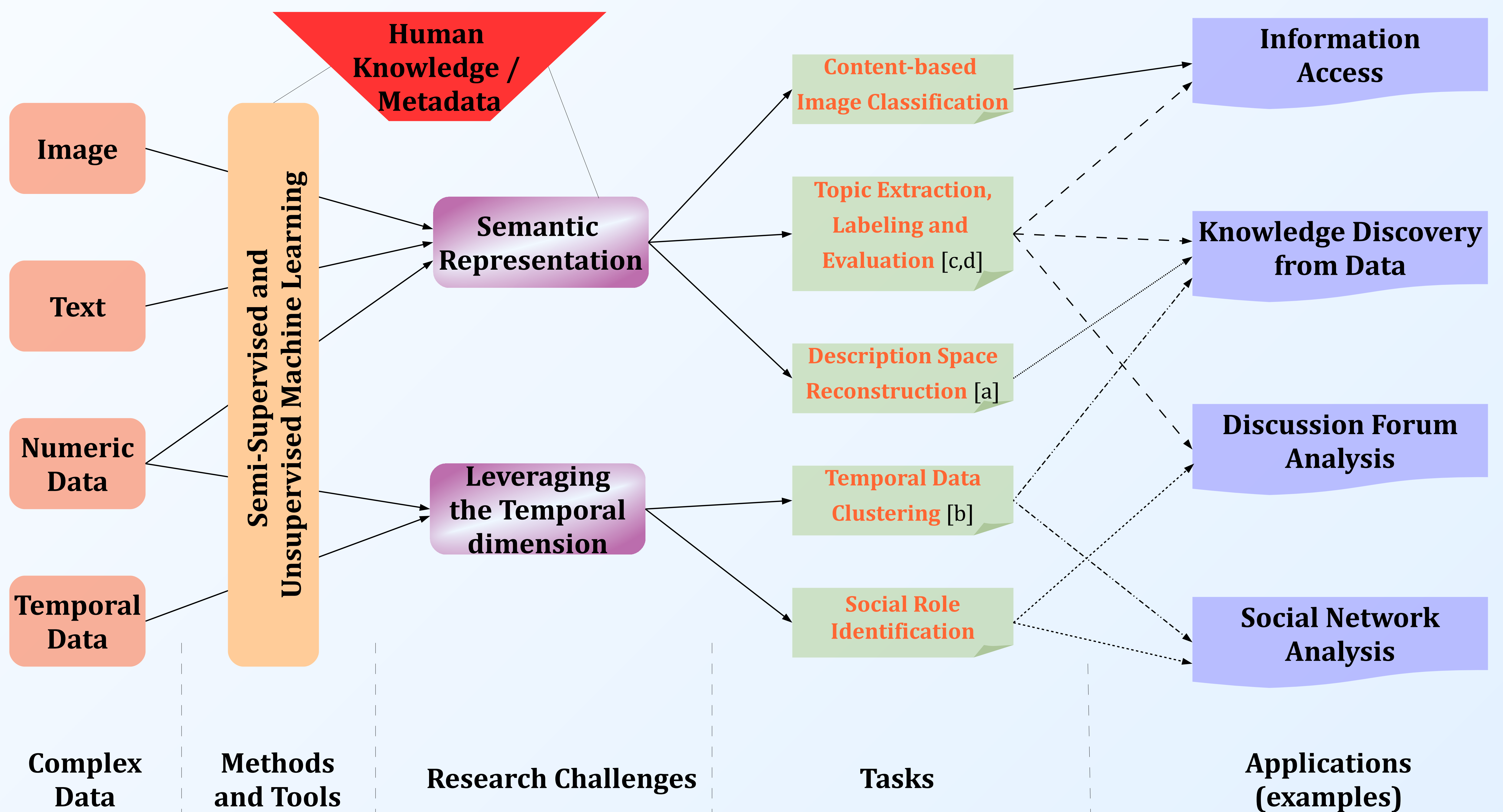


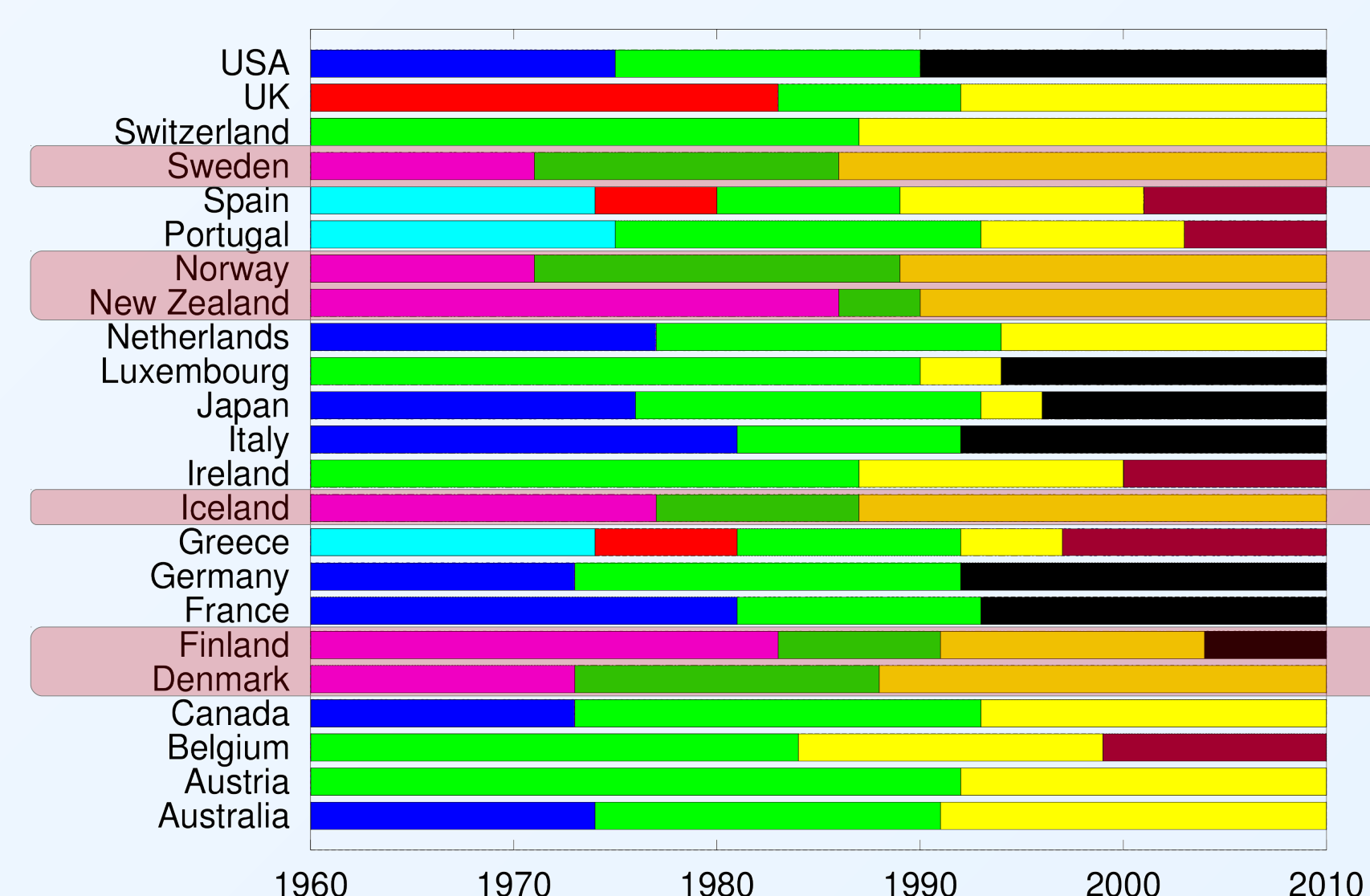
Main objectives

- extract knowledge from complex data, often in an unsupervised context
- add **semantics** in data analysis and construct **interpretable** outputs
- leverage the **temporal** dimension and available **side-information**

Conceptual schema



Applications



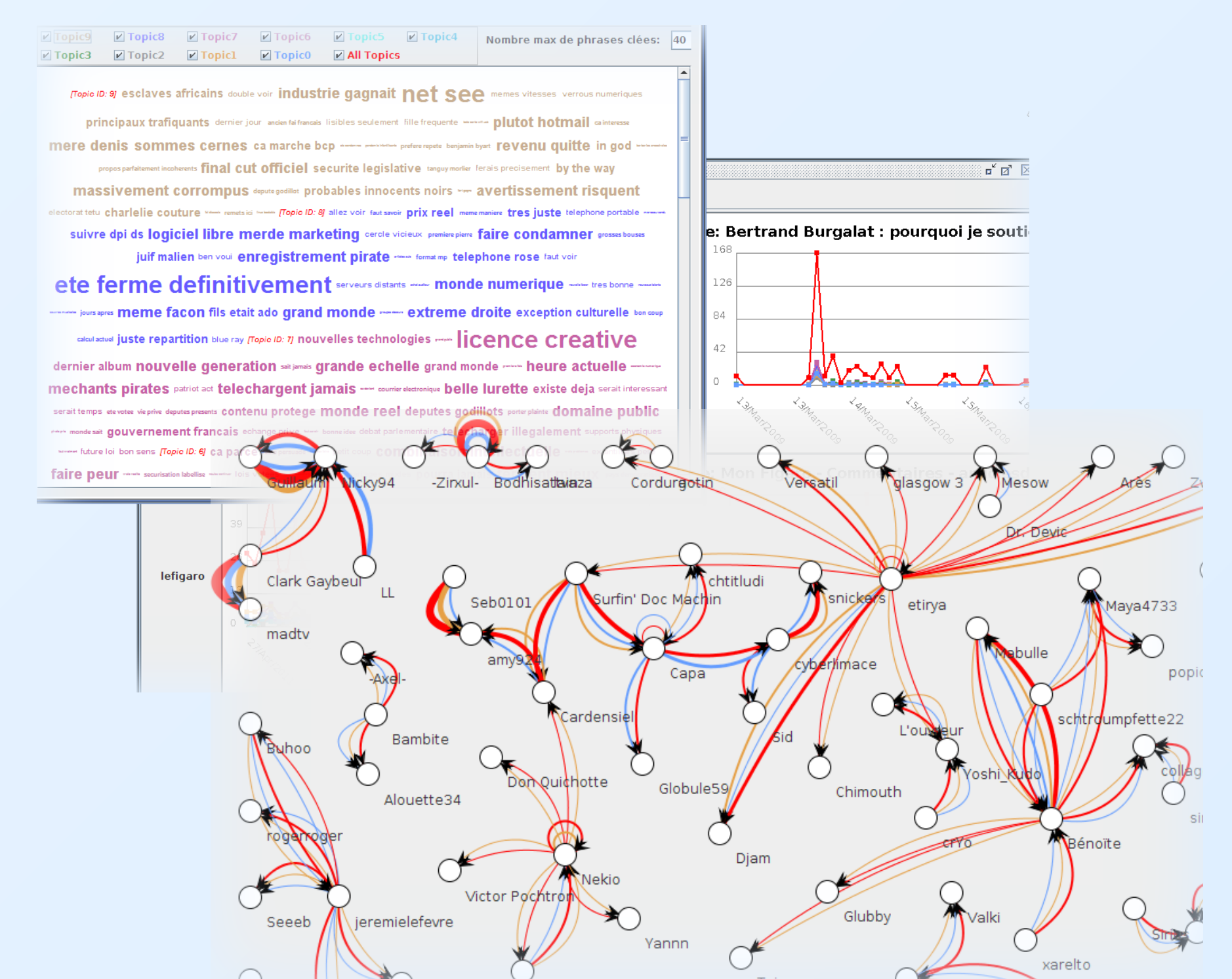
Detecting temporal evolution patterns in a population of entities recorded over a period of time [b]



$\{ sky \wedge building \wedge tree \wedge forest, sky \wedge groups \wedge street \}$

$\{ groups \wedge street \wedge interior, water \wedge cascade \wedge tree \wedge forest, sky \wedge building \wedge panorama \}$

Construct interpretable features, which capture better the semantics of the dataset and reduce feature correlation [a]



CommentWatcher, an open-source web-based platform for analyzing discussions on web forums

Selected publications:

- [a] Rizoïu, M.-A., Velcin, J. & Lallich, S. *Unsupervised Feature Construction for Improving Data Representation and Semantics*. Journal of Intelligent Information Systems (2013),
- [b] Rizoïu, M.-A., Velcin, J. & Lallich, S. *Structuring typical evolutions using Temporal-Driven Constrained Clustering*. ICTAI 2012, Greece, p. 610-617, 2012. **Best Student Paper Award**.
- [c] Rizoïu, M.-A. & Velcin, J. *Topic Extraction for Ontology Learning*. Chapitre dans le livre « Ontology Learning and Knowledge Discovery Using the Web: Challenges and Recent Advances » 2011
- [d] Musat, C., Velcin J., Trausan-Matu, S., & Rizoïu M.-A. *Improving Topic Evaluation Using Conceptual Knowledge*. International Joint Conference On Artificial Intelligence (IJCAI). Spain, 2011.

