

KAIFIA: Knowledge Assisted Intelligent Framework for Information Access

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OVERVIEW

n **Problem Statement**

n **Ideas**

- q Future Application of Topic Maps
- q Related projects
- q KAIFIA - Knowledge Assisted Intelligent Framework for Information Access

n **Achievement**

- q DREAM- Dynamic RetriEval, Analysis and semantic metadata Management

n **Future Works**



PROBLEM STATEMENT

n **Topic Map Advantage**

- q Information Access ,Information Exchange and Information Integration
- q Topic Map is currently being used in many applications like E-Government, E-Learning, E-Commerce, etc

n **Problems**

- q Manual Annotation with Topic Maps
- q Visualisation of big topic maps
- q + Many other problems



FUTURE APPLICATIONS OF TOPIC MAPS

n **Topic Map is yet to establish a framework to meet new challenges:**

- q Automatic Topic Map Population
- q Reasoning in Topic Maps for Intelligent Interactive Applications
- q Visualising Complex and Large “Infospheres”
- q Intelligent searches

n **Research Area**

- q Natural Language Processing (NLP)
- q Reasoning
- q Topic Map Exploration

KAIFIA is a conceptual framework that aims at addressing these challenges.



RELATED WORK

- n **Intelligent Topic Manager (ITM) - Mondeca**
 - q Legal Publishing Domain where author of legal articles is informed of court decisions and legal text.
 - q Integration between Information Extraction Tool and Ontological concepts to map words, concepts and their occurrences.

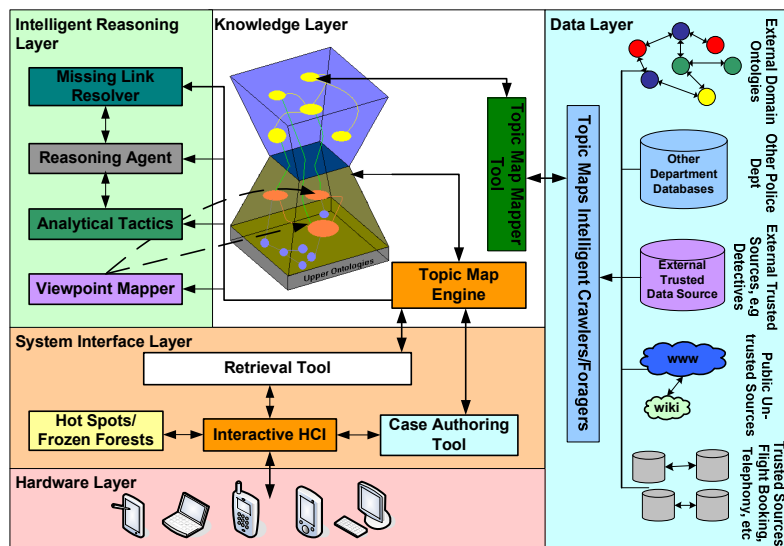
- n **HOLMES**
 - q Investigation Management System – assist in management of complex process of investigating serious crimes
 - q Information Notification and Graphical Representation of events.

- n **ONI, Office of Naval Intelligence - Ontopia**
 - q Topic Map Based Solution to filter multiple threads of data to identify alarming trends and create a unified and organised analysis.

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KAIFIA FRAMEWORK



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KAIFIA – INTELLIGENT REASONING LAYER

Missing Link Resolver and Reasoning Agent

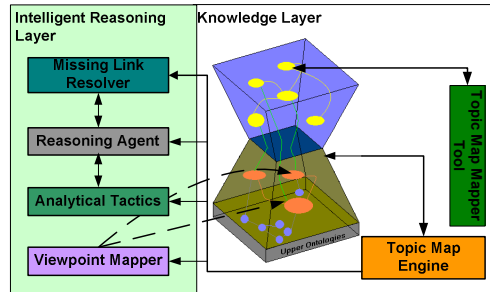
- Identify potential links between topics
- E.g. “Buying” action contains an equal action of “Selling”, same event but interpreted from different viewpoints
- Background queries called “Monitoring”

Analytic Tactics

- Domain-specific scenarios to conceptualise case-based patterns

Viewpoint Mapper

- Personalised user viewpoints, according to user role, nature of information, etc

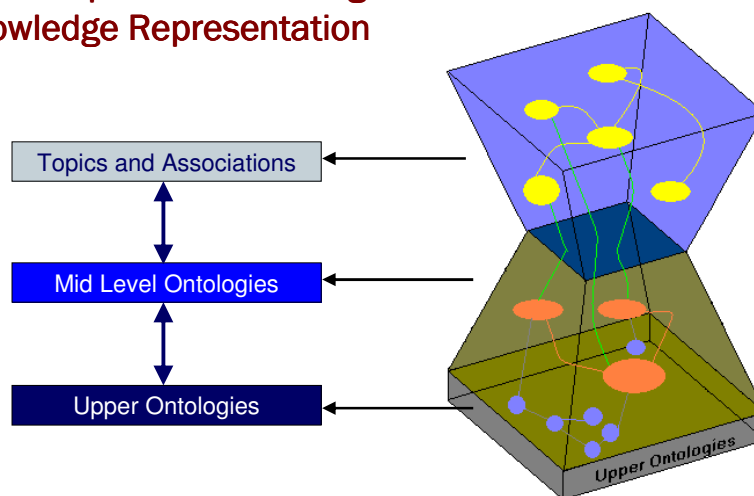


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KAIFIA – KNOWLEDGE LAYER (1)

Topic Maps as an enabling technology for Knowledge Representation



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DREAM: Dynamic Retrieval, Analysis and semantic metadata Management

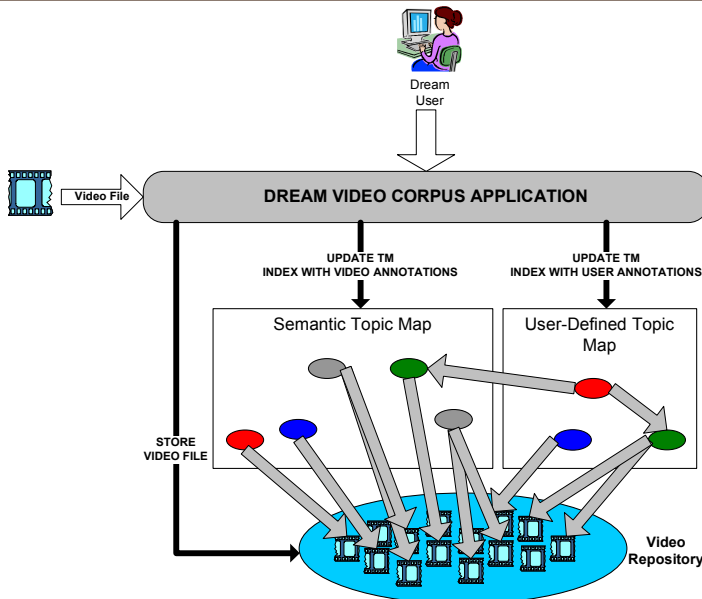


Objectives:

- Semi-automatic acquisition of knowledge from multimedia content
- Build network of scalable ontologies
 - Ontology evolution through multimedia concepts extraction
- Personalised knowledge representation for users' perspective
- Natural Language Based Query Language

Project Partners

- Double Negative
- The Foundry
- FilmLight



TOPIC MAP POPULATION

n NLP Templates

- q Subject Identification
- q Action Identification
- q Object Identification

n Example

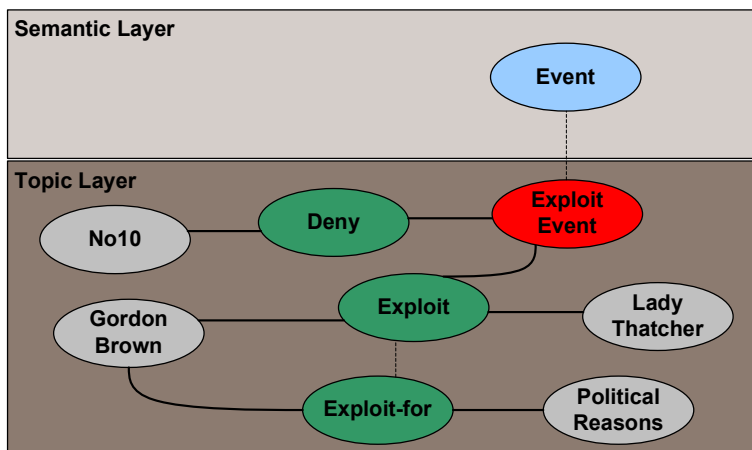
- q “No 10 denied that Gordon Brown exploit Lady Thatcher for political benefits” – BBC Text
 - q Topics Identified: “No10”, “Gordon Brown”, “Lady Thatcher”, “Political benefits”
 - q Actions Identified: “Deny”, “Exploit”
- q The action “Deny” is associated to a cloud of topics
 - q [No 10 denied] [Gordon Brown exploit Lady Thatcher for political benefits]

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AUTOMATIC TOPICS EXTRACTION (1)

“No 10 denied that Gordon Brown exploit Lady Thatcher for political benefits”



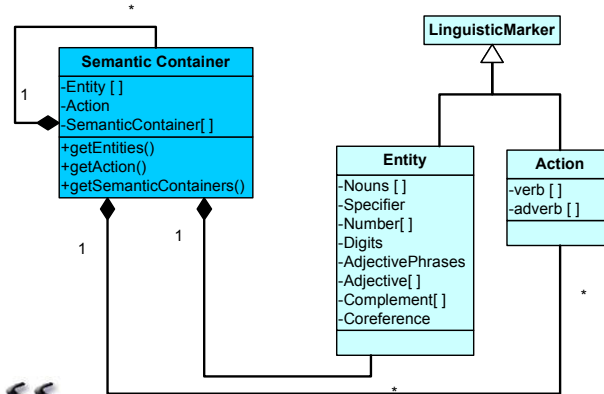
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AUTOMATIC TOPICS EXTRACTION (2)

n One Semantic Container represents statement which contains

- q List of entities
- q List of action
- q List of semantic containers



FUTURE WORKS

- n REASONING by employing predicate logic rules from MILO and SUMO
- n REPRESENTATION of a whole context in Topic Maps
- n VISUALISATION of complex topic maps using Hot Spots/Frozen Forests

Thank You for your attention

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