IBGE
Instituto Brasileiro de Geografia e Estatística

Providing Data to SDI: the Role of the Public and Private Sectors

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Public-Private Partnership for Spatial Data Infrastructure Exchange Forum

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To present this topic from the Brazilian perspective showing:

- **The legal and institutional framework which states the participation of both sectors in data production during the past 4 decades**

- **Examples of participation of the public and private sectors' data production during this time period**

- **The current open data context in Brazil and in the Americas**

- **Some examples of benefits of NSDI to public and private sectors**

- **Situation of PPP in the country**

- **Final remarks**

BRAZIL

Land area	8,514,876.599 km^2
Sea area	3,600,000 km^2
States	27
Municipalities	5,565
Population (2010 Demographic Census)	**190,755,799**

✓ **Constitution of 1988:** Union is responsible for:

  ✓ organizing and maintaining the National Cartographic Services

  ✓ legislating on the National Cartographic System: composed by **national public** and **private entities** responsible mainly for cartographic (or related) activities

✓ **Decree-Law 243/67:** establishes the directives of the brazilian cartographic activities

✓ **Decree 89817/1984:** establishes the Technical Standards of the National Cartography

✓ **Decree 6666/2008:** establishes the National Spatial Data Infrastruture of Brazil (INDE)

INDE
Infraestrutura Nacional
de Dados Espaciais

GI Institutional Arrangement in Brazil

Ministry of Planning

- Manager of the National Cartographic System

- Responsible for NSDI data sharing agreements

National Commission of Cartography

- Cartographic Policy

- NSDI Coordination

Examples of GI Producers

Instituto Nacional de Colonização e Reforma Agrária – INCRA

Instituto Nacional de Pesquisas Espaciais – INPE

Cidades Ministério das Cidades — Ministério das Cidades

Diretoria de Hidrografia e Navegação – DHN

DNIT — Departamento Nacional de Infraestrutura de Transportes – DNIT

Diretoria de Serviço Geográfico do Exército Brasileiro – DSG

MMA — Ministério do Meio Ambiente – MMA

Transportes Ministério dos Transportes — Ministério dos Transportes

SPU — Secretaria do Patrimônio da União – SPU

Embrapa — Empresa Brasileira de Pesquisa Agropecuária – EMBRAPA

IBGE — Instituto Brasileiro de Geografia e Estatística – IBGE

Instituto de Cartografia Aeronáutica – ICA

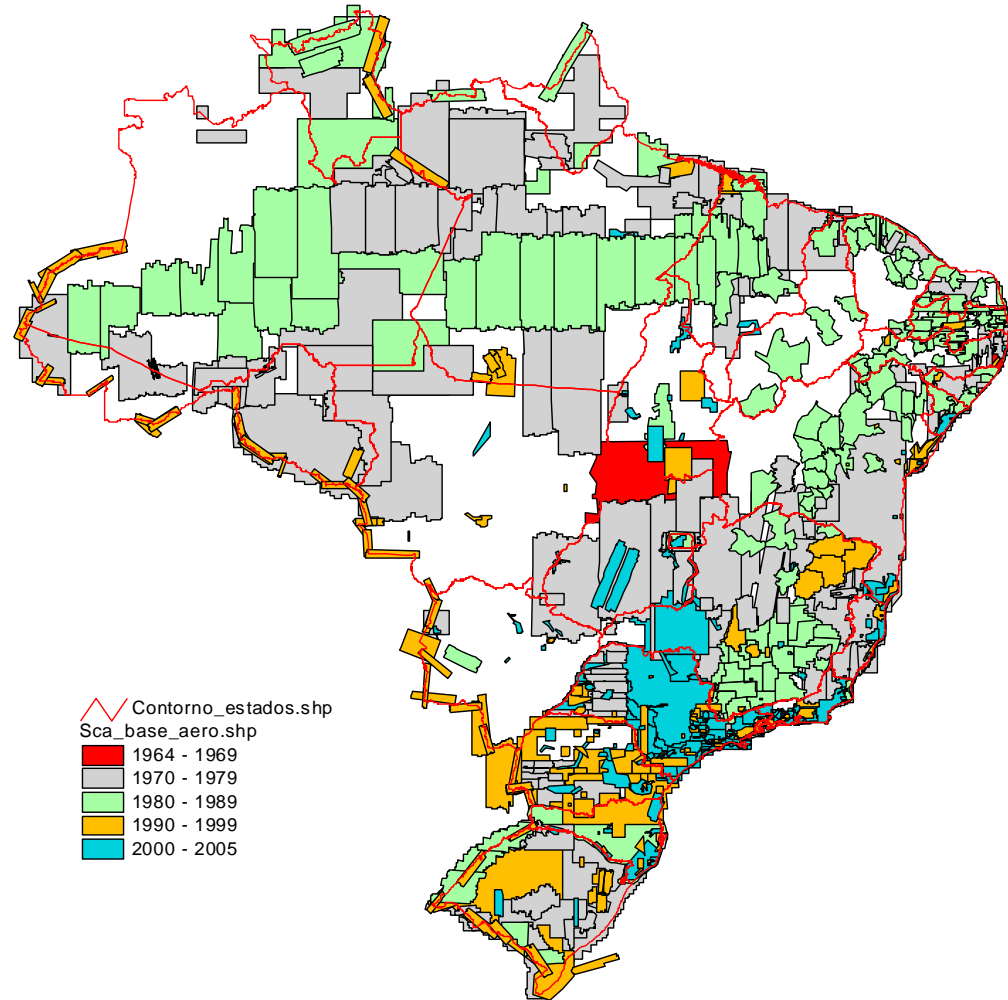ANTT — Agência Nacional de Transportes Terrestres – ANTT

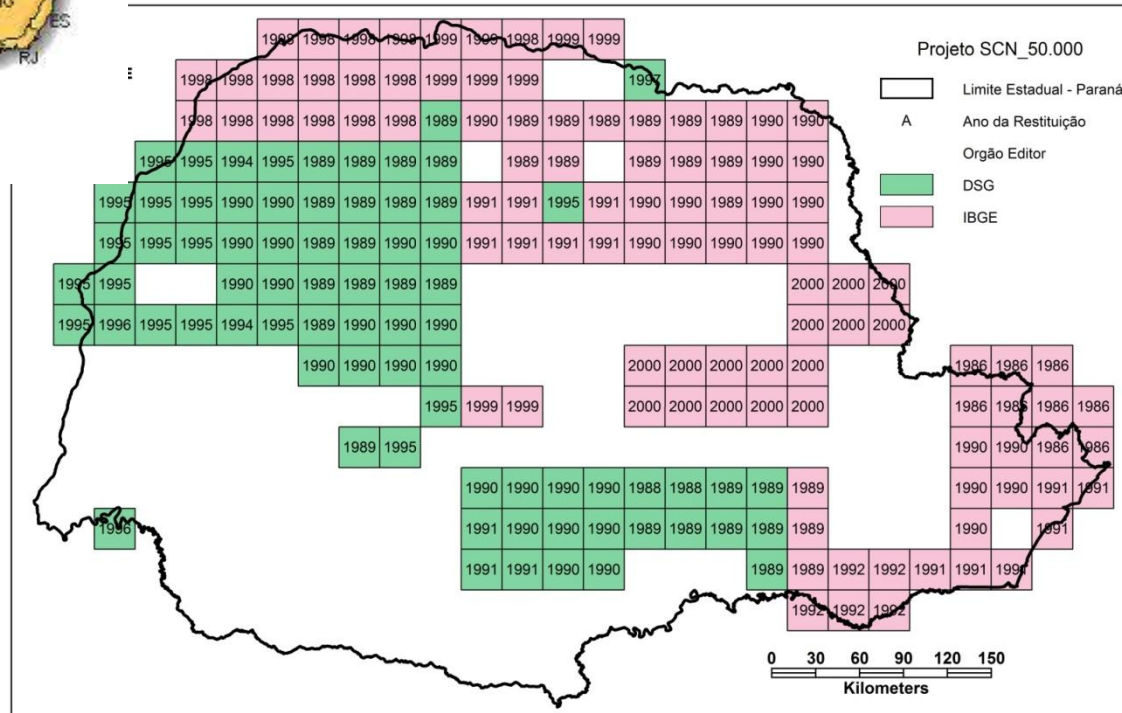Centro Gestor e Operacional do Sistema de Proteção da Amazônia -CENSIPAM

CPRM — Serviço Geológico do Brasil -CPRM

- 700+ flights

- Great majority by private companies contracted by the federal and state governments

- A few ones by the Brazilian Air Force

Contorno_estados.shp
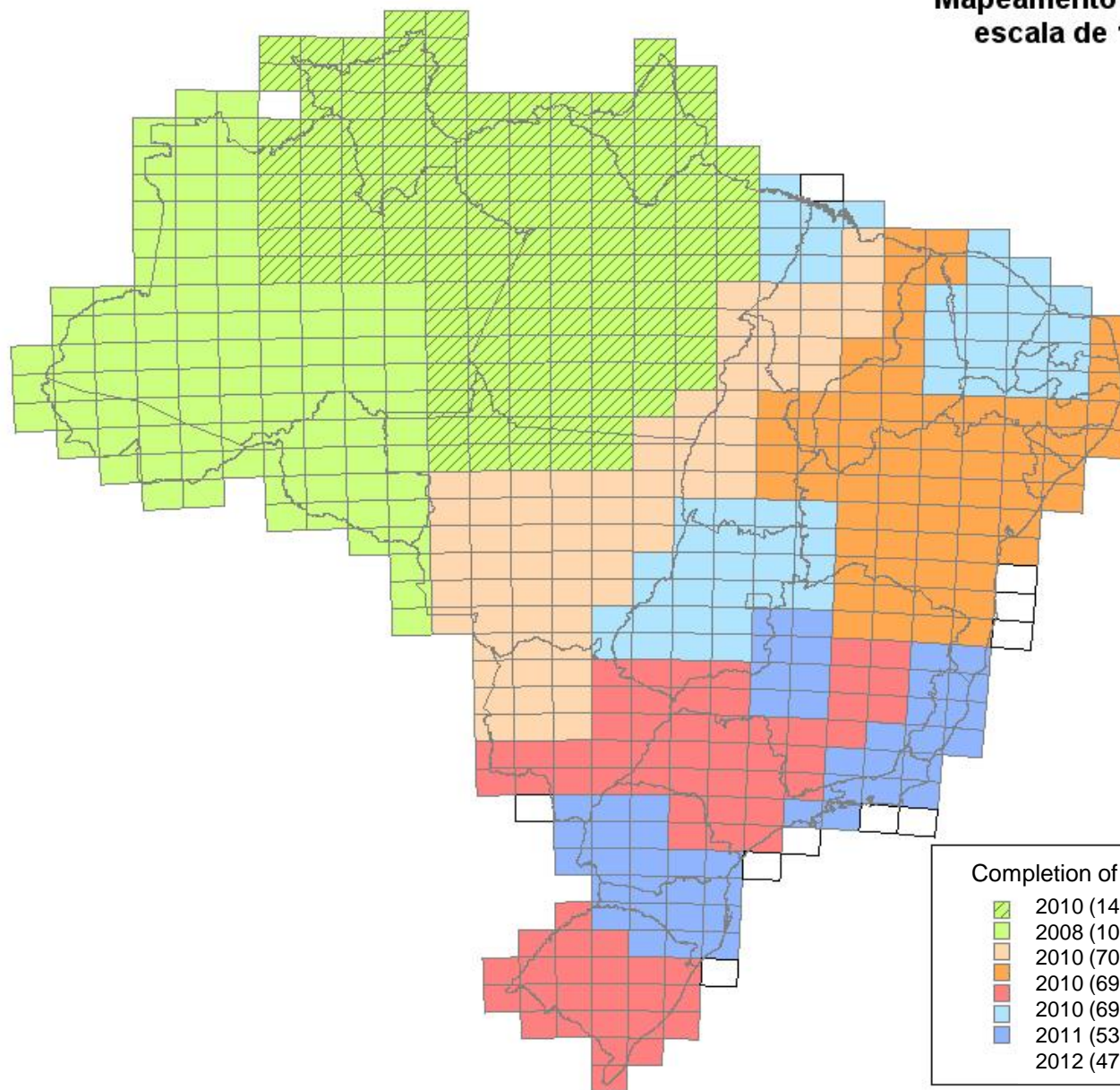Sca_base_aero.shp
- 1964 - 1969
- 1970 - 1979
- 1980 - 1989
- 1990 - 1999
- 2000 - 2005

Example of a joint Public-Private Initiative

Copel – Eletricity Company of the State of Paraná, created in 1954, co-owned by the State and private investors (participates in the stock market since 1994)

Seamless Cartographic Base Project 1:250,000

Mapeamento Sistemático
escala de 1:250.000

Completion of blocks
- 2010 (141 sheets)
- 2008 (100 sheets)
- 2010 (70 sheets)
- 2010 (69 sheets)
- 2010 (69 sheets)
- 2011 (53 sheets)
- 2012 (47 sheets)

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Census Mapping

27 Federation Units (States)

5,565 Municipalities

10,283 Districts

662 Subdistricts/R.A.

316,574 Enumeration areas
240,382 urban
76,192 rural
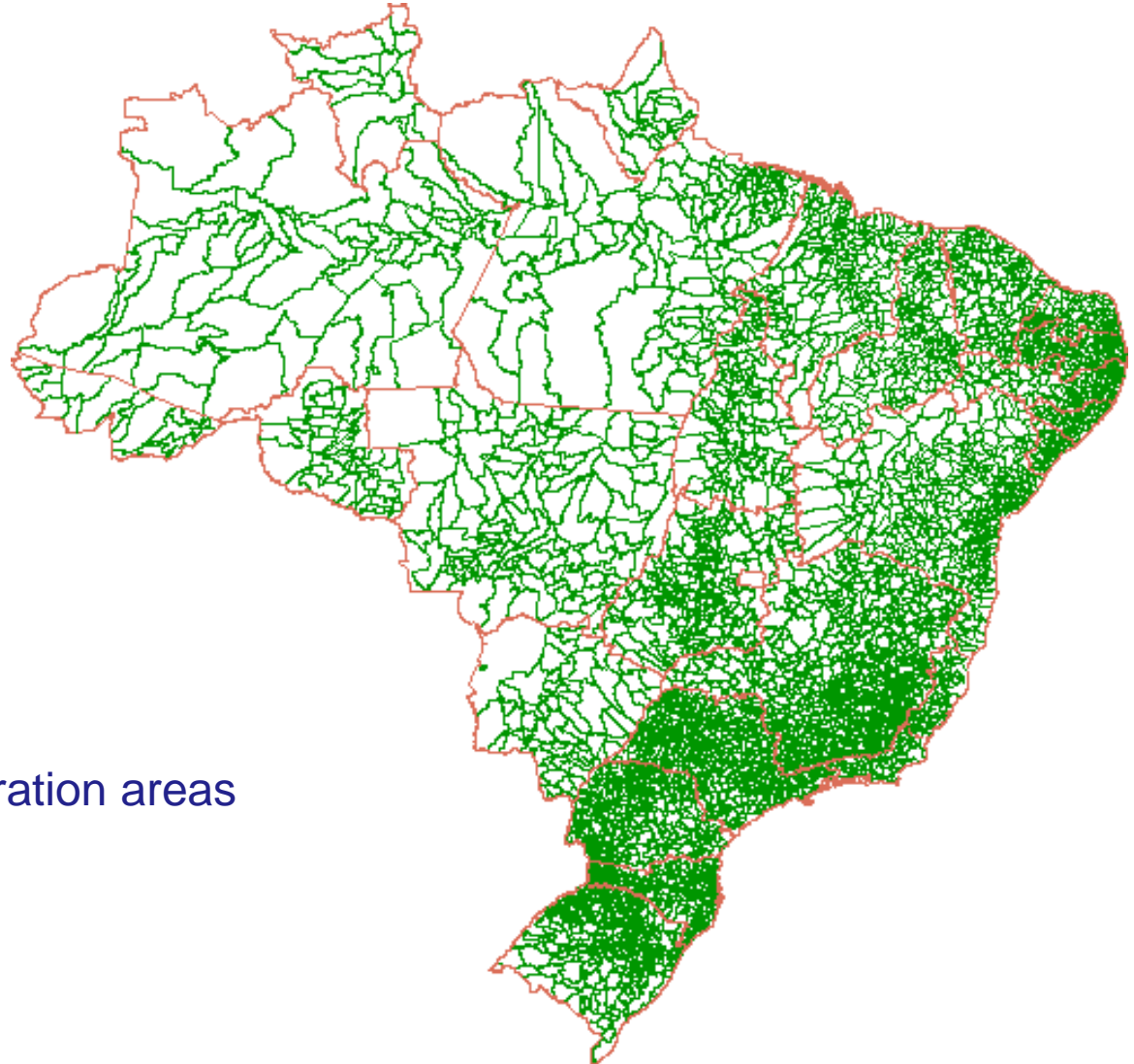
Municipalities with less then 20,0000 inhabitants covered by imagery in the 2010 Census Mapping Project

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Legend:
- Ortophotographs (162)
- Google Earth (1429)
- ALOS PRISM+AVNIR (702)
- ALOS PRISM (427)
- No imagery available

2720 Municipalities
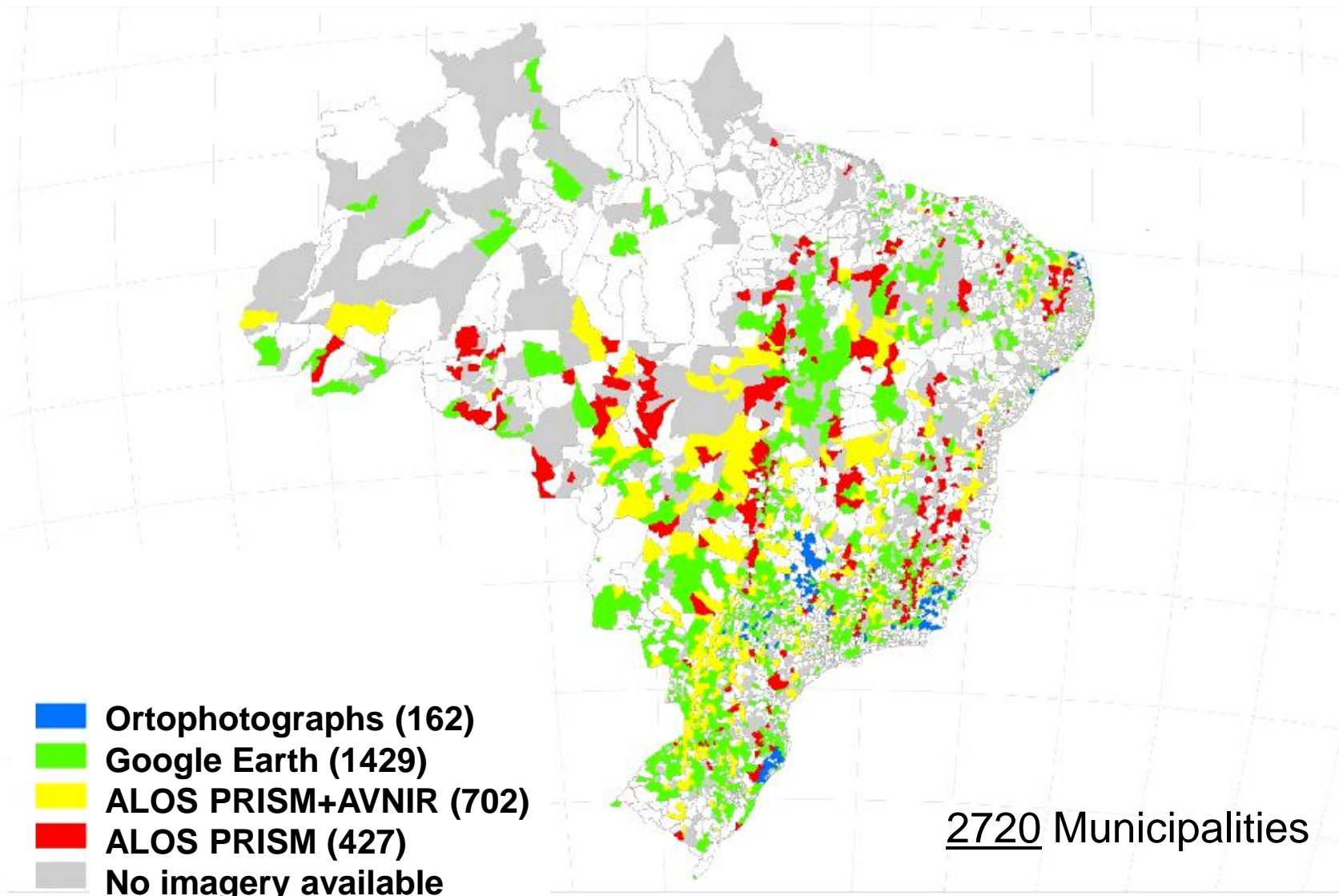
Orthophotograph

Pirapetinga, MG
From Ortophoto

Orbital image from Google Earth

Marechal Thaumaturgo - AC

Orbital image from ALOS satellite

Cabo Frio - RJ

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Municipalities with more than 20,000 inhabitants

1562 Municipalities - acquisition of urban vector bases from Mapping companies
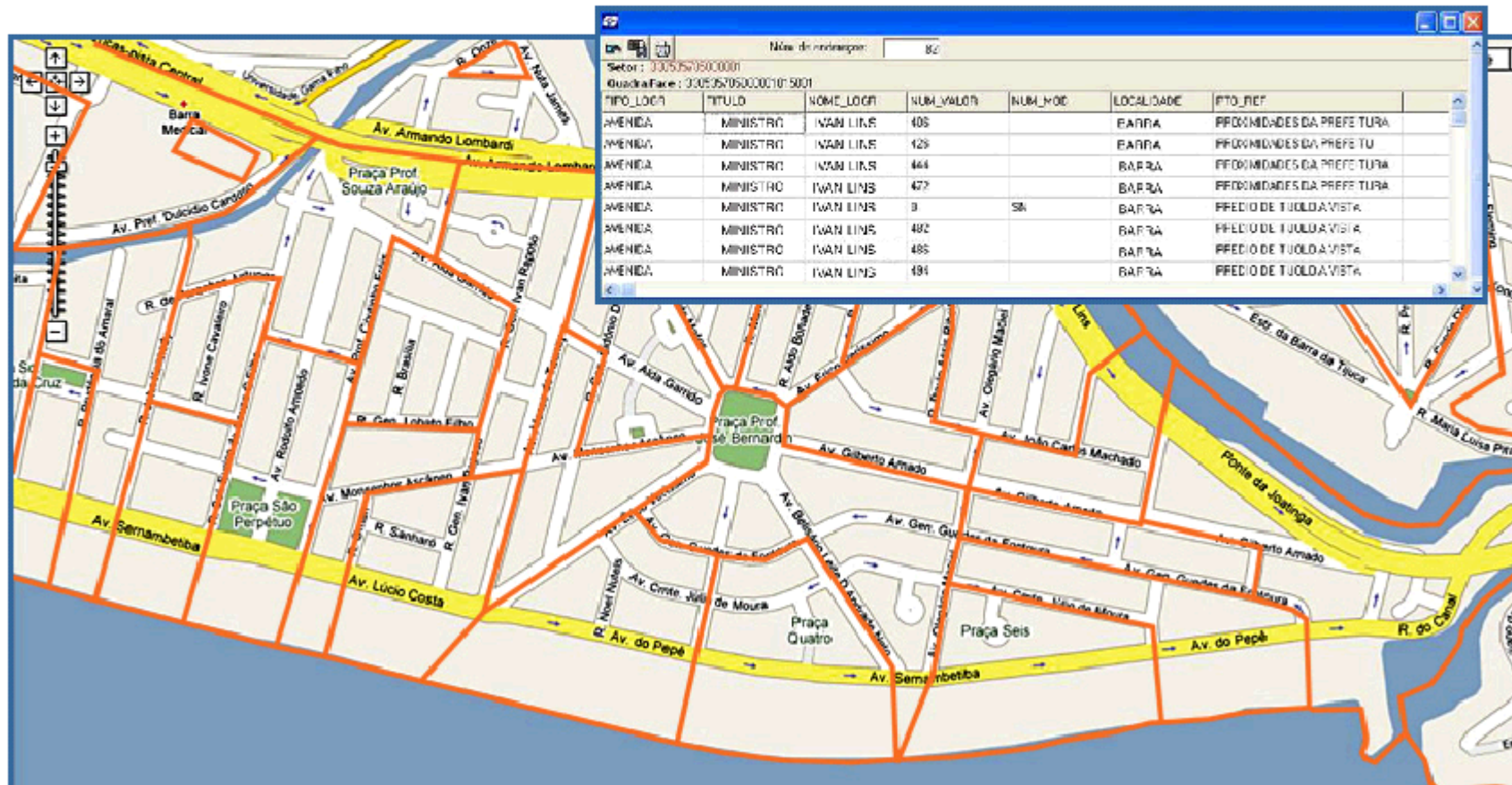
- **Established by Presidential Decree 6666 of November 27, 2008**
- **Coordinated by the National Commission on Cartography – CONCAR**
- **Used as reference for the National Open Data Infrastructure of Brazil (INDA)**
- **Industry has a role to be played, as indicated in the Decree**
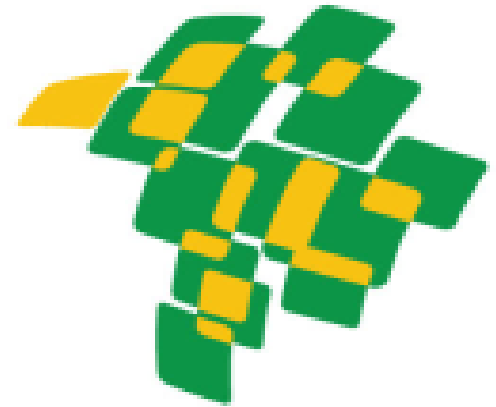
THE GOALS

- To promote the proper generation, storage, access, share, dissemination and use of geospatial data produced at federal, state, and municipal level

- To promote the use of standards and specifications certified by the National Commission on Cartography – CONCAR

- **To avoid duplication of efforts and waste of resources in obtaining geospatial data by public administration bodies**

GI Institutional Arrangement in Brazil for INDE

IBGE

CONCAR

(Superior Council)

CINDE

(Technical Committee)

Coordinates the INDE implementation

139 members from 32 institutions

- Management
- Standards and Specs
- Data and Metadata
- Technology
- Capacity Building and Training
- Dissemination
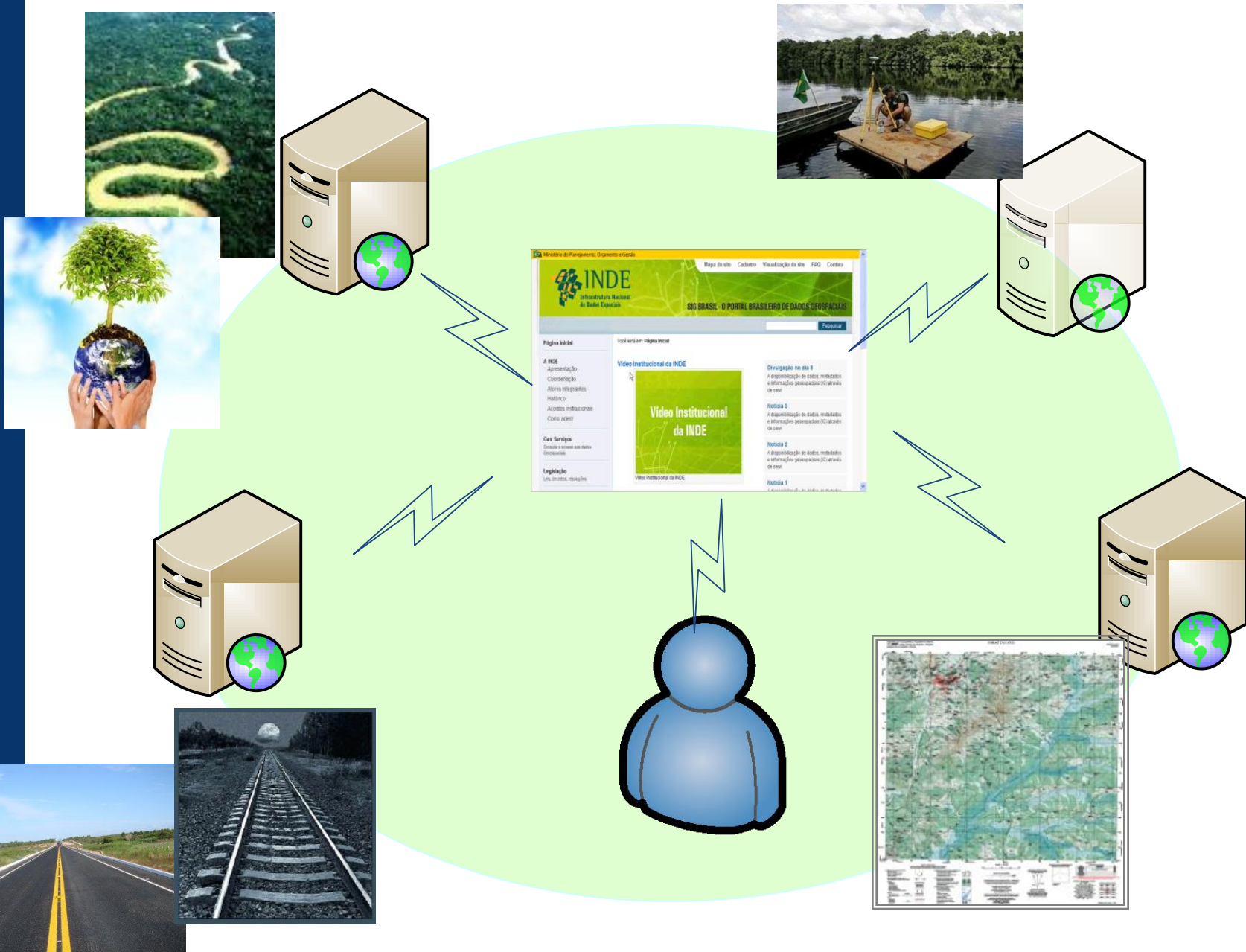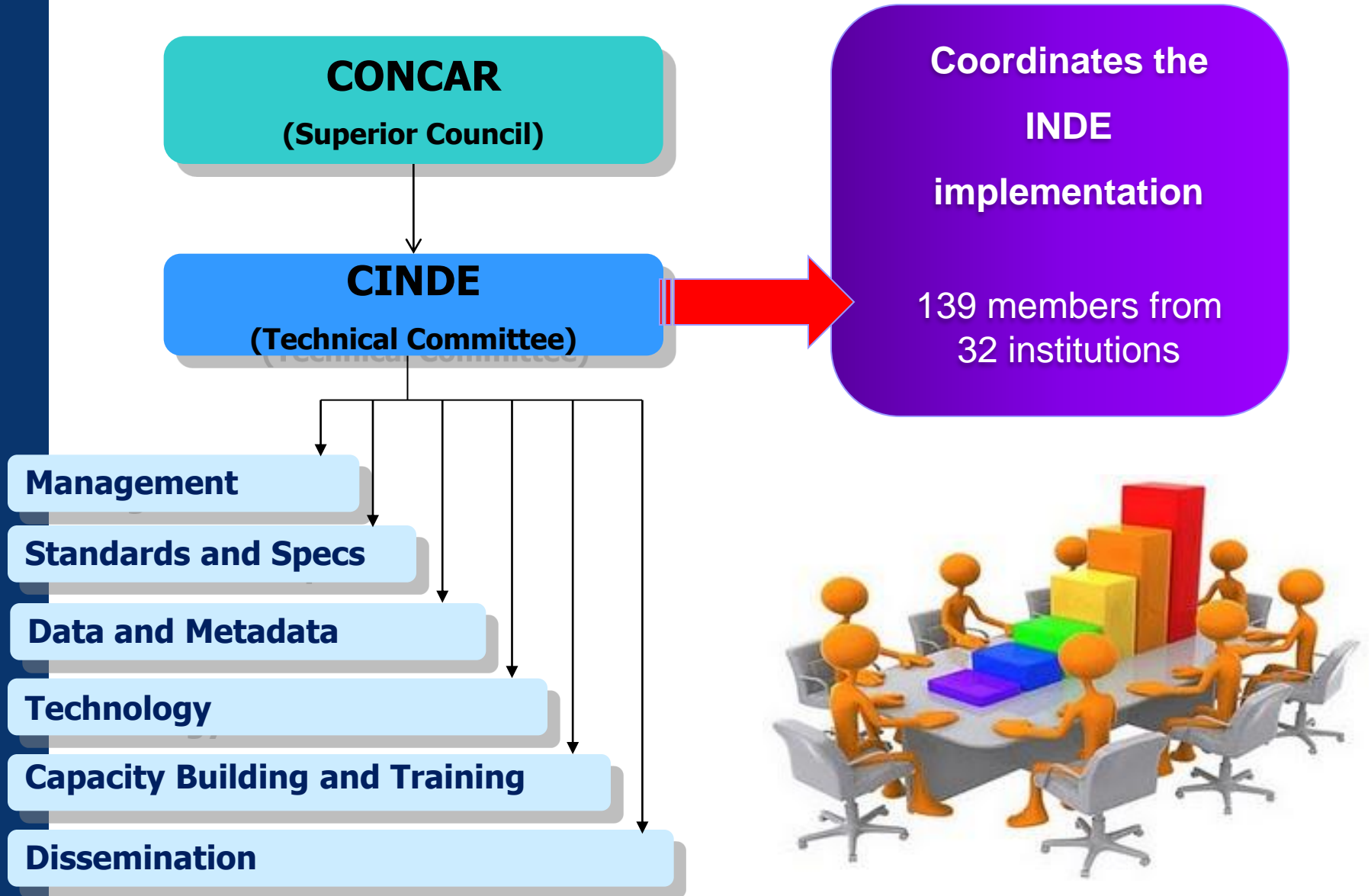
Current status

✓ **Avaliable applications**

- INDE portal: www.inde.gov.br
- Metadata catalog
  www.metadados.inde.gov.br
- Visualization tool
  www.i3geo.inde.gov.br

✓ **Avaliable data and metadata**

- Metadata: 5320 documents of 3 institutions
- Data: ~150 WMS services

✓ **Access statistics**

- Metadata catalog: 1,800,000 hits per month

www.inde.gov.br

Action Plan to INDE Implementation
(Portuguese, English and Spanish):
http://www.inde.gov.br/?p=896

Producers	Geospatial Reference (Framework) Data															
	Geodetic	Topographic Mapping			Subsidiary										Special Mapping	
	Redes Geodésicas: Planimétrica, Altimétrica, GNSS, Maregráfica Permanente, e Gravimétrica	Mapeamento Terrestre Sistemático - Geográfico	Mapeamento Terrestre Sistemático - Topográfico	Mapeamento Terrestre Sistemático Cadastral	Mosaicos Ortorretificados	Modelo Numérico	Ortofotocartas	Cartas-Imagem	Nomes Geográficos	Divisão Político Administrativa	Unidades de Conservação	Bacias Hidrográficas	Terras Indígenas	Dados e Informações Fundiárias	Mapeamento Náutico	Mapeamento Aeronáutico
Ministério da Ciência e Tecnologia – ON	X															
Ministério da Ciência e Tecnologia - INPE					X	X										
Ministério da Defesa – Aeronáutica – ICA									X							X
Ministério da Defesa – Exército - DSG			X	X		X	X	X	X							
Ministério da Defesa – Marinha - DHN						X									X	
Ministério do Desenvolvimento Agrário - INCRA									X					X		
Ministério da Justiça - FUNAI									X				X			
Ministério do Meio Ambiente – ANA												X				
Ministério do Meio Ambiente – ICMBio									X		X					
Ministry of Planning - IBGE	X	X	X			X	X	X	X							
Ministério das Relações Exteriores - CBDL										X						
Órgãos Federais, Estaduais e Municipais através de contratação da iniciativa privada		X	X	X		X	X	X	X							

Schedule of releasing IBGE data through INDE

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Geodesy

Data or Product	Metadata registered?	Format	Service availability
Redes Planimétrica, Altimétrica e Gravimétrica (BDG - Banco de Dados Geodésicos)	Yes	WMS and link to IBGE website	2nd Sem 2012

Geography

Data or Product	Metadata registered?	Format	Service availability
REGIC - Arquivos Vetoriais; Pranchas do Atlas Nacional	Yes	WMS	**available**

Topographic Mapping

Data or Product	Metadata registered?	Format	Service availability
BCIM	Yes	WMS	**available**
RR100	Yes	WMS	**available**
BC250	Yes	WMS	2nd Sem 2012
Modelo Digital de Elevação Nível 1 - (1:25.000 e 1:50.000)	Work in progress	WMS	2nd Sem 2012
Modelo Digital de Elevação Nível 3 - (1:250.000)	Work in progress	WMS	2nd Sem 2012
Ortofotomosaico nível 1 (fotografia aérea)	Work in progress	WMS	2nd Sem 2012
Mapa Indice	Work in progress	WMS	2nd Sem 2012
Ortomosaico ótico nível 2 (AVNIR - PRISM - Spot)	Work in progress	WMS	2nd Sem 2012
Ortomosaico ótico nível 3 (LANDSAT - CBERS)	Work in progress	WMS	2nd Sem 2012
Ortomosaico Radar (PALSAR)	Yes	WMS	2nd Sem 2012

Schedule of releasing IBGE data through INDE

Census mapping

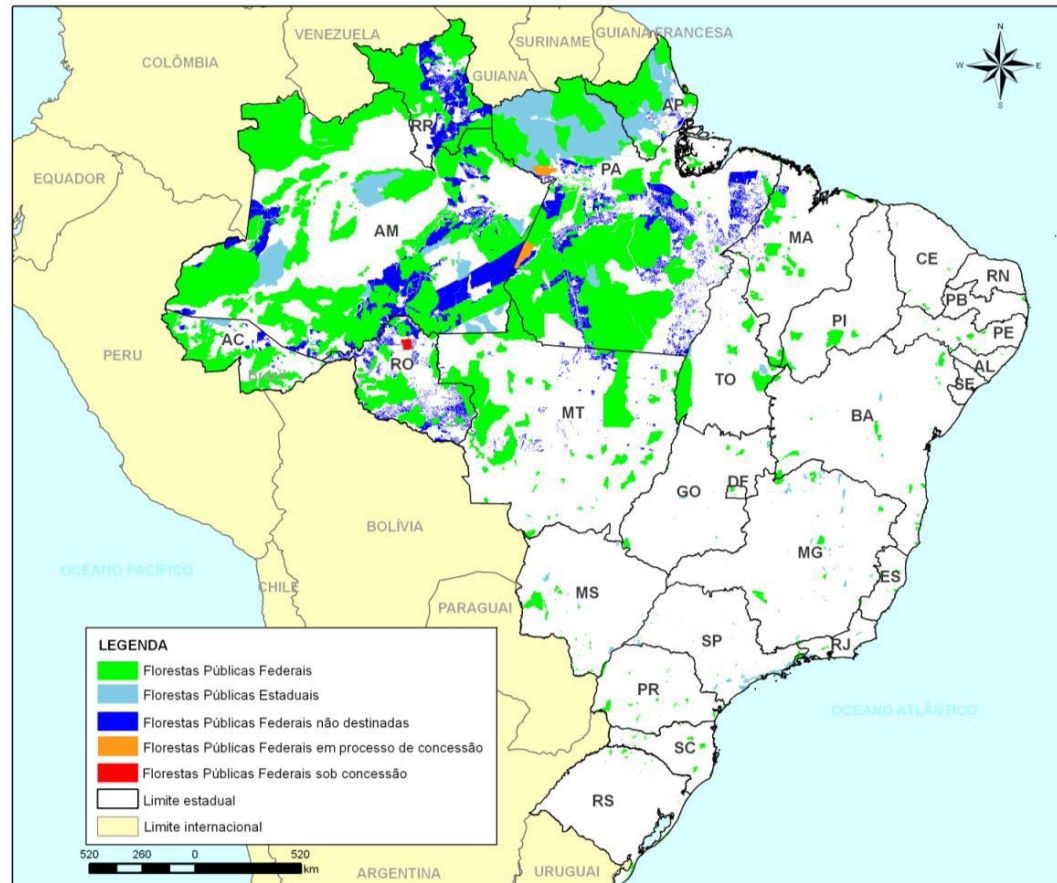| Data or Product	Metadata registered?	Format	Service availability
Malha Municipal	No	WMS	2nd Sem 2012
Malha Distrital	No	WMS	2nd Sem 2012
Malha Subdistrital	No	WMS	2nd Sem 2012
Malha Setorial	No	WMS	2nd Sem 2012

Thematic data – Natural resources

Data or Product	Metadata registered?	Format	Service availability
Biomas 1 : 5.000.000 BR	No	WMS	2nd Sem 2012
Geomorfologia 1 : 250.000 AML	No	WMS	2nd Sem 2012
Vegetação 1 : 250.000 AML	No	WMS	2nd Sem 2012
Vegetação 1 : 5.000.000 BR	No	WMS	2nd Sem 2012
Cobertura e Uso Estadual e 1:250.000 AP, AC, RR , RS, PA e SE.	No	WMS	2nd Sem 2012
Geologia Estadual AML (–MA)	No	WMS	2nd Sem 2012
Geomorfologia Estadual – AML (– MA)	No	WMS	2nd Sem 2012
Hidrogeologia 1: 2.500.000 R. Nord.	No	WMS	2nd Sem 2012
Hidroq./Hidrogeo Estadual PB e RN (4)	No	WMS	2nd Sem 2012
Hidroq./Hidrogeo. 1 : 250.000 (22 folhas) SB24 e SB25	No	WMS	2nd Sem 2012
Hidroquímica 1: 2.500.000 R. Nord.	No	WMS	2nd Sem 2012
Pedologia Estadual – AML (– MA)	No	WMS	2nd Sem 2012
Vegetação Estadual AML (–MA)	No	WMS	2nd Sem 2012

Example of INDE Use by Public Sector

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Annual Forest Concession Plan (PAOF) describes the public forests to be submitted to concession processes by the Ministry of the Environment (MMA)

Developed using IBGE 1:1,000,000 basemap (available at INDE)

LEGENDA
- Florestas Públicas Federais
- Florestas Públicas Estaduais
- Florestas Públicas Federais não destinadas
- Florestas Públicas Federais em processo de concessão
- Florestas Públicas Federais sob concessão
- Limite estadual
- Limite internacional

Fonte: CNFP/SFB, março 2010; IBGE/DGC, 2010 (a).

Example of INDE Use by Public Sector

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GeoPR – Geospatial Information Supporting System
GSI - Institutional Security Cabinet of the Presidency

http://geopr1.planalto.gov.br/saei/sistemas/geopr

ArcGIS for INDE

Supporting INDE standards

In partnership with:
Diretoria de Serviço Geográfico
(DSG)

Adapting ArcGIS system to INDE standards will benefit for:

- Saving resources. Freely available data models.

- Increasing productivity in data conversion and editing for INDE standards.

- Increasing productivity in the use and sharing of data in INDE standards.

- Greater speed and ease of adoption of the standards across the community.

Making a Difference

Aligned with similar Esri initiatives in Europe and North America

imagem
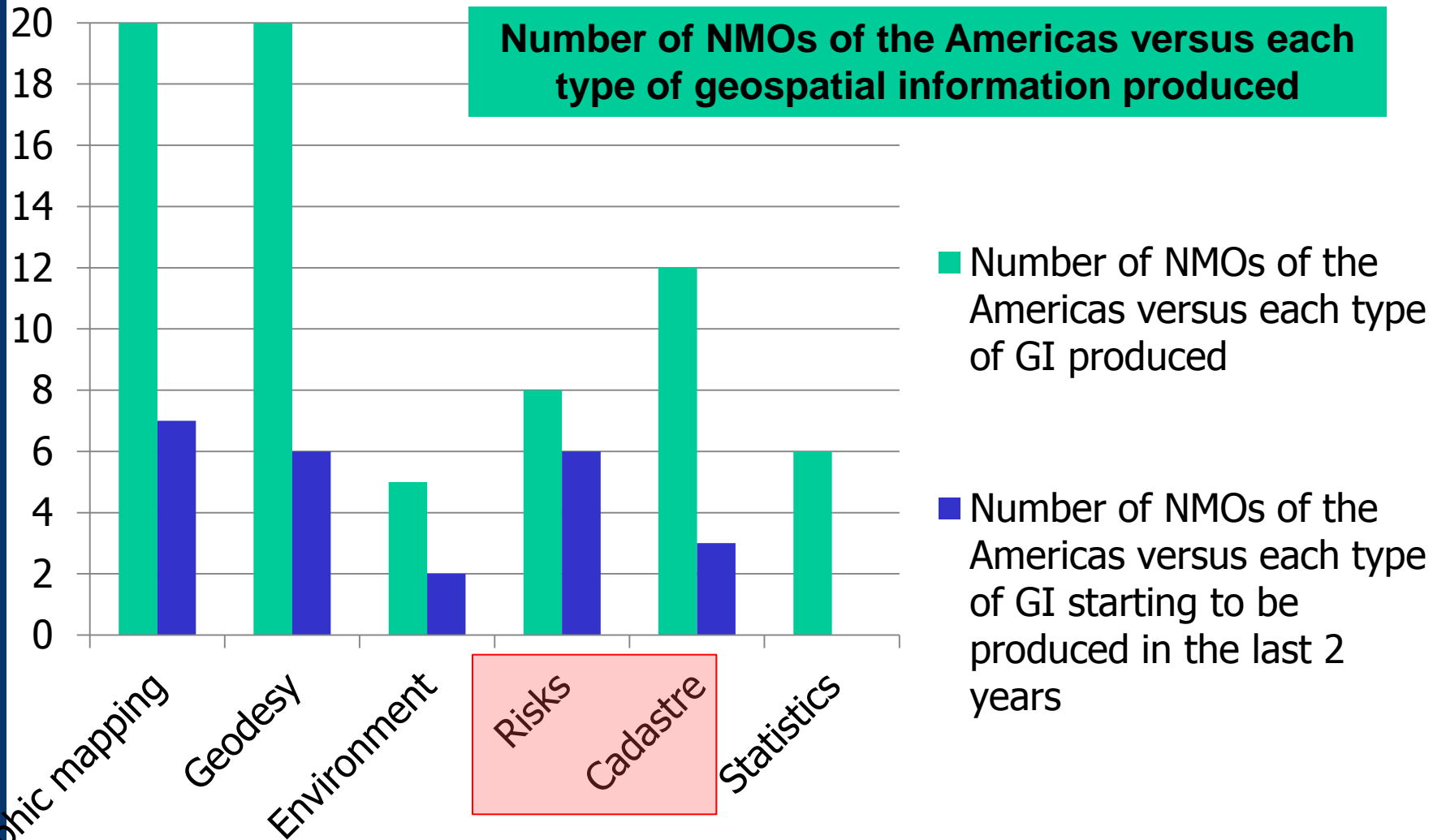Soluções de Inteligência Geográfica

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Brazilian Federal Law 11527 of Nov 18, 2011

- **Regulates the access to public information in Brazil based on principles of transparency of public administration**
- **Art. 12: access to data is free**

Brazilian open data website

- **http://beta.dados.gov.br**

2011 PC-IDEA Questionnaire Results

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Number of NMOs of the Americas versus each type of geospatial information produced

■ Number of NMOs of the Americas versus each type of GI produced

■ Number of NMOs of the Americas versus each type of GI starting to be produced in the last 2 years

Number of NMOs of the Americas versus each type of GI distributed free of charge

Legend:
- Number of NMOs of the Americas versus each type of GI distributed free of charge
- Number of NMOs of the Americas versus each type of GI starting to be distributed free of charge during the last 2 years

Categories (x-axis): Topographic mapping, Geodesy, Environment, Risks, Cadastre, Statistics

- **Applied to direct public administration entities, to public foundations, to public companies, and to entities directly or indirectly controlled by the Union, States, Federal District and Municipalities**

- **PPP Managing Committee (CGP), composed by the Ministry of Planning (as Coordinator), Ministry of Finance and Ministry of Civil Affairs**

Projects under public bid
- Datacenter Project (Banco do Brasil and Caixa Econômica Federal)
- Pontal (Pernambuco)

Projects being analyzed
- Digital Public TV Network
- **Brazilian Geostationary System**
- Baixio do Irecê
- Salitre Project

Brazilian Geostationary Satellites

The Brazilian Geostationary Satellites (SGB) are being jointly developed by Empresa Brasileira de Aeronáutica (Embraer), which is private, and by Telebras, which is public

Telebras will use SGB to improve the National Wide Band Plan, which proposes to amplify the use of high speed Internet in Brazil

- ✓ Private companies have participated in the geospatial data production in Brazil since the 60´s

- ✓ Responsibility of data production still heavly relying on goverment institutions in Brazil

- ✓ Data providers to benefit from SDIs, either by using data available for producing other data, either by avoiding overlap of efforts and by optimizing resources

- ✓ Private companies to benefit from SDIs, either by using data available, either by providing new services to clients

- ✓ There is a Legal Open Data framework in place in Brazil, in the general and in the NSDI contexts

- ✓ Situation in the Americas shows trend of producting risk and cadastre data, as well as of open data policies, based on the results of the 2011 questionnarie

- ✓ PPP in Brazil still at the first stages and must properly address the constraints and rules that generally govern the relationship between the involved parties. At the same time, it may help fostering the development of a SDI

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Thank you!