

Semantic Access, Coordination, and Orchestration of Information Visualization and Visual Data Mining Services

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1 Introduction

Visualizations represent data as images that can aid in understanding the meaning of the data. Information visualization, in particular, creates images from abstract data which has per se no natural visual appearance. Traditionally, information visualization can greatly support humans in information retrieval tasks.

The process of mapping data into visual representations also takes into account the purpose of visualization and, in the case of interactive visualizations, the human computer interaction dialog. Our interest in multimedia ontologies cares about the understanding and *description of the information visualization process* itself and not the data being visualized. On the basis of an information visualization ontology, we plan to introduce an *service-oriented architecture* for information visualization. The ontology as an agreed meaning about entities involved in the visualization process allows for the loose coupling and flexible composition of visualization services.

For a more detailed description, please refer to our submission to the AVI 2006 attached called "Towards Service-oriented Information Visualization".

2 Requirements

Information visualization builds on top of multimedia techniques and multimedia technology. Multimedia content is the outcome produced by the information visualization process. In *information retrieval* applications, multimedia content is the means for representing information. As such, a minimal set of multimedia ontology needs to describe features of multimedia techniques and technology that support human users in perceiving information.

Traditionally, information visualization techniques produce 2D as well as 3D *vector diagrams* and *raster images*, also combined with *animation*.

3 Characteristics to Be Represented

- Visual attributes of multimedia content suitable for encoding information
- Structure of multimedia content suitable for reference and direct access
- Interaction capabilities and event models

4 Harmonisation Approaches

We expect to find existing event models in the area of human-computer interaction. Also, there are ongoing activities in visualizations in grid-computing environments.

We support A. Rector's best practices for ontology normalisation¹.

¹ Rector, A. L. Normalisation of ontology implementations: Towards modularity, re-use, and maintainability. Proceedings of the Workshop on Ontologies for Multiagent Systems (OMAS) in conjunction with European Knowledge Acquisition Workshop (Sigüenza, Spain, 2002).