Aggregations of spatial information for statistical data dissemination

06/06/2013

Context

The Demographic Census has two questionaries

1. Universe
2. Sample survey

Political-Administrative divisions of Brazil:

- 27 States
- 5565 municipalities

Introduction

Some forms of aggregation of spatial information:

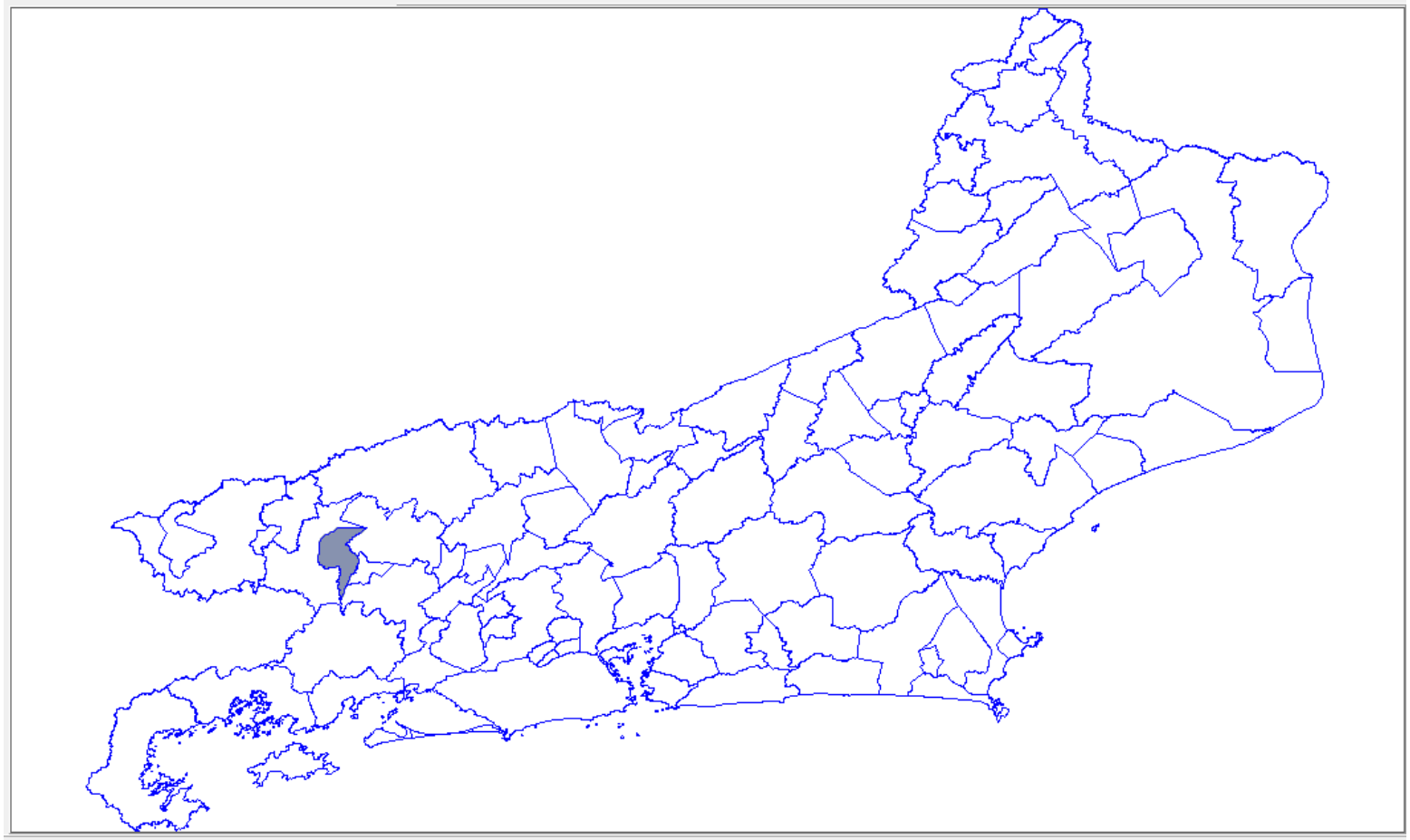
1. Enumeration area (*Setores censitarios*)

2. Weighting area (*reas de ponderacao*)

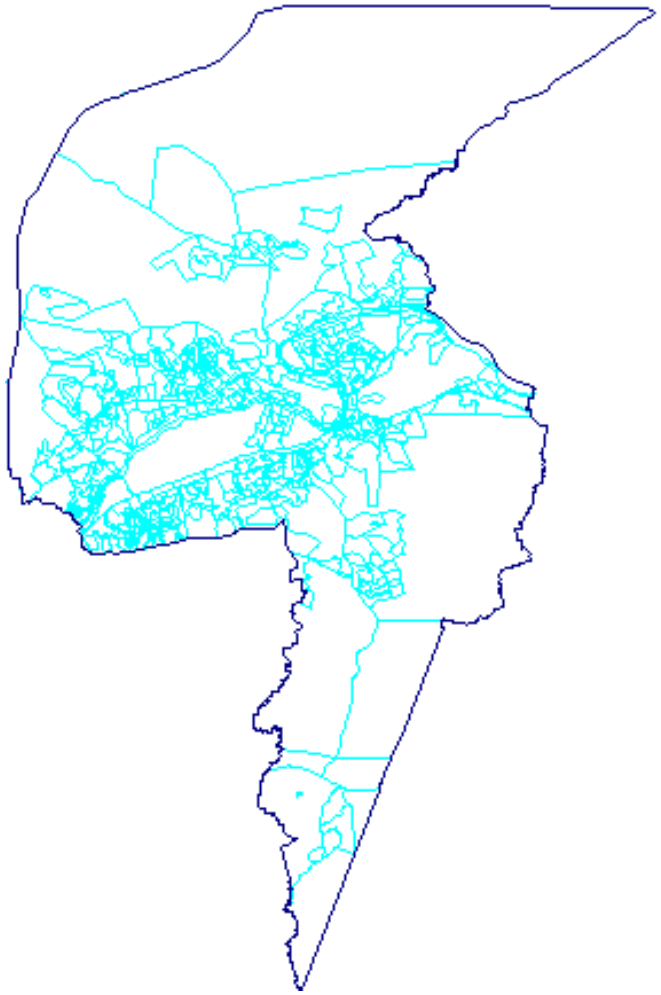
3. Block-face

4. Statistical grids

Example: Volta Redonda



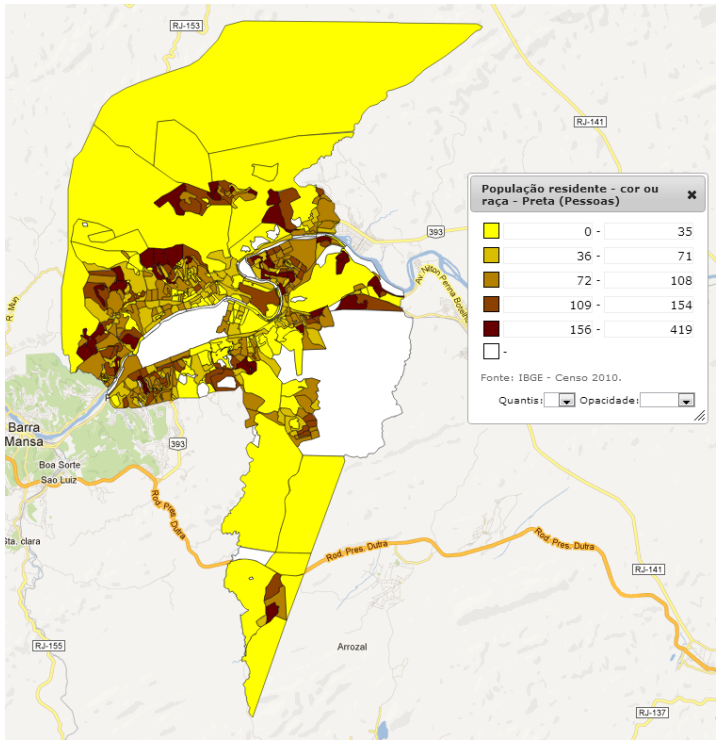
1. Enumeration area

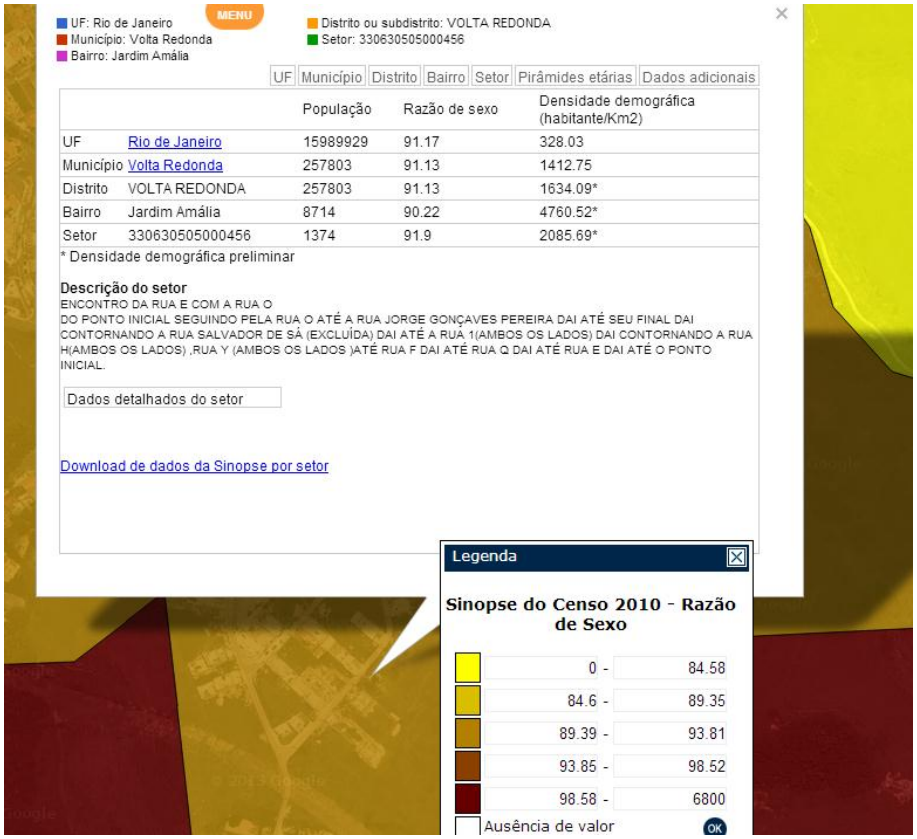


1. Enumeration area

- Dissemination
  - 2010 Census
  - SIG IBGE / 2010 Census
  - Statcart

1. Enumeration area





2. Weighting areas

Criteria for aggregation

1. **Size**
   To provide estimates with statistical quality in small areas

2. **Contiguity**
   Constituted by geographically adjacent enumeration areas

2. Weighting areas

Possible scenarios

- The smallest weighting area must have 400 occupied private households in the survey sample
- The highest geographic level is the city
- Weighting areas with municipal planning agencies (more than 190.000 residents – 140 municipalities)
- Noncontiguous administrative divisions (Ex: urban enumeration area X rural enumeration area)

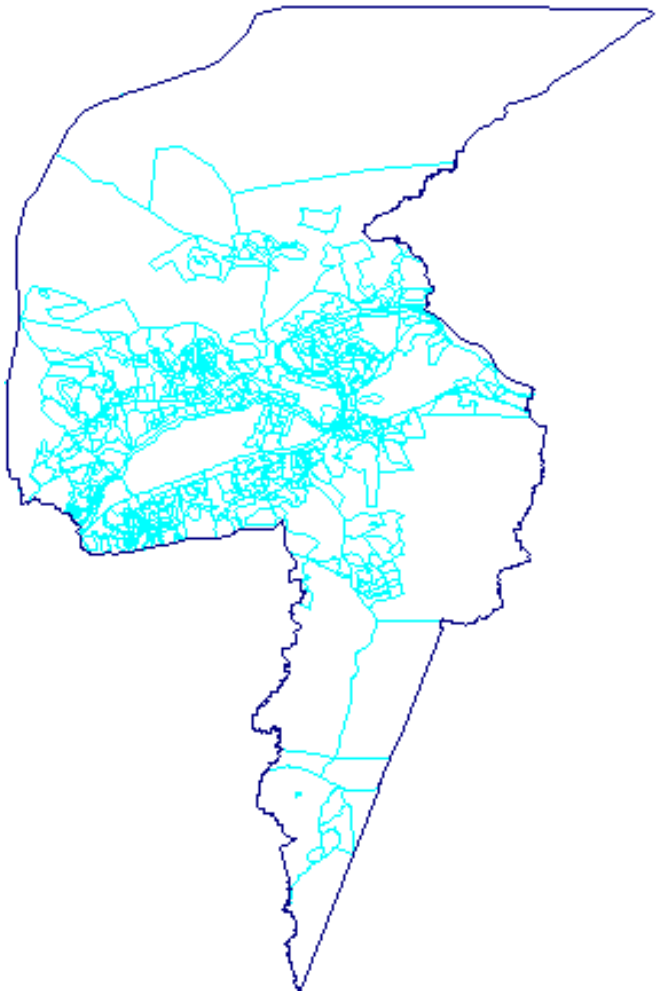
2. Weighting areas

Total

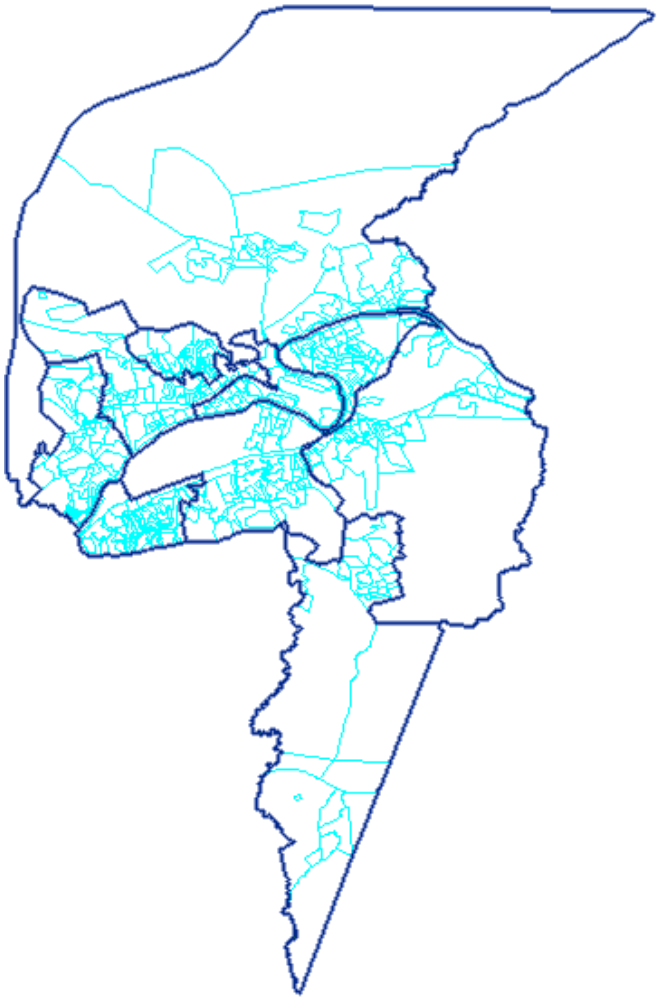
- 4524 – Municipality = weighting area
- 1041 – Municipality divided in more than one weighting area
    - 5660 weighting areas

Example: Volta Redonda

Enumeration areas



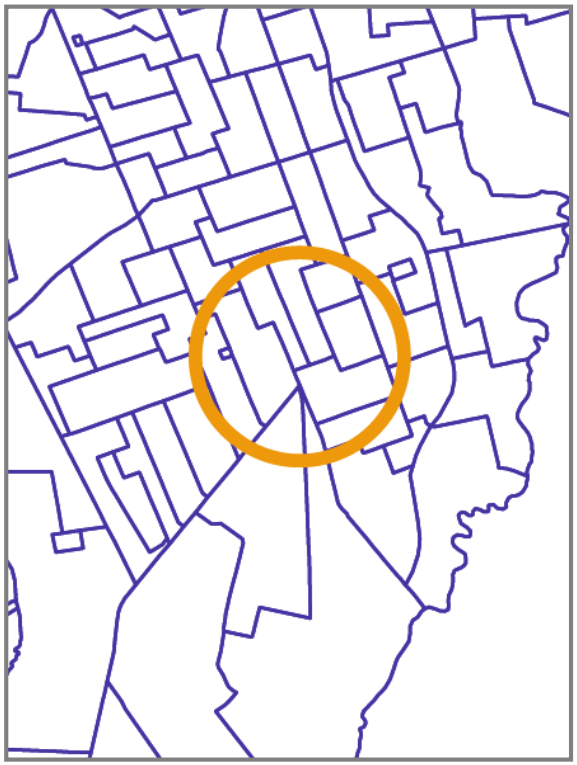
Weighting areas



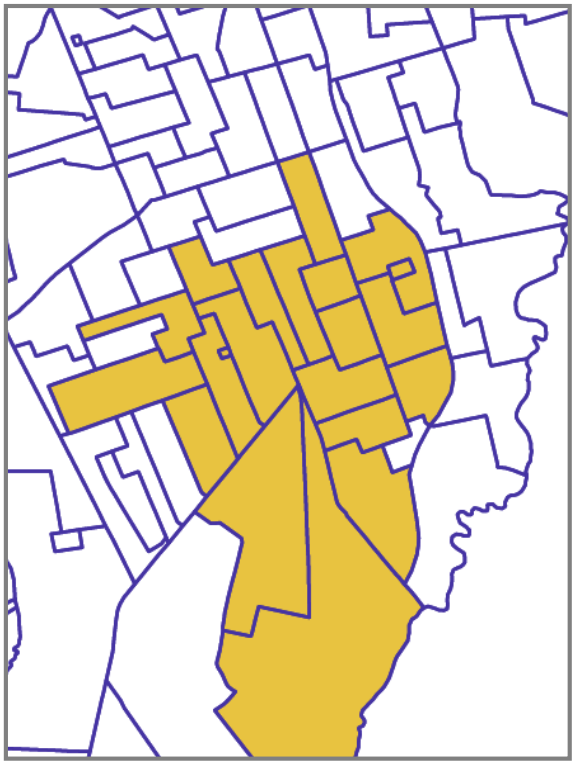
3. Block-face

Query by selected area

Previous situation: enumeration area as the smallest spatial unit



area of interest



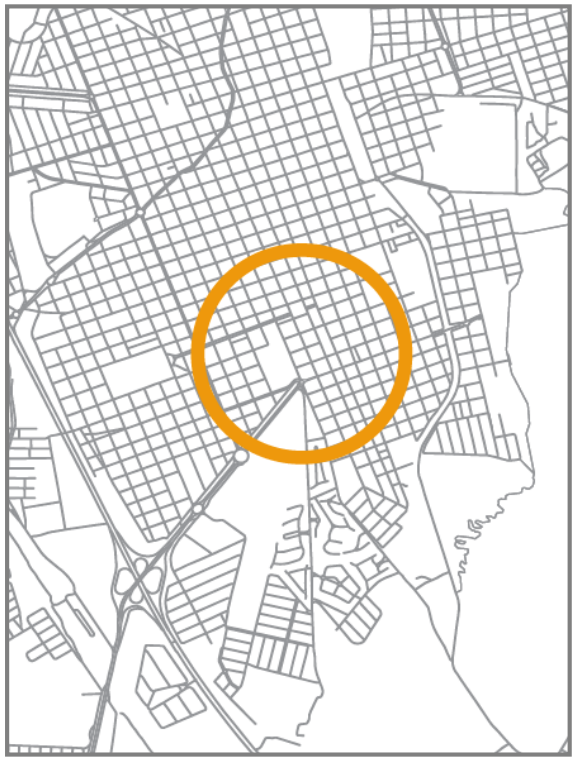
intersection result

3. Block-face

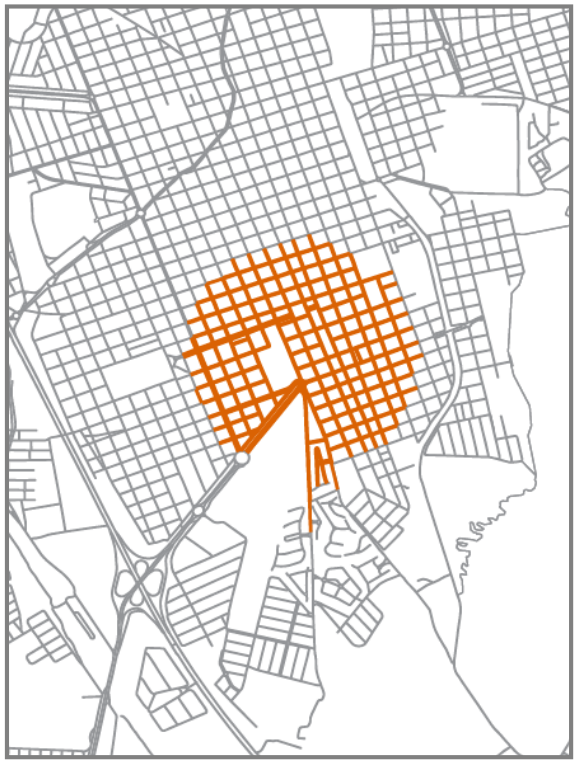
Query by selected area

Block-face as the smallest spatial unit

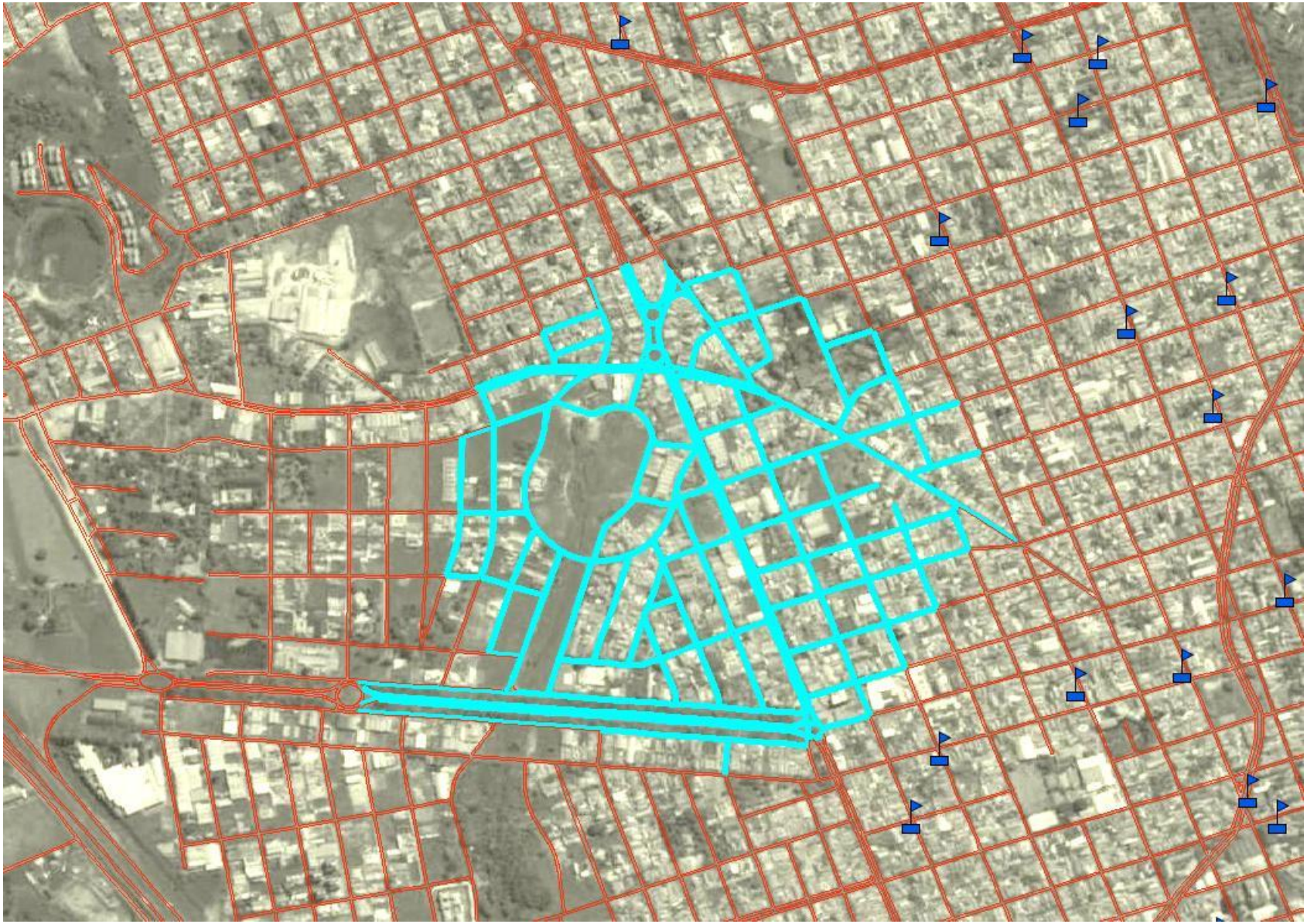
- confidentiality is maintained

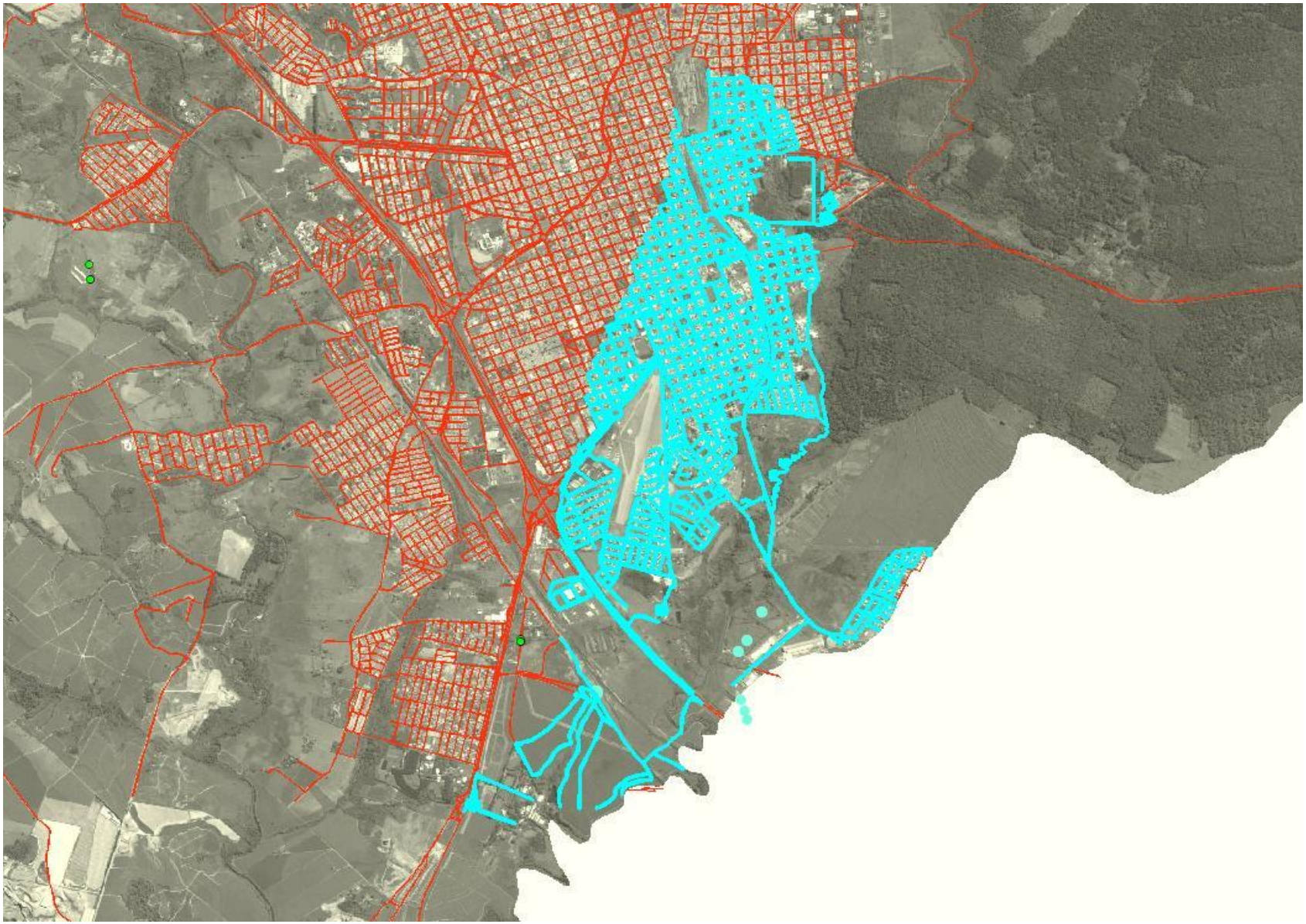


area of interest



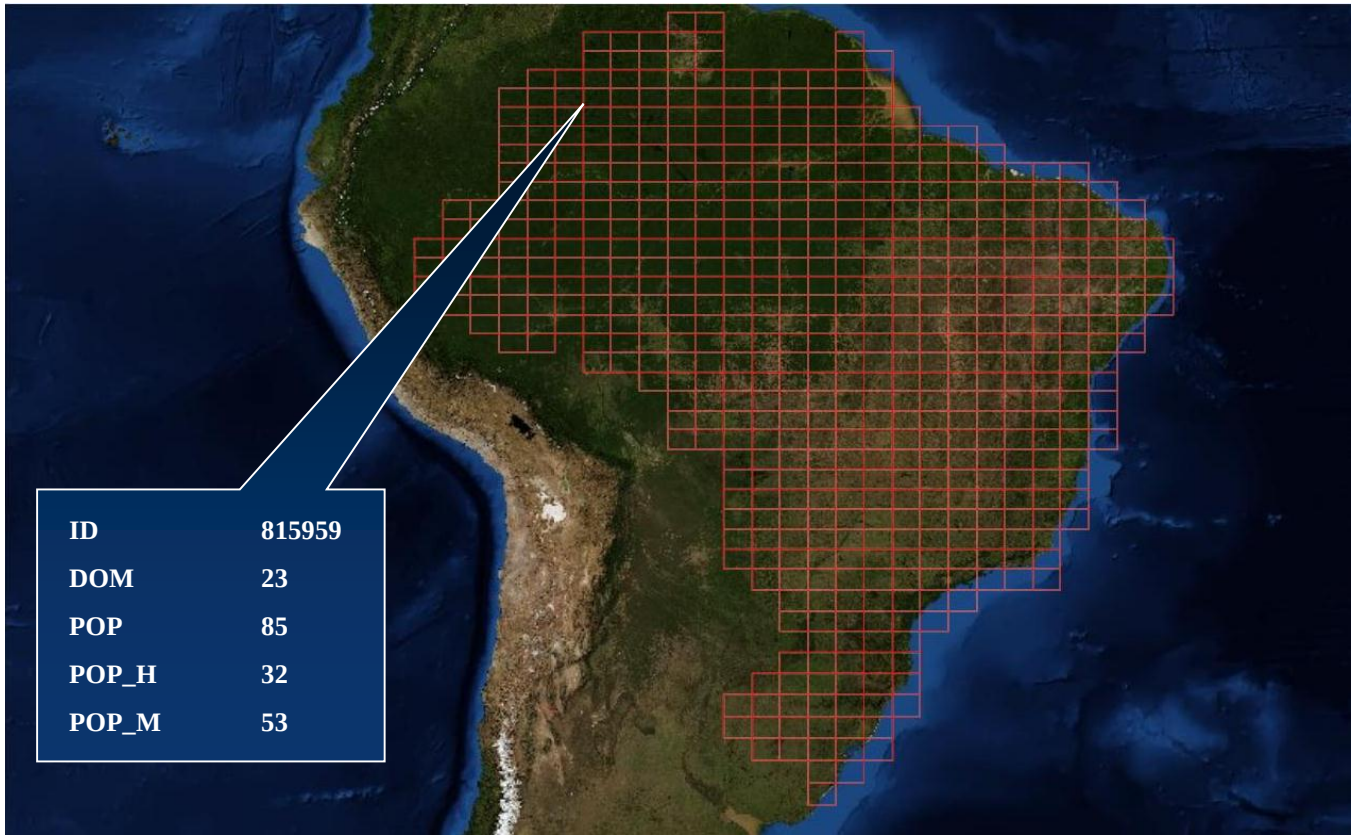
intersection result





4. Statistical grids

- hierarchical spatial structures formed by regular cells and used to make aggregate data available



4. Statistical grids

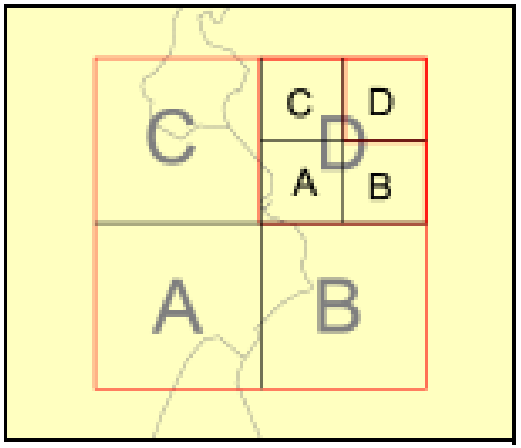
- independence from political-administrative boundaries
  → direct comparability

- no change over time
  → direct comparability

- hierarchical structure
  → allows multi-scale analyses

- easily handled with GIS tools

- vector or raster data structure

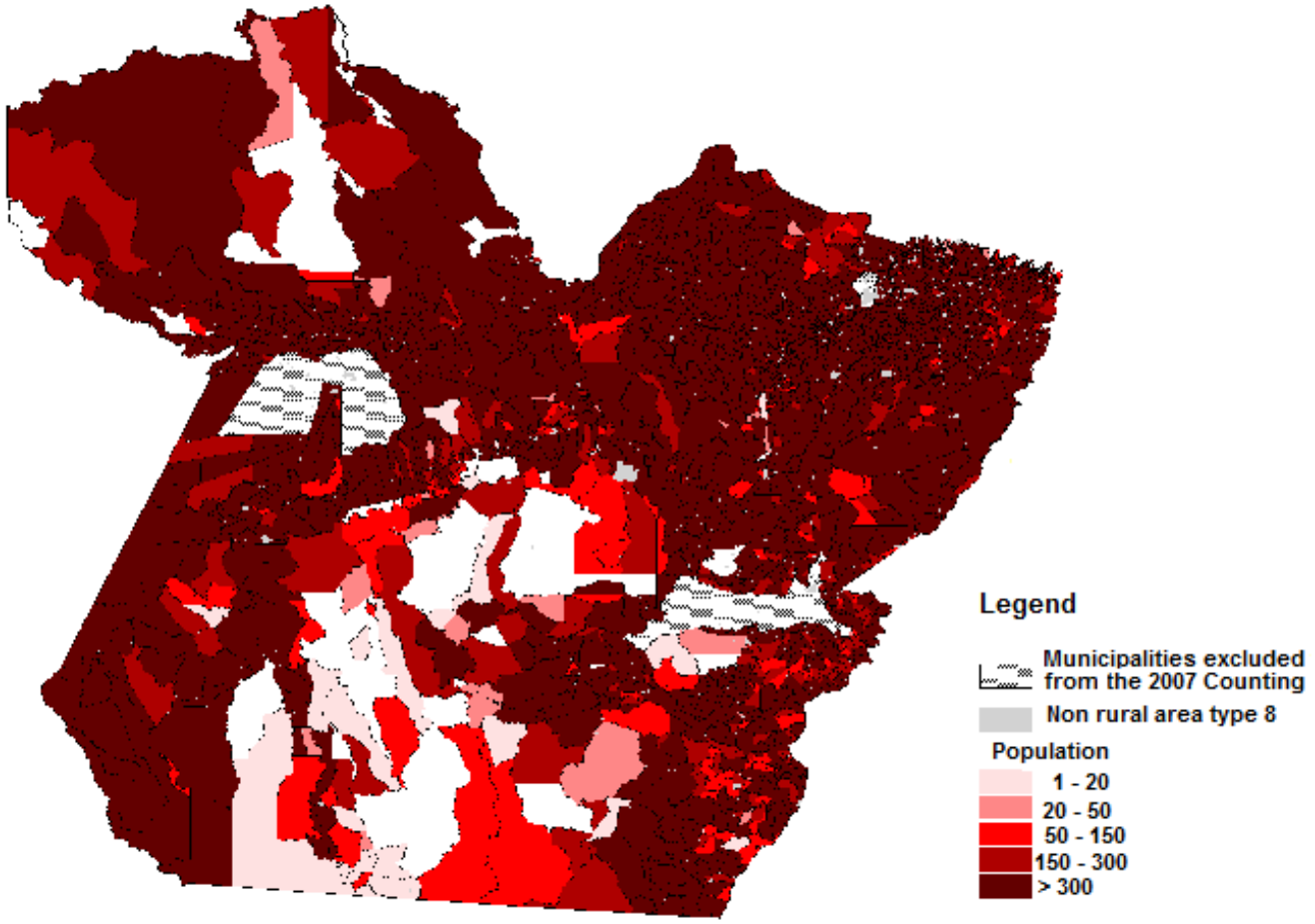


4. Statistical grids

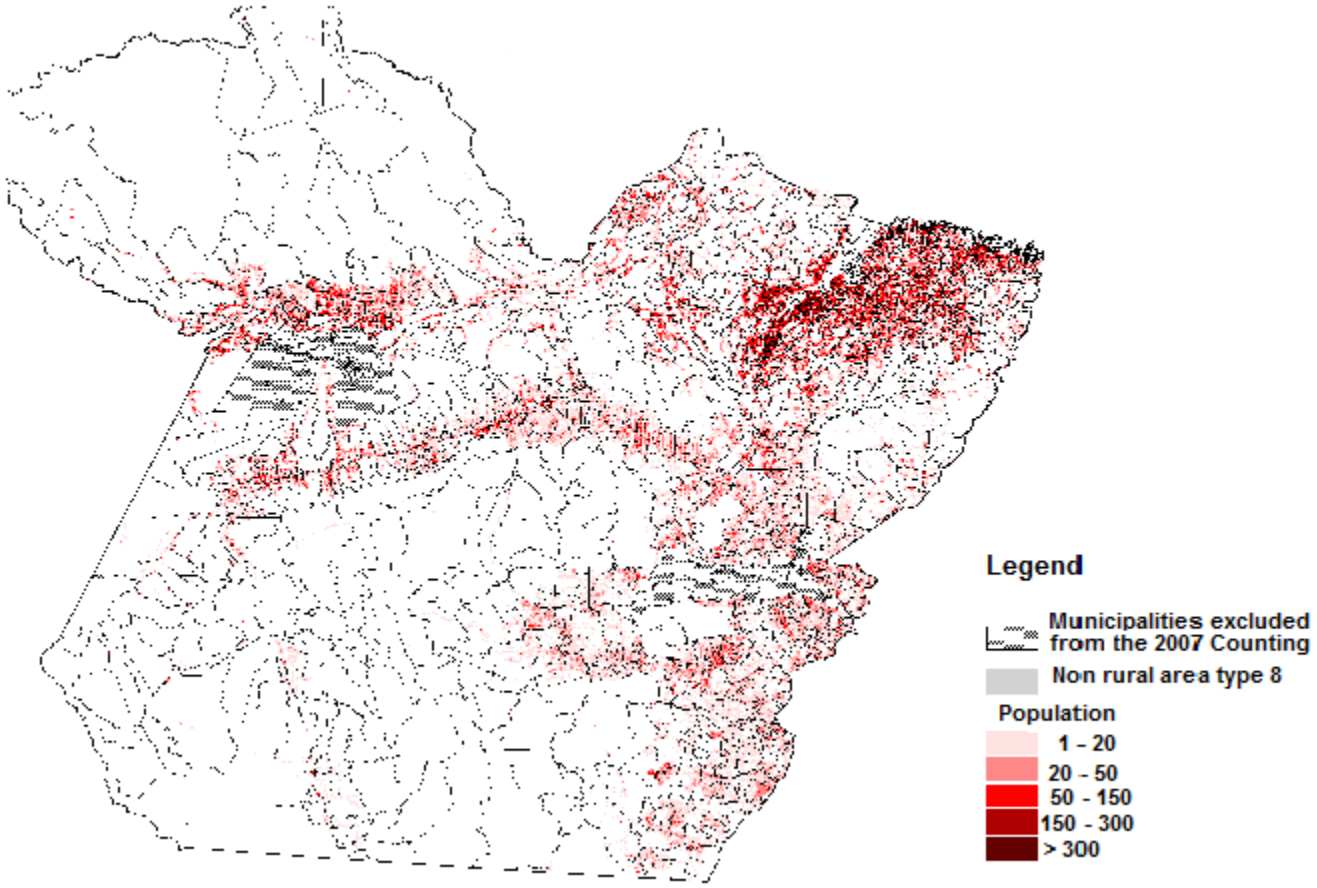
Case study:

- publicly available data from the 2007 Counting
- permanent private housing units (occupied and closed) in areas classified as rural - type 8
- population density obtained from the average number of residents per housing unit in the enumeration area
- 1’15” x 1’15” ~ 2.3 Km → 1:4,000 scale
- Case - Para

PARÁ
Enumeration Areas



PARÁ
Cells of 1 min and 15 sec



A Proposal for a Digital Map Collection: Find, Visualize, Create and Share

Date 06/06/2013

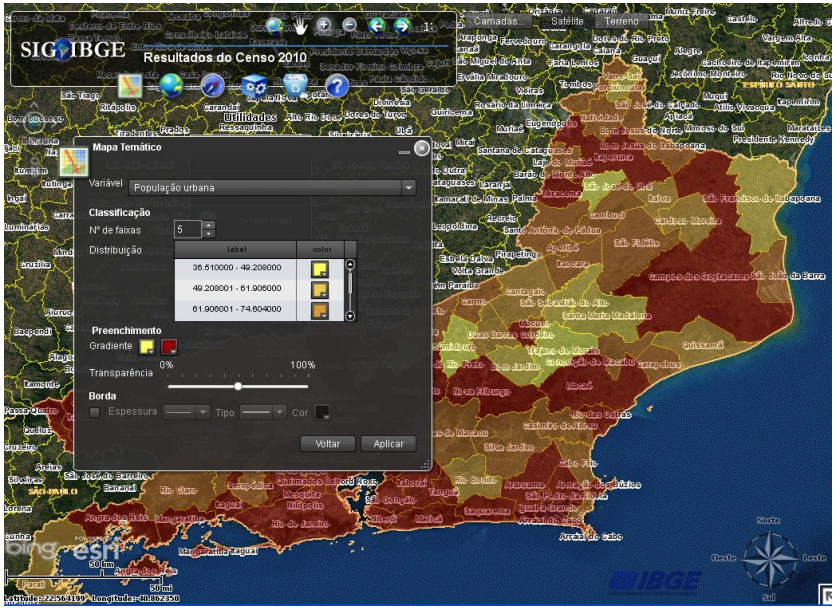
Introduction

Current context:

- Many entrances for maps through different channels
- Map channels aggregating maps in a number of formats (PDF, JPG, KML, WMS,...)
- Interactive map products

Interactive map products

The map server of IBGE: **SIG IBGE / SIG IBGE 2010 Census**



Interactive map products

SIG IBGE / SIG IBGE 2010 Census

- Developed in Flex technology
- Features:
    - To help reading data
    - To analyze and create maps
    - To export maps

Challenges

1. How can we improve access to map information?
2. How can we improve information visualization of IBGE interactive tools?
3. How can we motivate the production of information with IBGE maps?

Goal 1: To improve access to map information

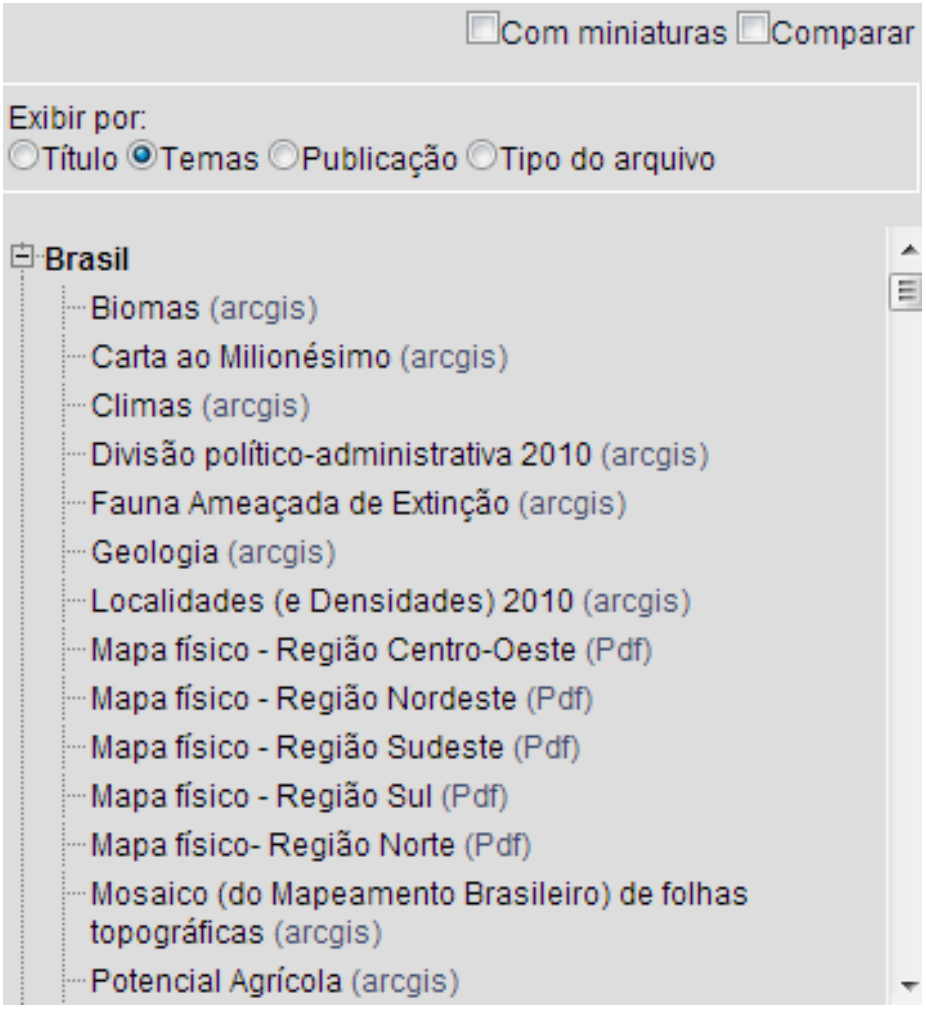
Proposals

1. Expanding hierarchical navigation through more data facets > Overview of the portal's content

- **Theme**
  Sub-theme
    Sub-sub-theme
- **Publications**
  Chapters
    Sections
- **Geographic area**
  Sub-area
    Sub-sub-area
- **Title**

- **File Type**

Example:


Com miniaturas
Comparar
Exibir por:
Título
Temas
Publicação
Tipo do arquivo
Brasil
Biomas (arcgis)
Carta ao Milionésimo (arcgis)
Climas (arcgis)
Divisão político-administrativa 2010 (arcgis)
Fauna Ameaçada de Extinção (arcgis)
Geologia (arcgis)
Localidades (e Densidades) 2010 (arcgis)
Mapa físico - Região Centro-Oeste (Pdf)
Mapa físico - Região Nordeste (Pdf)
Mapa físico - Região Sudeste (Pdf)
Mapa físico - Região Sul (Pdf)
Mapa físico- Região Norte (Pdf)
Mosaico (do Mapeamento Brasileiro) de folhas topográficas (arcgis)
Potencial Agrícola (arcgis)


Brasil
Biomas (arcgis)
Imagem não cadastrada
Capitanias hereditárias (Gif)
Carta ao Milionésimo (arcgis)

Proposals

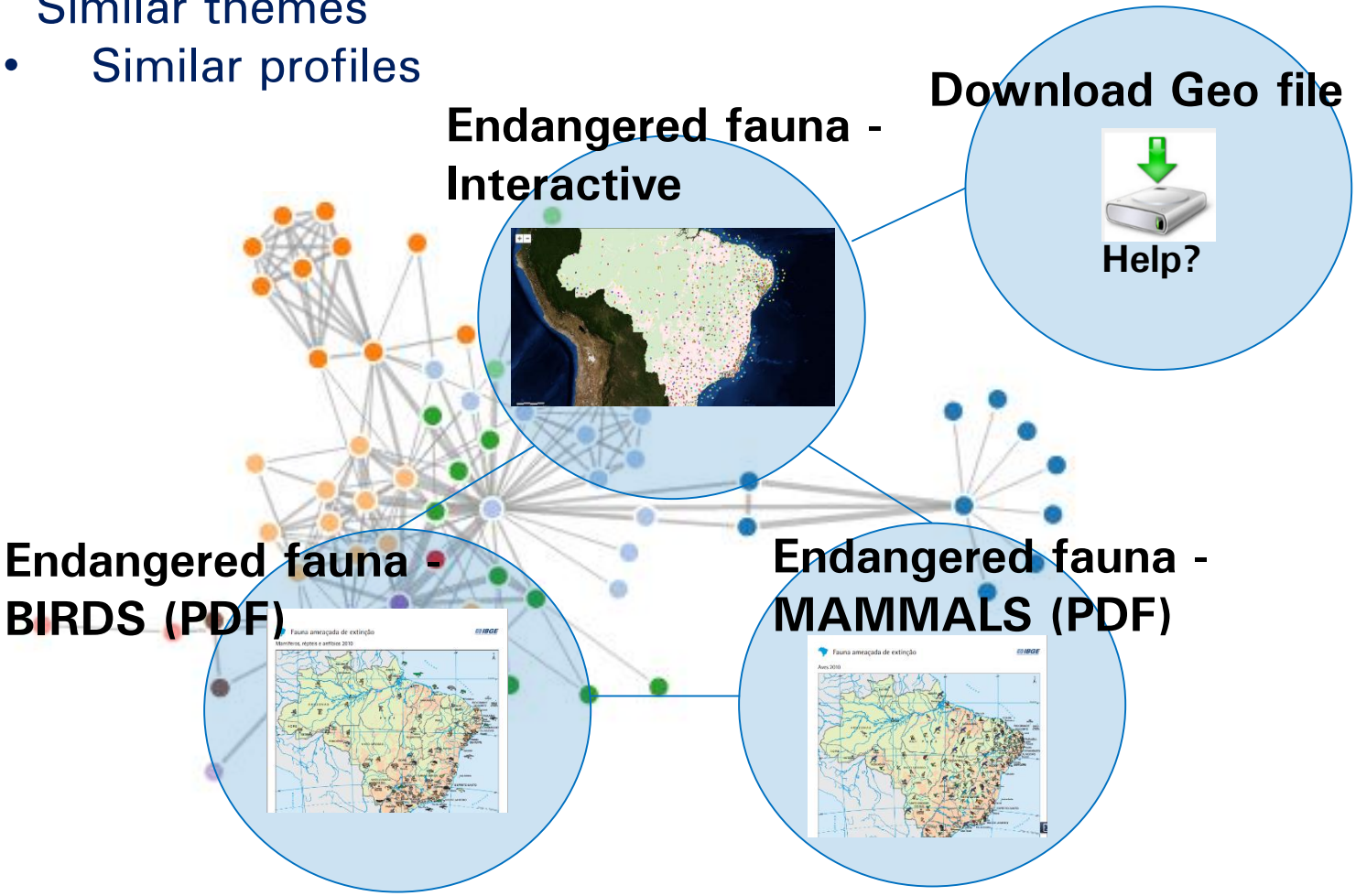
2. Search in the set of geospatial metadata (FGDC) through the inclusion of keyword search

   - Title
   - Subtitle
   - Summary
   - Tags

Proposals

3. Through **recommendations**

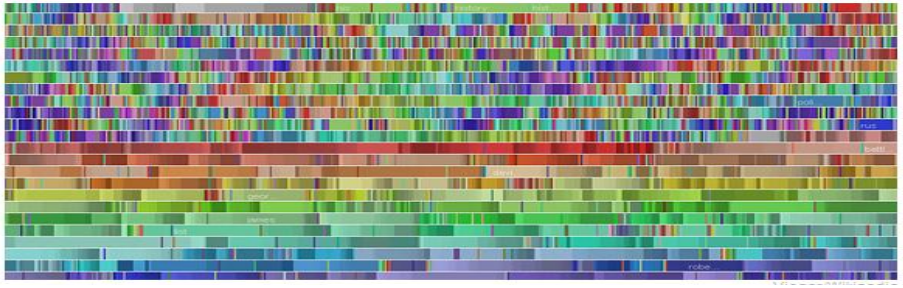
- Similar themes
  - Similar profiles



Proposals

4. To get to know our users

- Recording usage logs – **Big data**



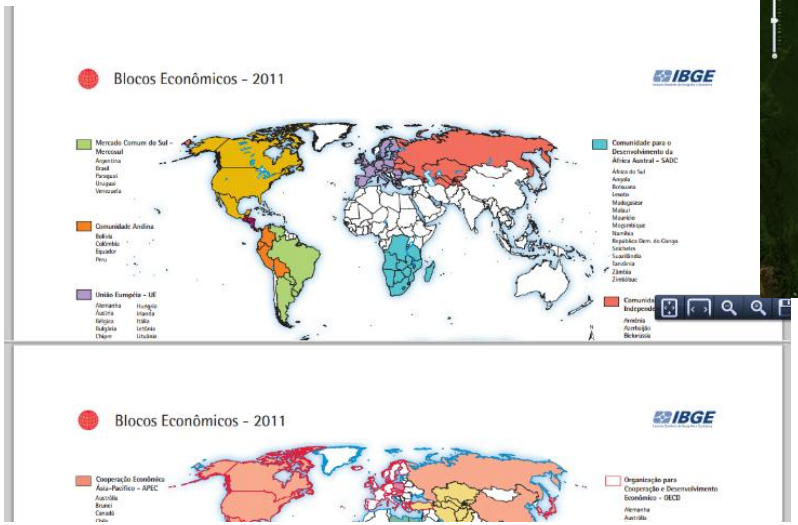
- Motivating users to create an account and **personalize** content

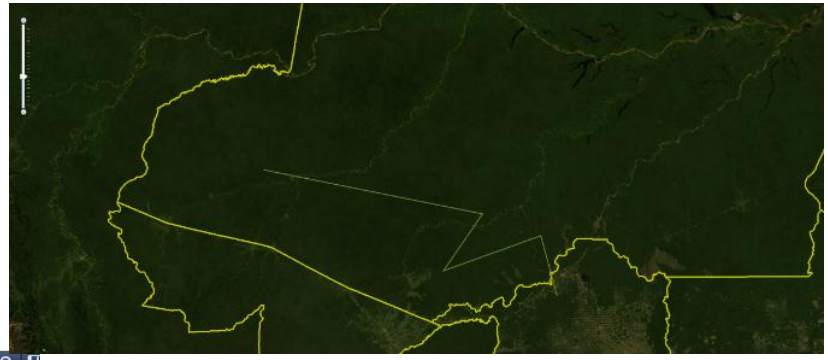
- Allowing information sharing in social networks

Goal 2: To improve information visualization

Proposals

1. New features to facilitate map interpretation and analysis
    - Allowing side-by-side comparison
    - Allowing map overlay
    - Improving visual feedback to the user
    - Including task-based interactive features



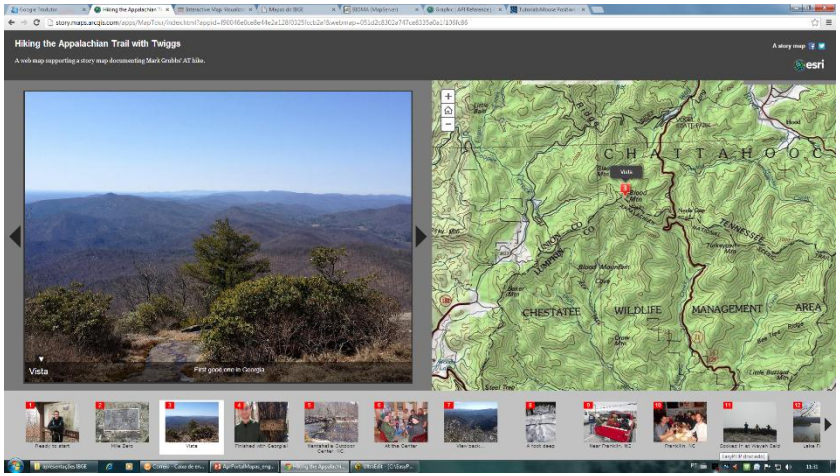


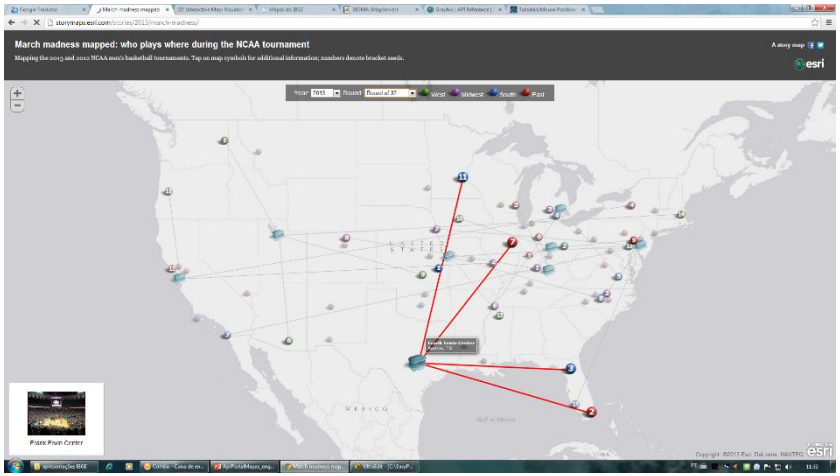
Proposals

2. Relevance **feedback** mechanism

- Explicit
  - User classification
- Implicit
  - Analysis of Big Data

3. Make it memorable through **storytelling** maps (future)





Goal 3 - To motivate the production of information Proposals

To expert users:

1. Improving **interoperability** between visualization systems using OGC standard services

    - WMS
    - WFS
    - WTMS

To novice users:

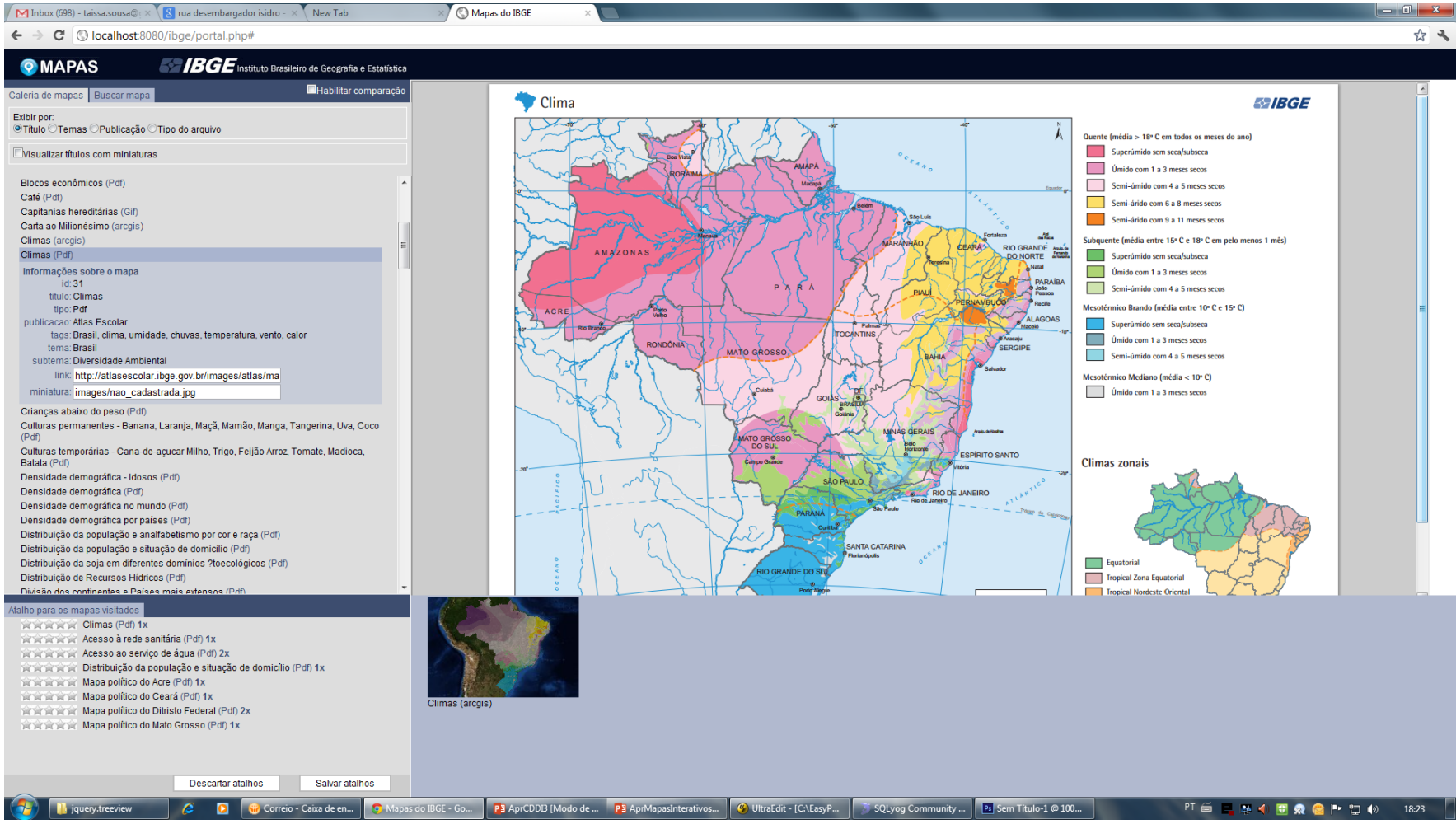
2. Allowing the importation of common file formats


Proposals

2. Allowing information sharing

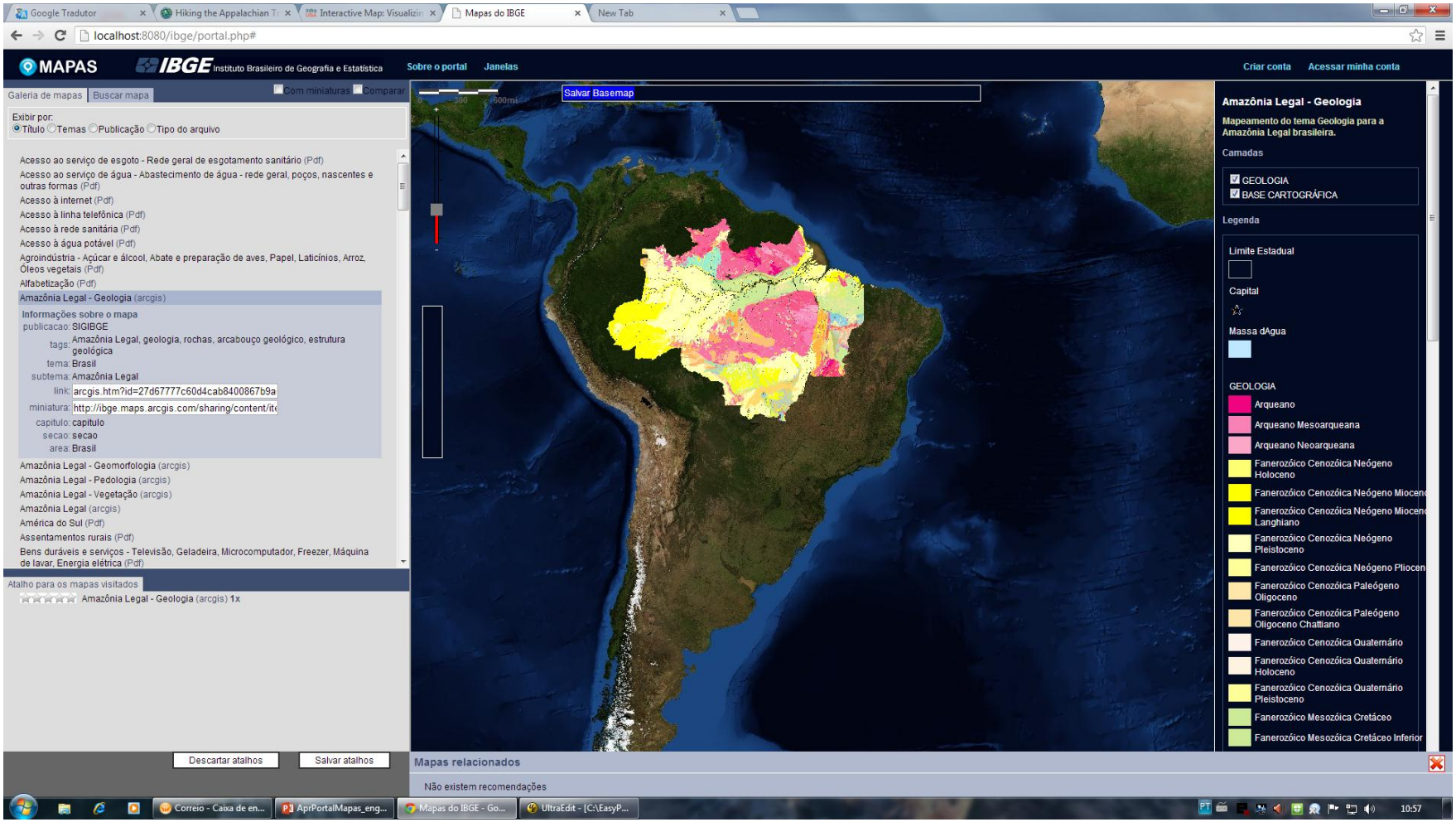
Interface

Visualizing PDF files



Interface

Visualizing interactive maps



Conclusions

The new proposal aims at covering characteristics from the following applications:

- Portal
- Social network
- Visualization tool

Thank you!

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