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eBDthèque

Thematic axis: IDDC
Strategic axis: ASPIC

Plan

- Presentation
- Content extraction
  - State of the art
  - Contribution
- Information representation
  - Fill the semantic gap
- Project structure
  - Extraction and representation
  - Some features
- Ongoing work

Presentation
eBDthèque team

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Presentation
eBDthèque project

- ## What are the needs?
  - Valorising comic book content

- ## What for?
  - Information retrieval
  - Interactive e-comic reading
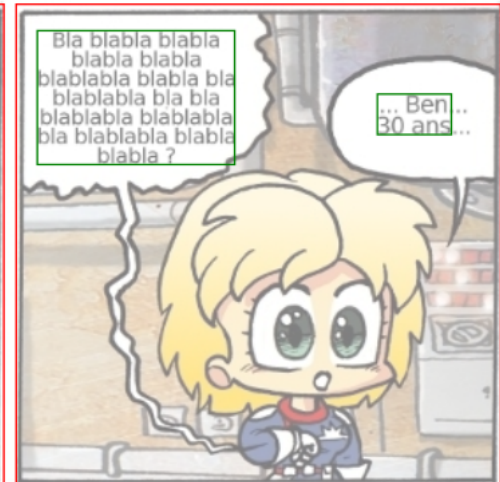
- ## How?
  - Extracting and representing content

Content extraction
State of the art

- ## Page indexation
  - Album, page

- ## Frame splitting
  - Blob, line cutting

- ## Speech balloon
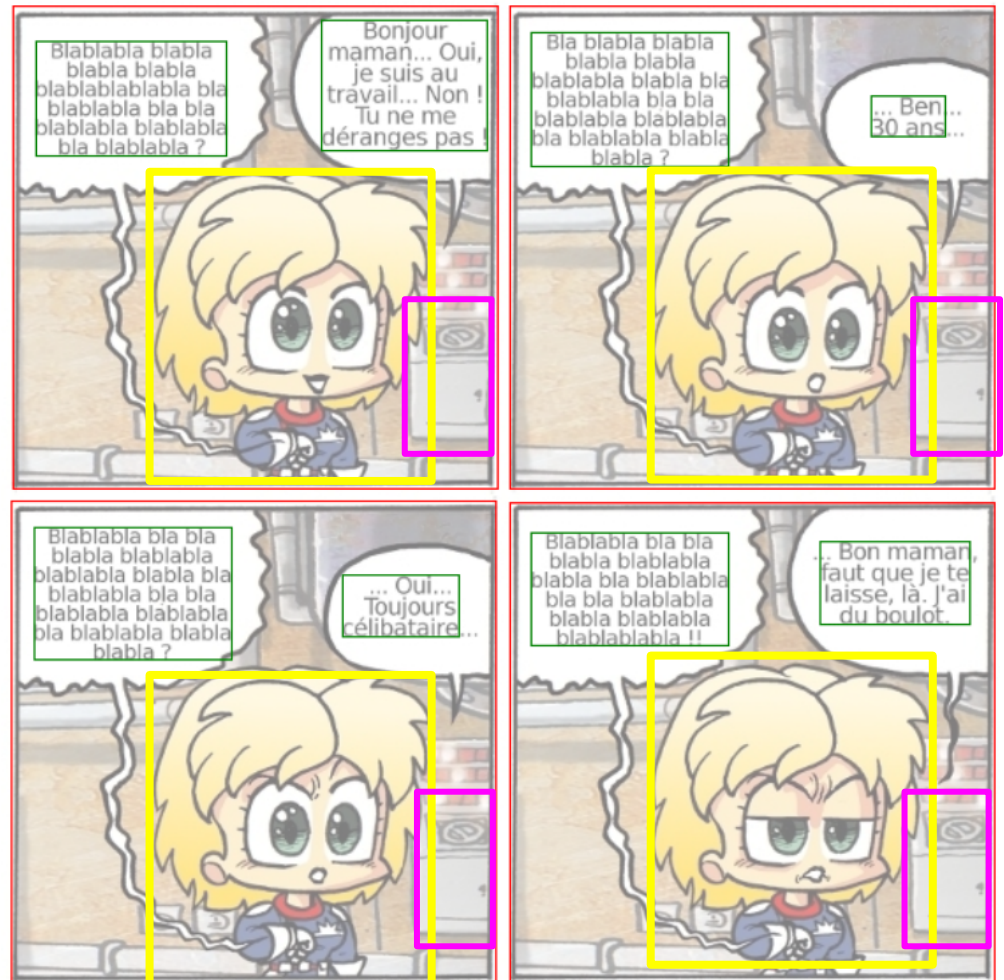 - White background

- ## Text recognition
  - OCR

Content extraction
Contribution (low level)

- # Robust
  - ## Page size
  - ## Resolution

- # Complex object
  - ## Detection
  - ## Extraction
  - ## Characterization

- # High level ready

Information representation
Introduction

- ## What have we got?
  - Low-level information automatically extracted from comics

- ## What do we want?
  - A high-level information model capable of reasoning and deducing concepts from image-based data

- ## How to fill the semantic gap between low-level and high-level information?

Information representation
How to fill the semantic gap?

- ## Define what a comic is made of
    - A very wide set of patterns
    - Simple pages, double pages, strips, undelimited frames, free text regions, etc.
    - Need to formalize the comic anatomy into a model

- ## Use of modelisation and reasoning tools
    - Formalisation languages (*OWL, SPARQL, DLV...*)
    - Ontologies editors (*Protégé, TopBraid, Jena...*)
    - User interaction (*Sewelis, Toon's demonstrator...*)

Information representation
A look into the comic's anatomy

Album
→ Page
→ Frame
→ Object
→ Text

Each of these components have image based characteristics that are relevant to the high-level

The relationships between them are relevant as well

Information representation
A bi-directional data circulation

- We have to relie on professional knowledge
  - Whether it comes from people or books
  - A comic page is not randomly structured
  - Scenaristic information can be deduced with inferencing rules

- High-level reasoning may improve low-level extraction
  - Spatial deduction
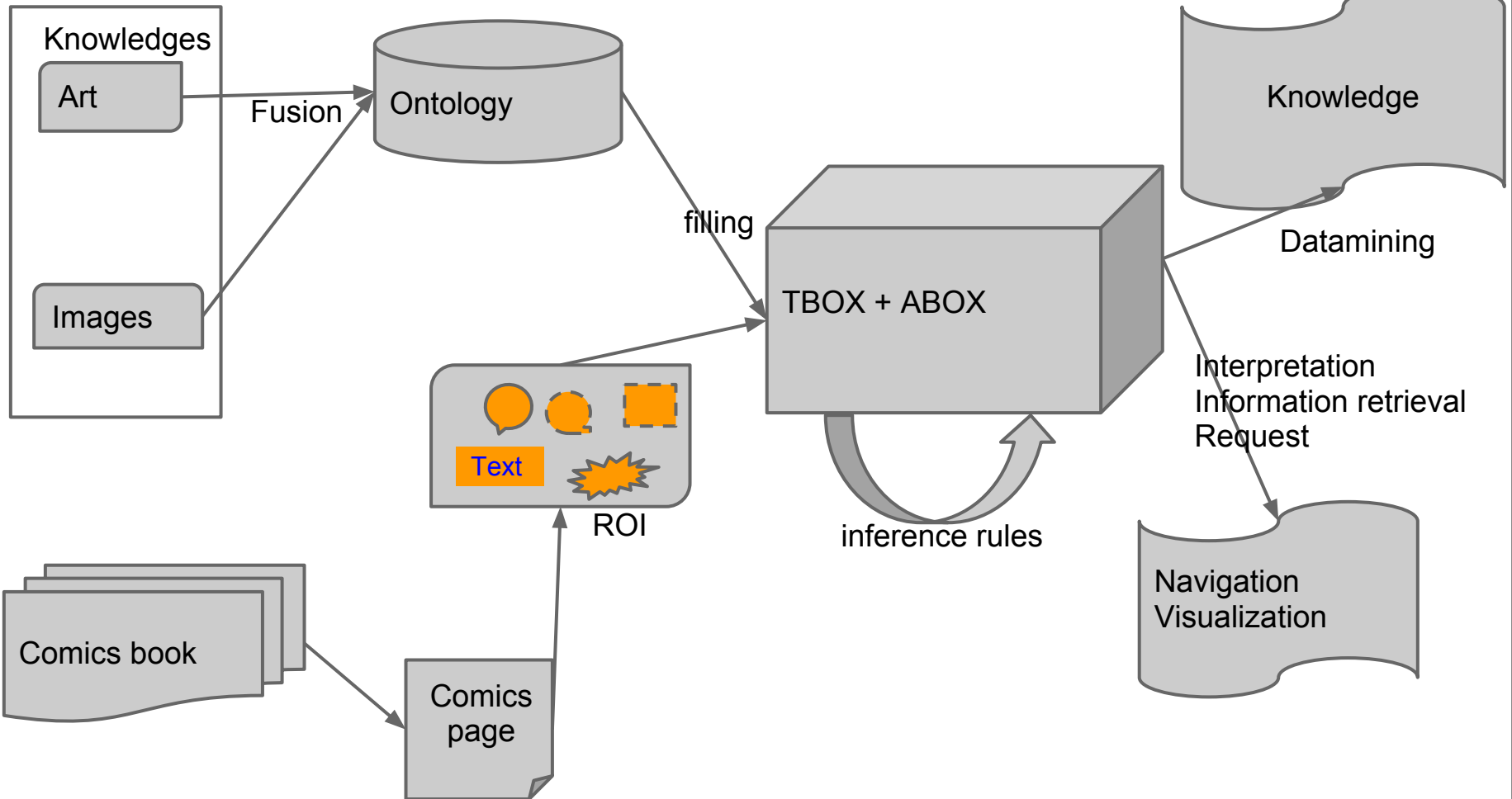 - Statistical singularity

Information representation
How to fulfil the needs?

- ## Data-mining

  - ○ Formalizing a comic's content allows the use of performant quering tools

- ## Interactive reading

  - ○ Being able to automatically retreive the screenplay from the low-level data would simplify a lot the process of migration from paper to screen
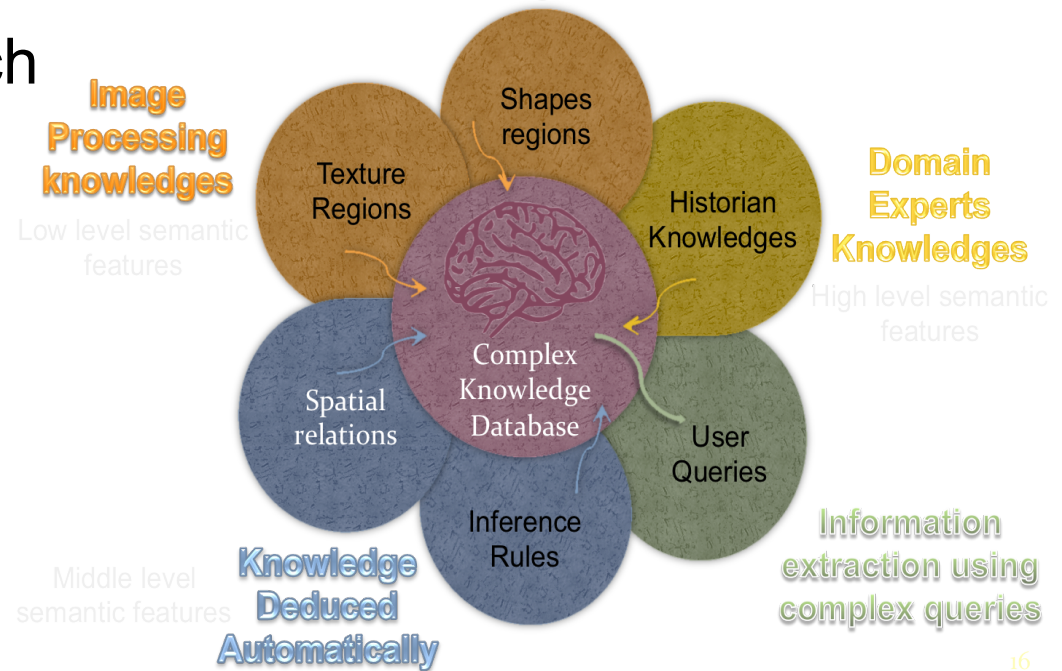
Project structure
Extraction & Representation

Knowledges

Art

Images

Fusion → Ontology

filling → TBOX + ABOX

Comics book → Comics page → ROI

Text

inference rules

Knowledge

Datamining

Interpretation
Information retrieval
Request

Navigation
Visualization

Project structure
Some features

- Drop Caps approach on comics

- Combine many knowledge sources

Complex Knoweldge Database

Image Processing knowledges
Low level semantic features

Shapes regions

Texture Regions

Historian Knowledges

Domain Experts Knowledges
High level semantic features

Complex Knowledge Database

Spatial relations

User Queries

Knowledge Deduced Automatically
Middle level semantic features

Inference Rules

Information extraction using complex queries

[thèse de Mickaël Coustaty]

Project structure
Some features

- Inferences rules
  - Compute the next frame
- Users requests
  - All comics about police
  - In which page of which comics author named X speaks about Football?
- Knowledge extraction (Datamining)
  - 60% USA comics are about fiction
- Reading comics on small device (mobile phone, PDA, ...)

Ongoing work

- Partners
    - CIBDI
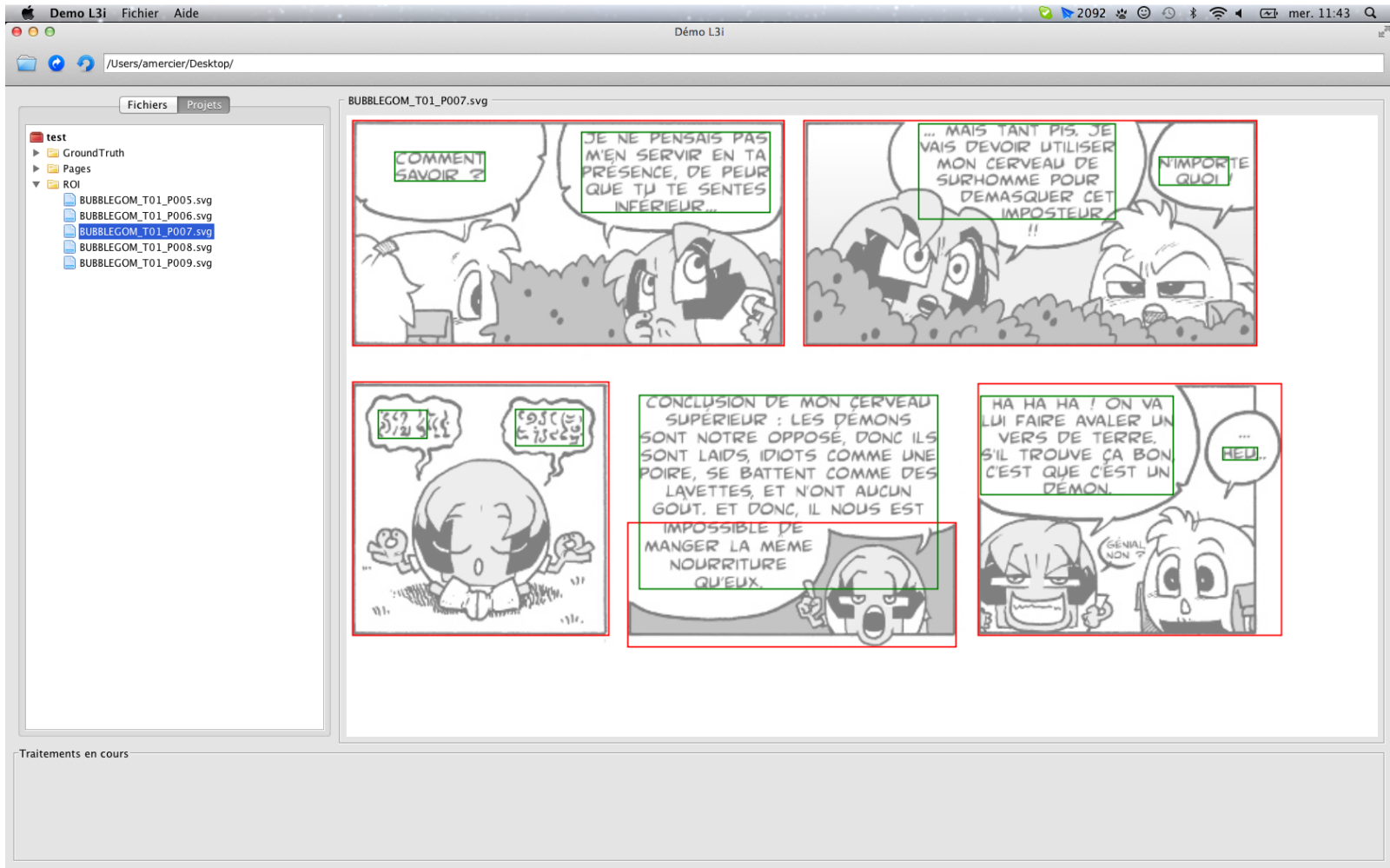   - Editors
    - Authors
    - Companies

- Tools
    - Data-mining => Sewelis
    - Ground truth maker => Toon's demonstrator

Ongoing work
Toon's demonstrator

Ongoing work
Sewelis