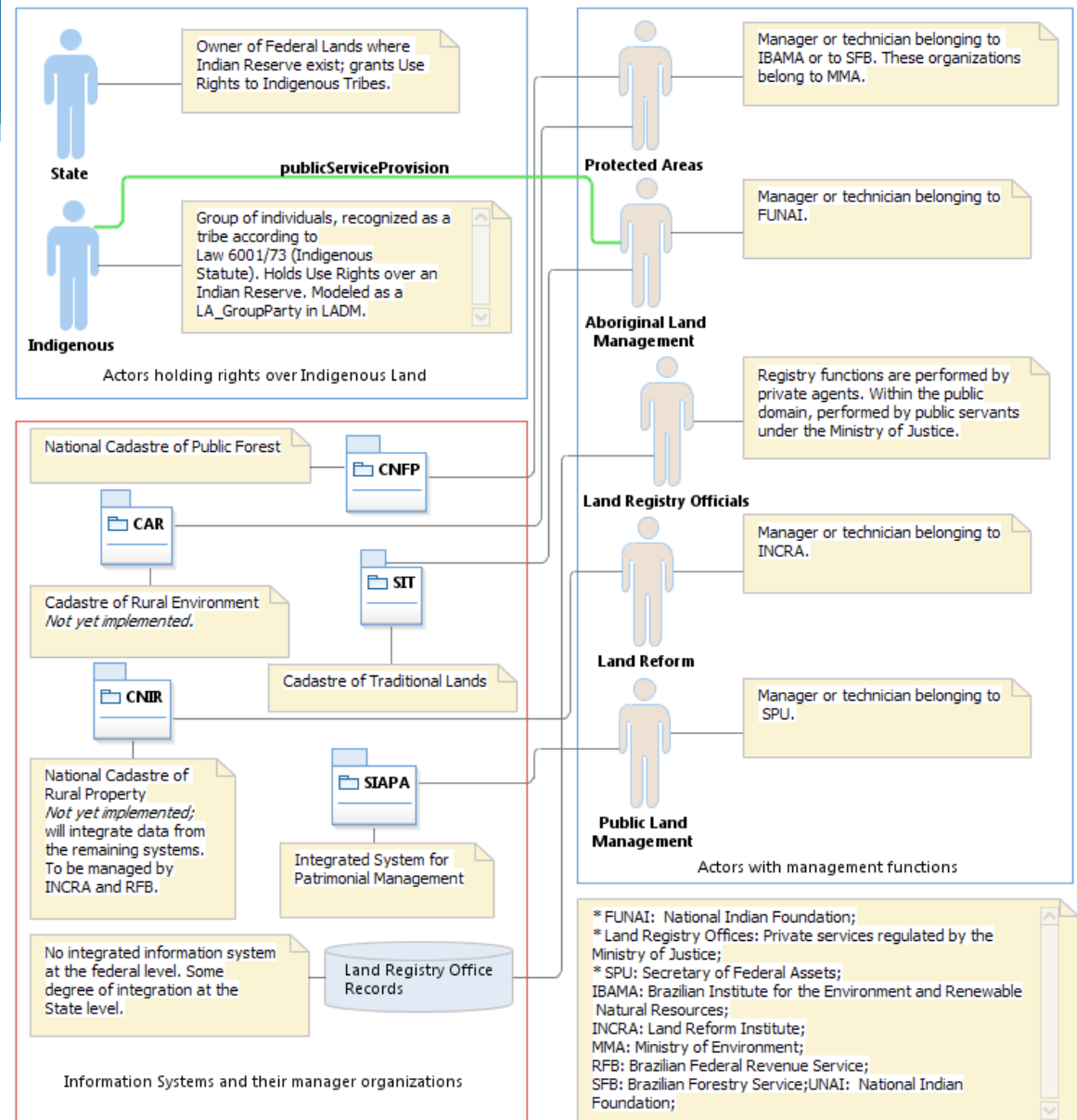


- **LA_RRR's:**

- Basic Property: lies with the Federal Government;
- Indigenous communities hold exclusive usufruct and permanent possession rights;
- Use rights for mining and forestry resources can be granted to third parties. These were not further modelled in this paper (separate laws and regulations exist);
- Indigenous communities have the (inherent) responsibility to promote economic and environmental sustainability.

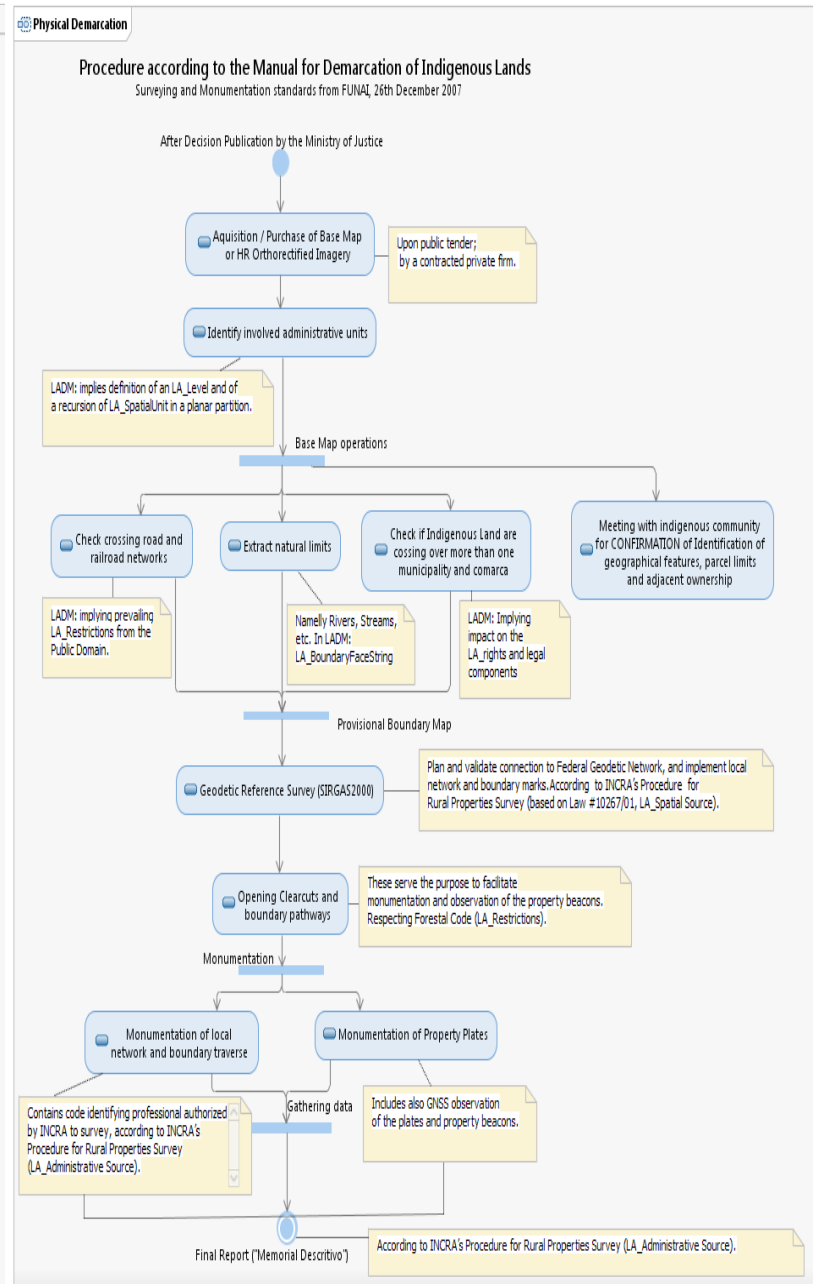
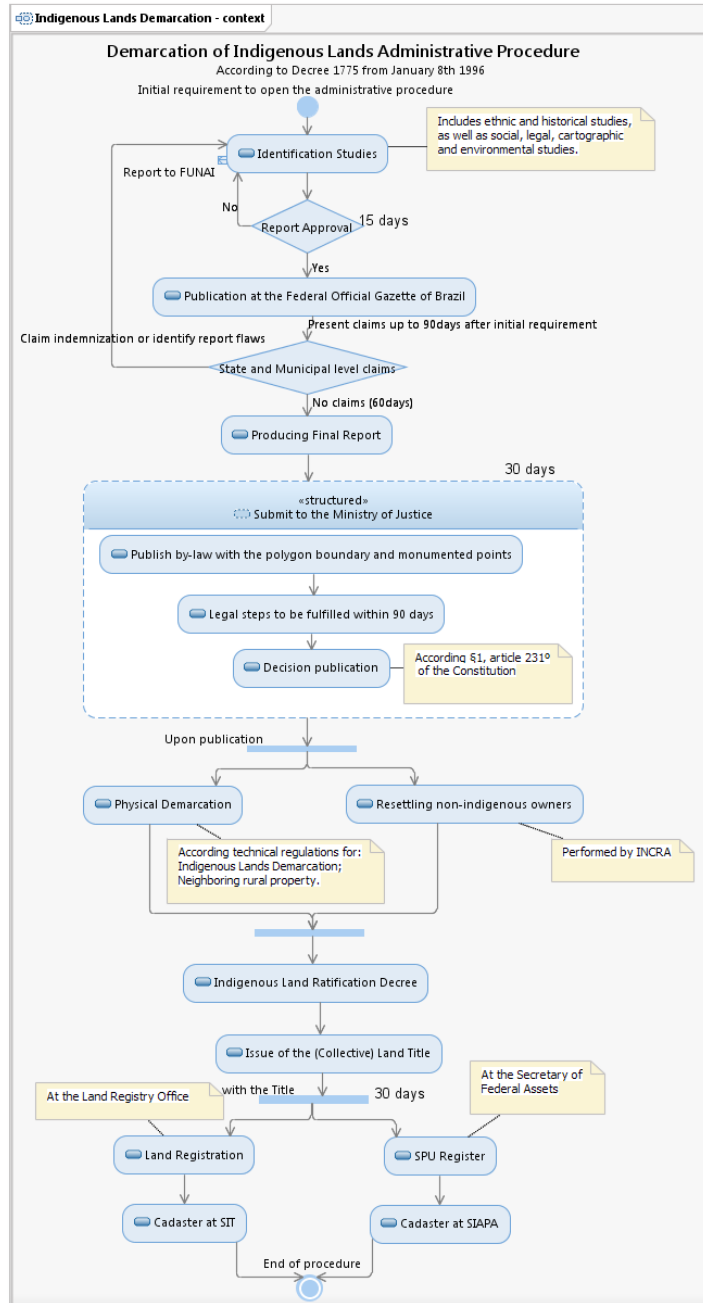
Dynamic Modelling; Use Case

Brazilian Land Administration concerning Indigenous Forest Rights

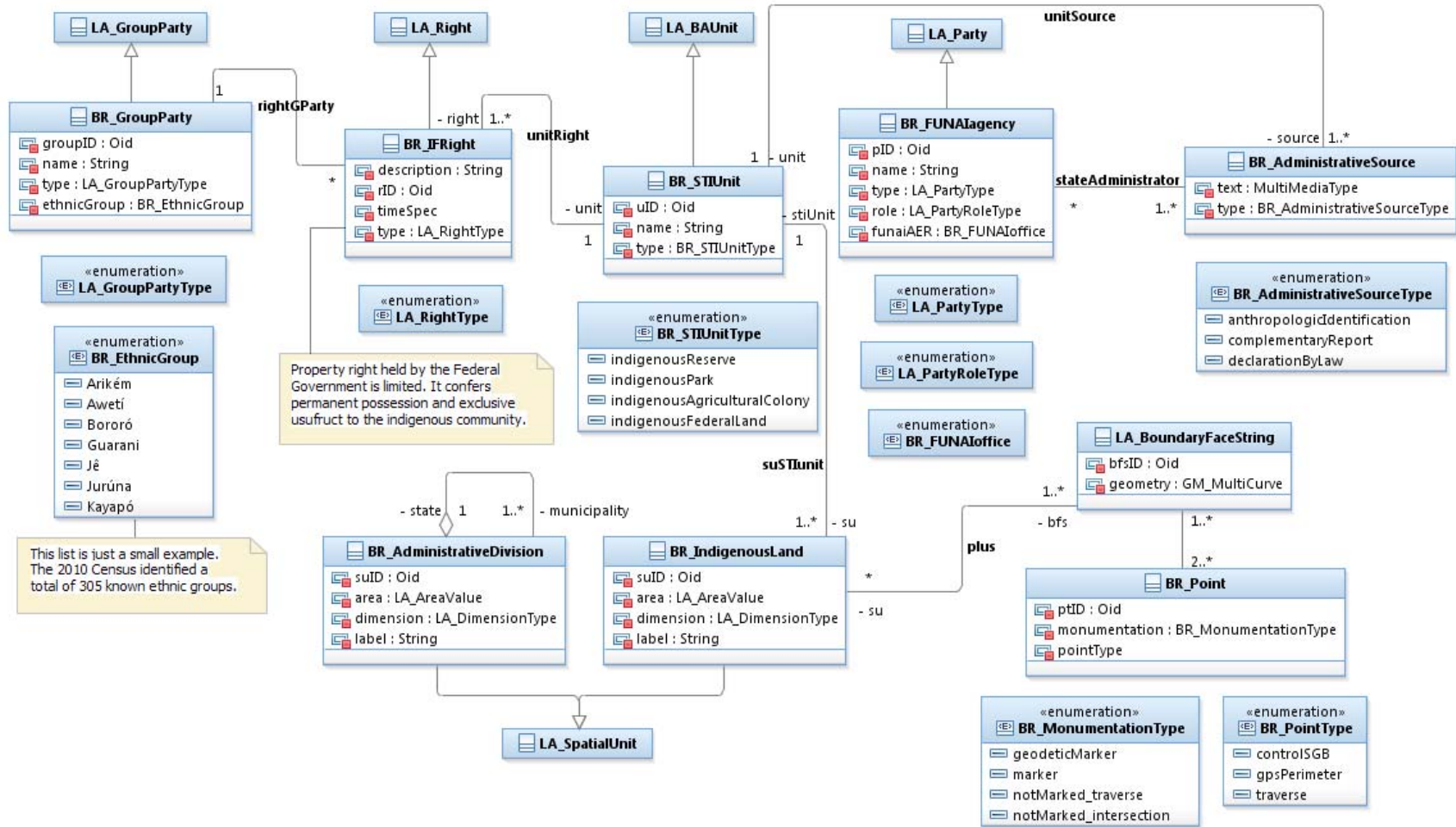


Dynamic Modelling;

Activity (generic and detail)



Indigenous Lands Class Diagram

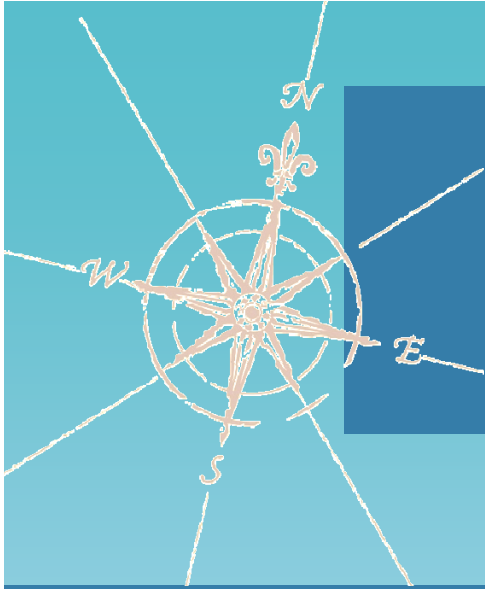


Spatio-Temporal Dimensions of Indigenous Rights

- **Temporal dimension of Rights:**
 - Land has been “traditionally occupied”; a vague time-spec element is introduced into the claim;
 - Granted permanent possession rights: no temporal changes in the future;
- **Spacial dimensions of Rights:**
 - Exclusive usufruct over soil, rivers and lakes (2D and 3D extension of rights);
 - Mineral deposits and potential for hydraulic energy belong to the Federal Government and form a separate 3D parcel.

Conclusions and Recommendations

- Land regularization procedure, focussed on land demarcation and administrative steps has been modelled based on LADM;
- Development of a conceptual schema can bring a common understanding for Nodal Agencies involved in Indigenous Land Regularization;
- Use of LADM in Brazil allows interoperability and data sharing based on a common data model;
- Implementation of CNIR opens an opportunity to integrate land information;
- A systematic approach including dynamic modelling is especially useful when no UML or legacy models are available.



Tribe Kisêdjê – Xingu Park
Indigenous: 330
Language: Suyá

Questions?