

ConceptVista

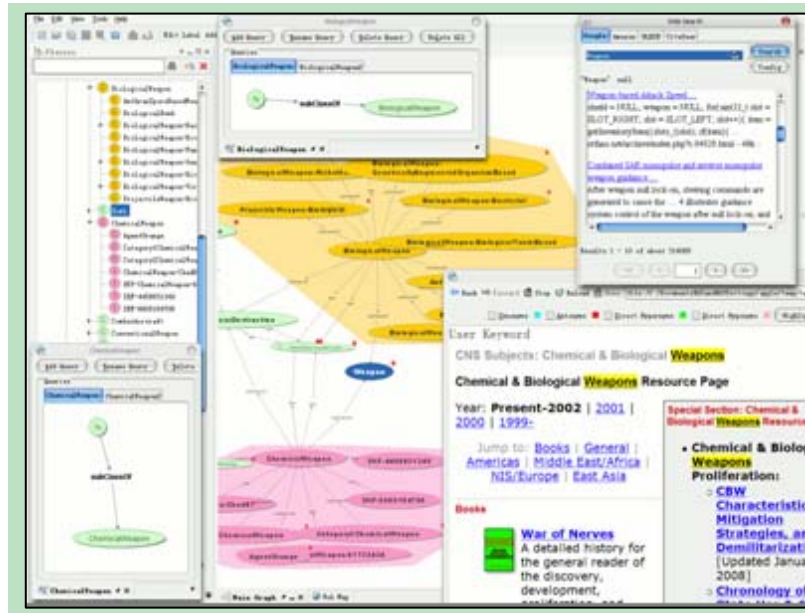
A Visual Environment for Ontology Development and Analysis

Knowledge is essential to intelligence analysis because human analysts always use prior knowledge to evaluate data, guide analysis, interpret results, and most importantly, to formulate new knowledge. In most visualization tools knowledge only plays an implicit role, where prior knowledge, such as facts, assumptions, and hypotheses, remains “taciturn” in an analyst’s mind, and new knowledge such as findings and conclusions is buried in informal text reports that are difficult to query and manage.

ConceptVista is a software environment that supports the visualization, manipulation and management of knowledge. Represented as ontologies and visualized as concept maps, intelligence analysts’ taciturn knowledge can be explored and analyzed explicitly and interactively. Furthermore, the concept maps in ConceptVista can be visually linked to texts, web pages, data sets, and common ontologies defined by other parties. Consequently, users can easily explore the connections between raw data and conceptual understandings during the course of analysis. Finally, novel findings can be immediately harnessed to form new concepts and relationships, and results can be stored in new ontologies. This allows different agencies to quickly exchange the ontology-based knowledge they have discovered, which can be easily managed and queried.

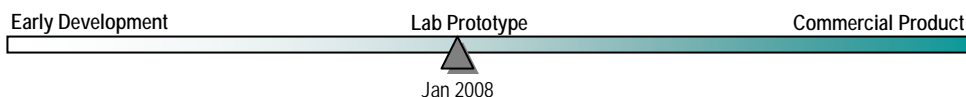
ConceptVista’s standard concept mapping interface is used to create and edit ontologies represented in W3C’s RDF (Resource Description Framework) and OWL (Ontology Web Language) formats. The “perspective editor,” a novel visual query interface, allows users to build a complex ontology query as another concept map (with node variables). A similarity panel supports customized ontology matching, where analysts can select various similarity measures to find similar concepts in an ontology. Finally, ConceptVista provides an integration framework to quickly combine knowledge visualization with advanced text browsing tools, search engines, and other visualization views.

Benefit: *ConceptVista supports visual development and interactive visualization of ontologies. It allows human analysts to quickly encode taciturn knowledge, structuralize results, and connect knowledge views with texts, search engines, and other data sources. It assists sense making by explicitly displaying, contextualizing, and manipulating high-level knowledge which normally remains implicit in most traditional data visualization tools.*



Results of Perspective filtering: Two simple perspectives, one about chemical weapons and the other about biological weapons, are created to query the OpenCyc ontology. The resulting concepts are aggregated in colored “clouds”, and can be connected to search engines and Web resources.

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