# Hybrid AI for Medieval Illumination Analysis

D. Diarra, M. Clouzot and C. Nicolle

Same Event…





… two symbolic representations

**Use for**

- Environment representation
- Social communication
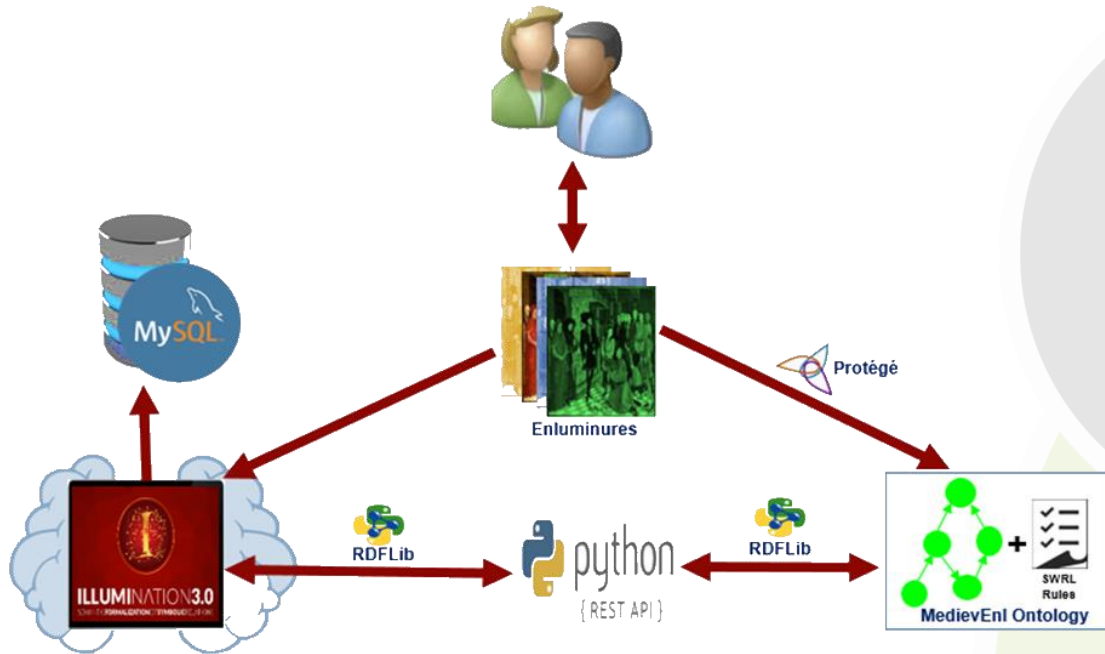- Influence creation and propagation

**Twofold Preservation**

- Physical preservation
- **Preservation of meaning carried**

**Issues**

- Multiple contextual meaning
- Tricky understanding for no specialist
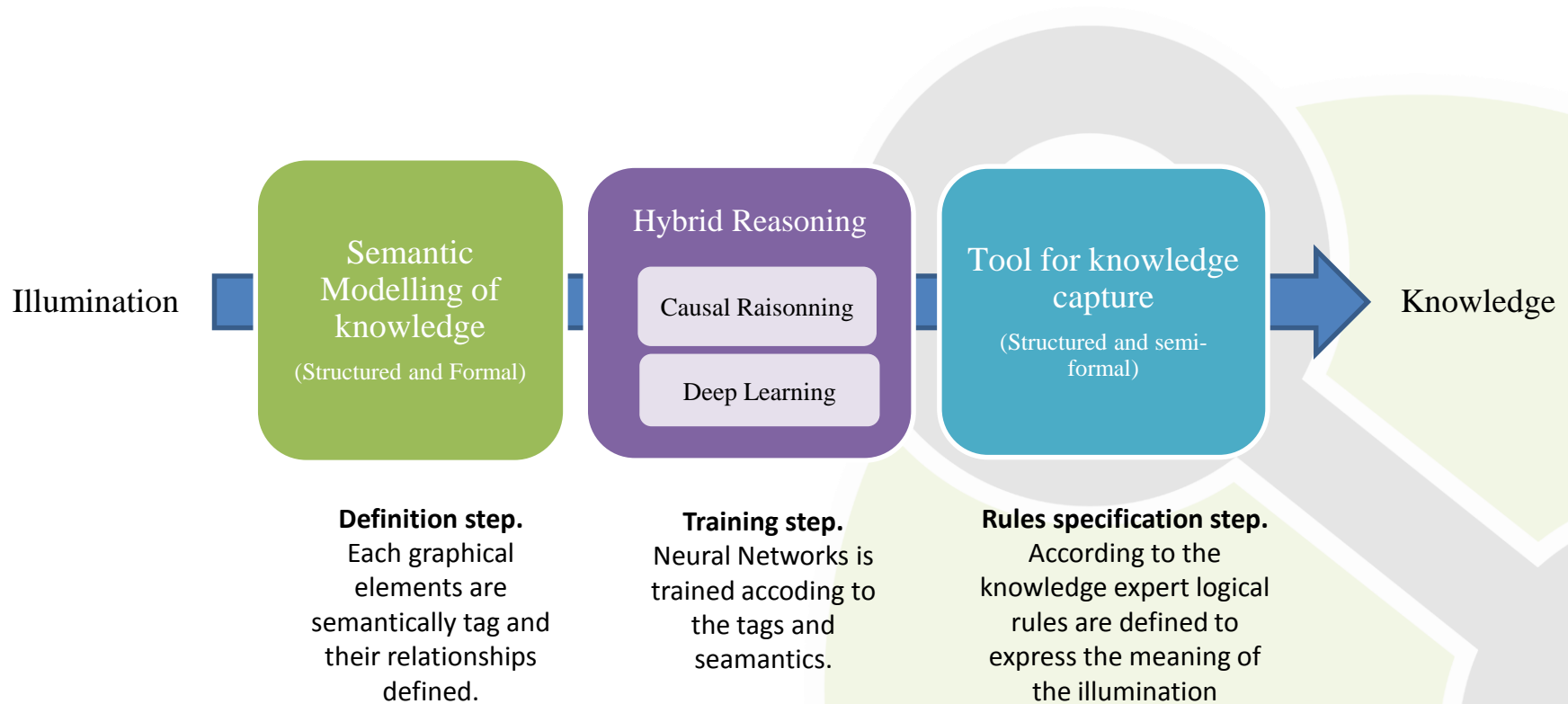- Exact meaning dispareance over the time

**Approach**

- Ontology Engineering
- Reasoning (inference) on medievist know-how
- Machine Learning

**Results**

1. Domain Ontology « MedievEnl »
   => **IA Symbolic**
2. Web Application for knowledge capture
3. Module of automatic detection of objects in Illumination

1. *http://medievenl.ontology. checksem.fr*
2. *http://app.illumination.checksem.fr/home*

Illumination

## Semantic Modelling of knowledge
(Structured and Formal)

## Hybrid Reasoning

Causal Raisonning

Deep Learning

## Tool for knowledge capture
(Structured and semi-formal)

Knowledge

**Definition step.**
Each graphical elements are semantically tag and their relationships defined.

**Training step.**
Neural Networks is trained accoding to the tags and seamantics.

**Rules specification step.**
According to the knowledge expert logical rules are defined to express the meaning of the illumination

# Conclusion

## Cultural Heritage preservation

- Illumination images

- Know-How and Experts knowledge

## Knowledge extraction and Modelling

- Illumination Ontology

- Extraction of Illumination Meanings

## Culturage Heritage Exploration by IA

- HAI for concepts clarification and organisation

- HAI for objects and relationships detection in Illumination

# Thank you