

# Sharing geospatial knowledge : "The geocognition project"

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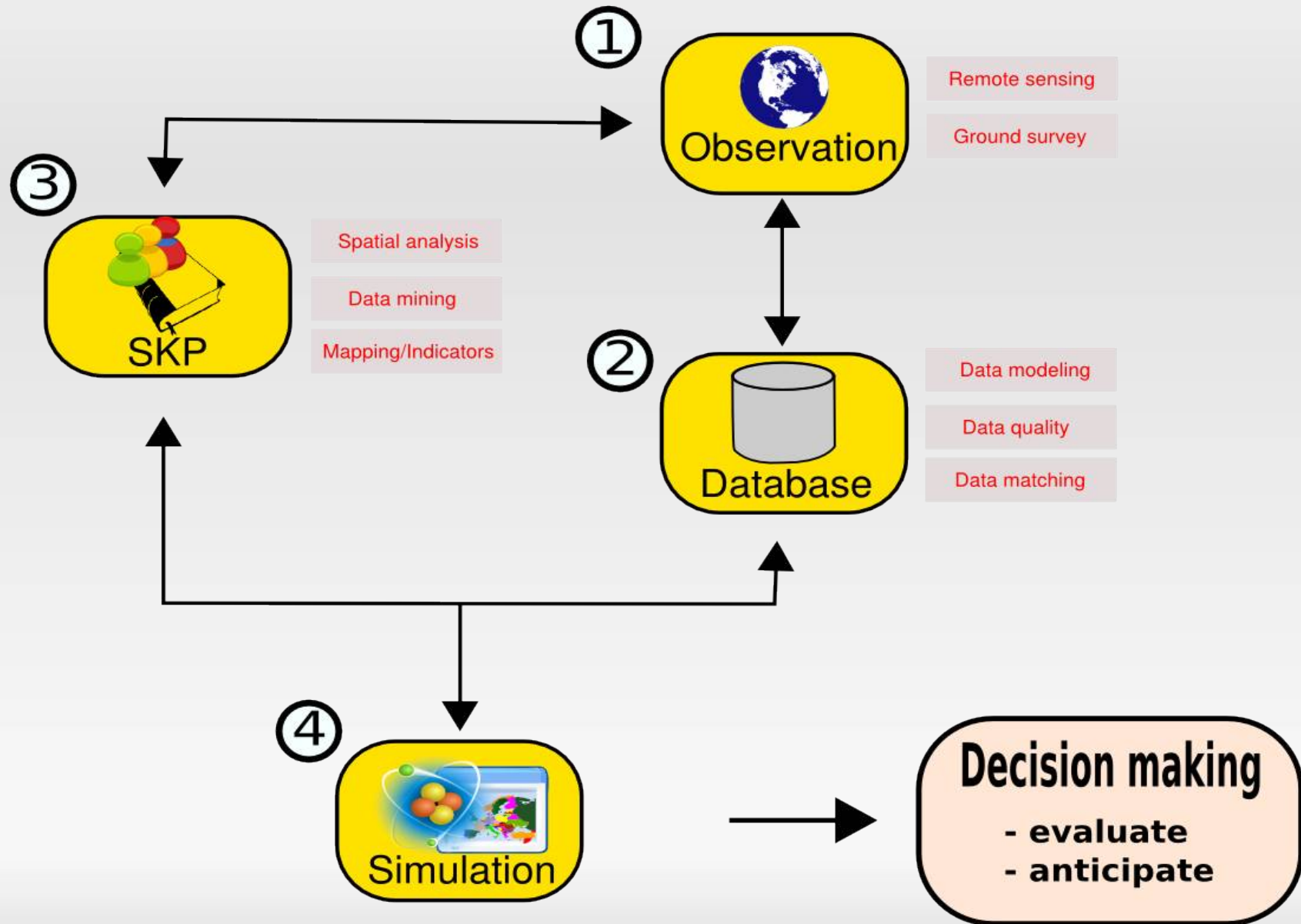
# Outline

- From GIS to SDI
- About SDI
- Motivations
- The geocognition project
- The needs
- Position in SDI

# From GIS monitoring to SDI

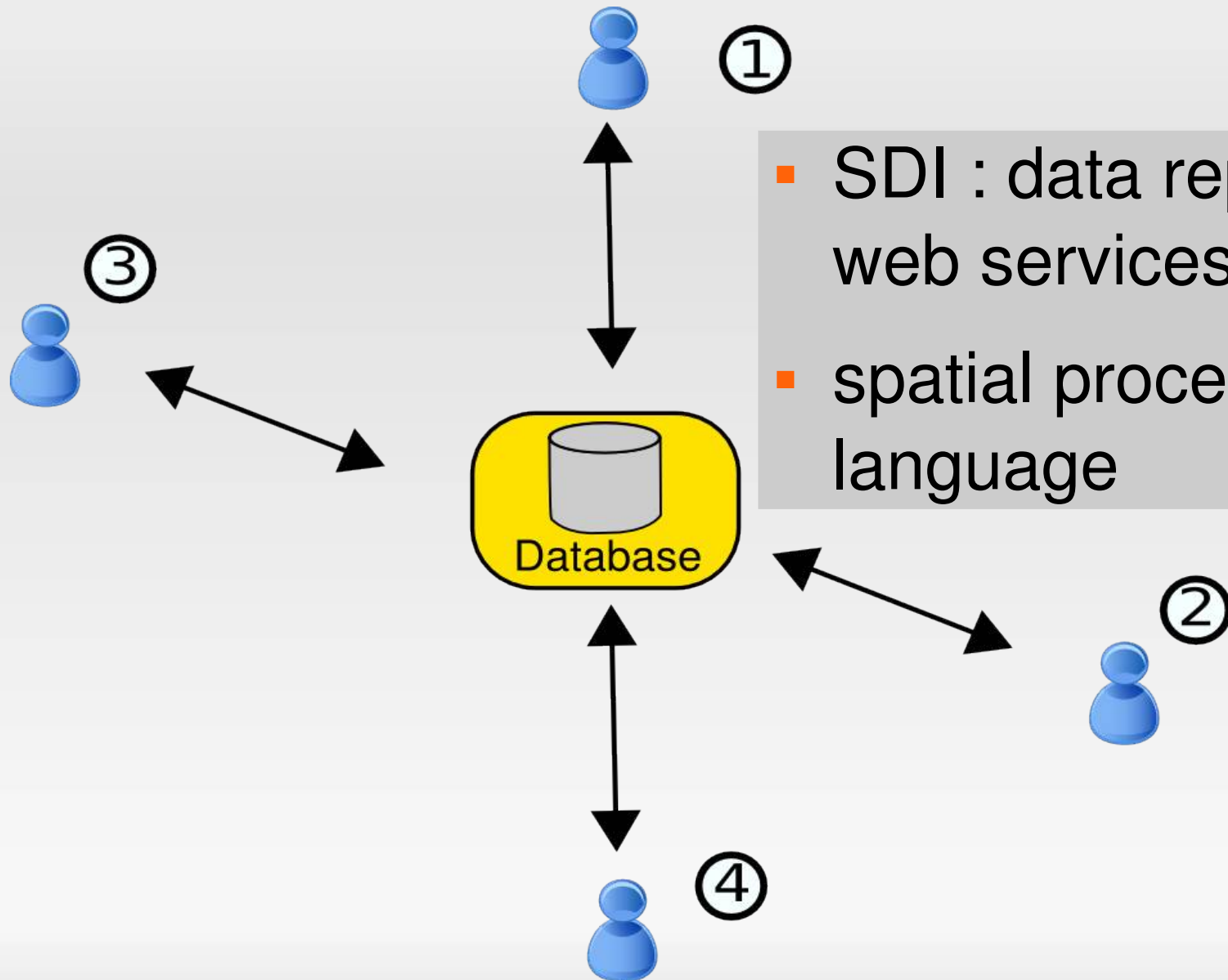
- Indisputable GIS = diagnosis, public debate and as decision-making tools for both experts and non-experts
- Largely used to study the urban sprawl = coupling with remote sensing, extract spatial urban indicators

# From GIS monitoring to SDI



SKP : Spatial Knowledge Production

# From GIS monitoring to SDI



- SDI : data repositories, web services
- spatial processing language

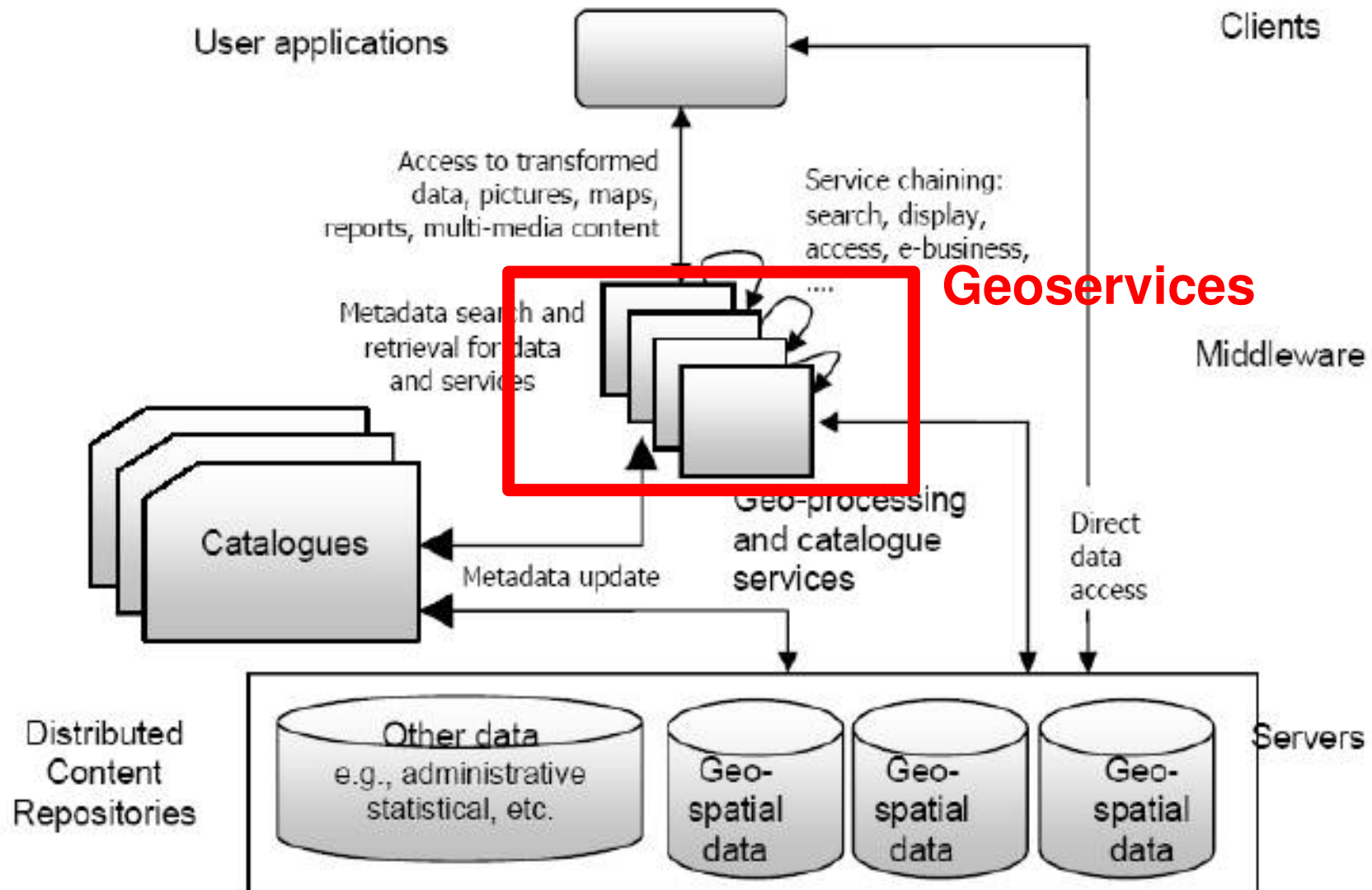
# About SDI

- Spatial Data Infrastructure (SDI) : an architecture and a set of standards to share spatial data over the web.
- Directive Inspire : general rules for Europe
- Open Geospatial Consortium (OGC) is the group that specifies the standards that allow geographic systems to interoperate.

# About SDI

- OGC defines :
  - To access:
    - the Web Map Server (WMS) ,
    - the Web Feature Server (WFS), based on the Geographic Markup Language (GML).
  - To represent
    - the Styled Layer Descriptor (SLD).
  - To process
    - SQL spatial for RDMS

# About SDI





# Motivations

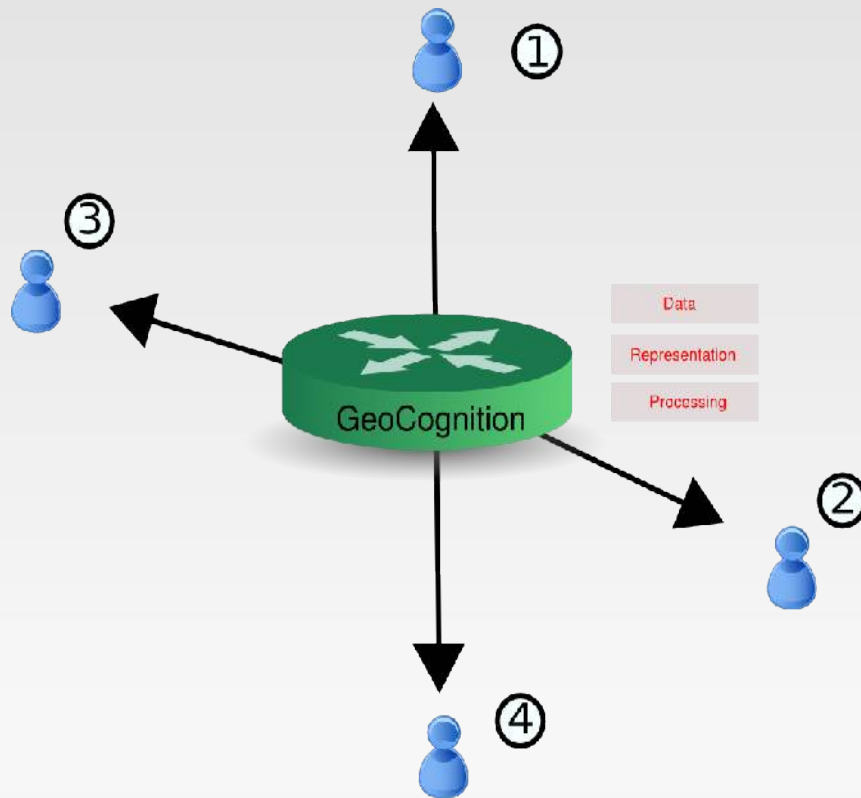
- Nevertheless, SDI have some limitations
  - Data model
    - A WMS or WFS requests support only 2D static representation (no time).
    - don't support spatial ontology (spatial thesaurus)
  - Cartographic representation
    - The SLD format supports only basic cartographic styling (no thematic map production, )
  - Processing
    - A common SQL spatial but only for vector data

# Motivations

- It is a strong limitation with respect to the availability of various representation like raster grid or triangular irregular network
- It induces a limited collaboration between different scientific fields and disciplines, including civil engineering, urban design and planning, spatial information techniques, artificial intelligence, sociology of science.

# The geocognition project

- To increase the knowledge sharing and define some common rules to connect several disciplines.



- Use spatial ontology to improve the SDI approach.

# The geocognition project

- What about spatial ontology ?
  - Objects (e.g., legal and administrative regions, blocks, streets, parcels);
  - Relations (e.g., a parcel belongs to a block);
  - Events (e.g., traffic accidents);
  - processes (e.g., noise pollution, traffic flow).

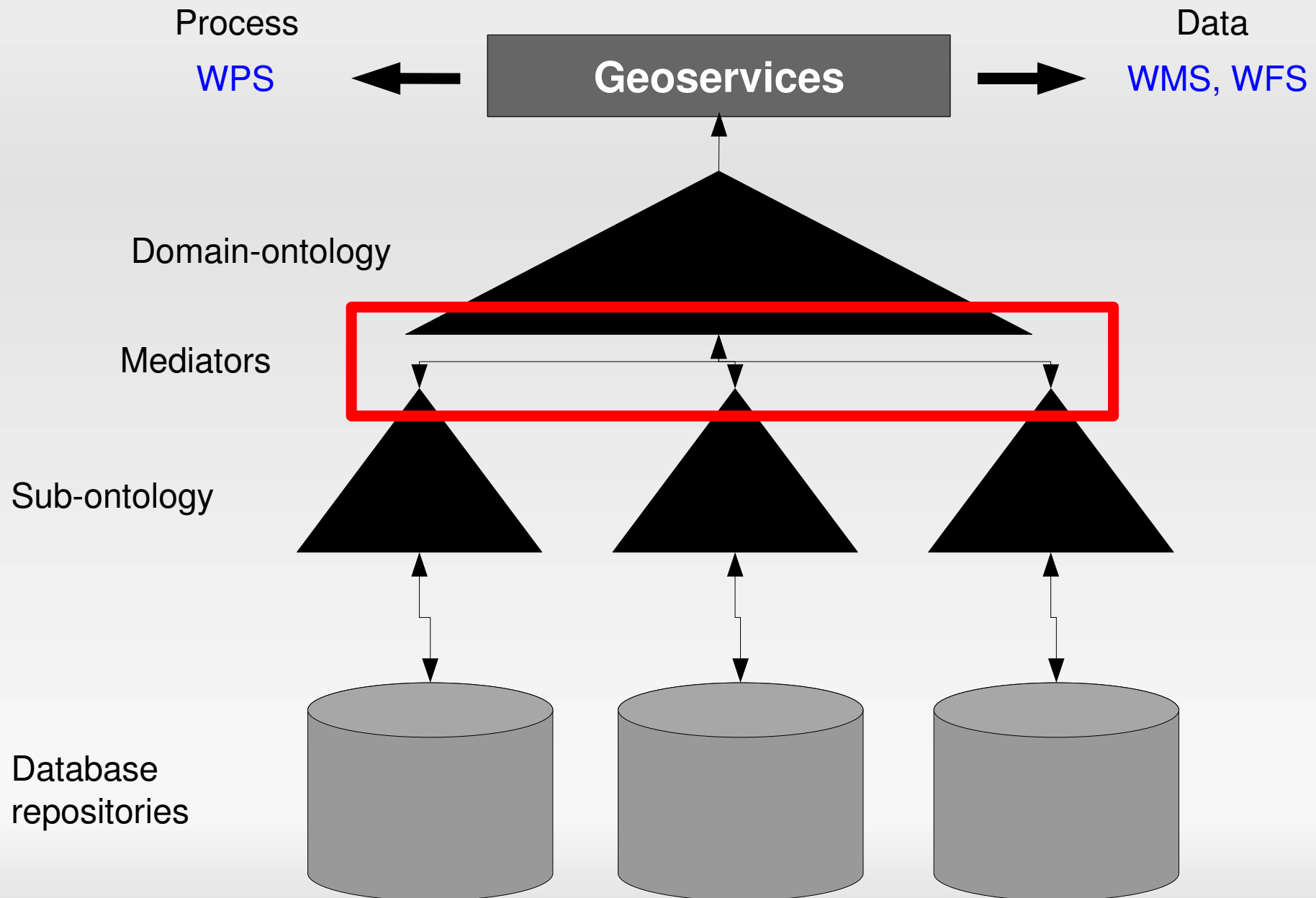
# The geocognition project

- My own vision for an urban ontology at IRSTV
  - Each laboratories must define there urban field (sub-ontology);
  - Sub-ontology will be merge in a global ontology;
  - A consensus will be found for each definition;
  - Processes and events will be merged without duplication (redondance);
  - Check consistency and completeness;
  - Encode in the SDI context.

# The needs

- A mapping data model for 2D, 3D.
- A mapping schema model.
  - Develop some mediators
    - –  $DB2.residents = DB2.men + DB2.women$
- A common language to build processing.
  - Able to deal with spatial data particularities (scale, abstraction, continuity...)

# Position in SDI



Questions ?