Topic Maps for Polyscopic Structuring of Information

Rolf Guescini, Dino Karabeg,
University of Oslo, Norway
Tommy W.Nordeng, Cerpus A/S

Outline

- Presentation of Polyscopic Modeling
- Thoughts on implementation by using Topic Maps
- Examples

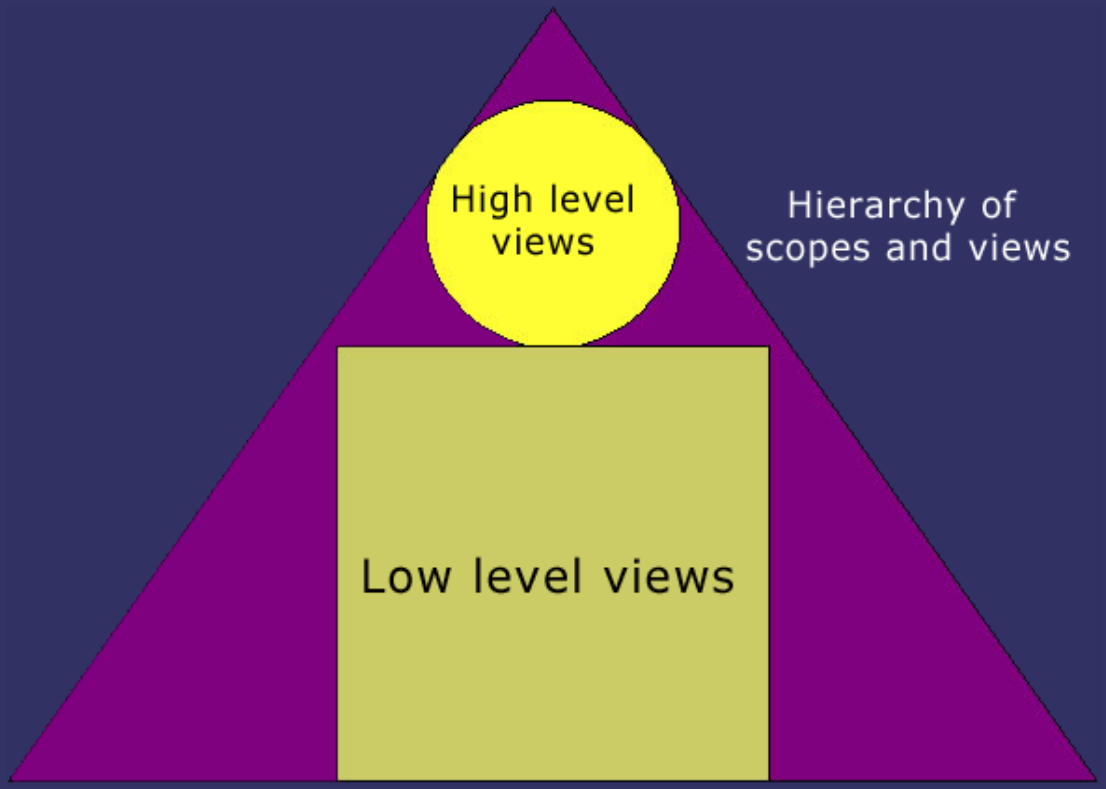
Introduction

- Information Overload motivation for polyscopic structuring of information
- A parallel with early history of computer programming suggests the approach to handling information overload
- Similarity between information overload and software industry crisis is striking

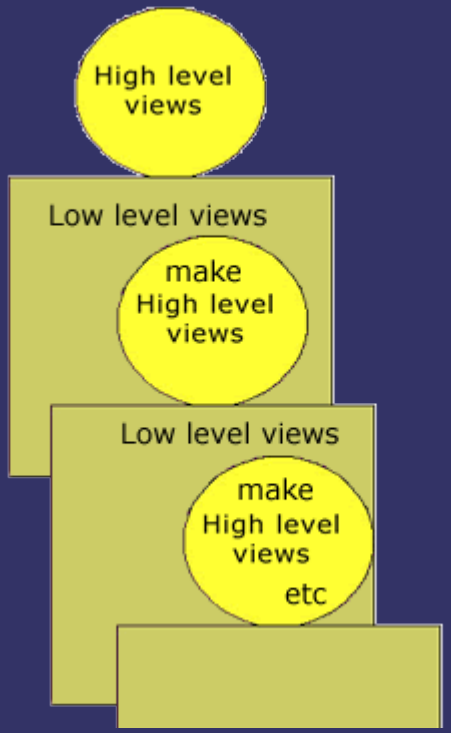
The need for a Methodology

- Why do we need a methodology?
- We need to produce high level information

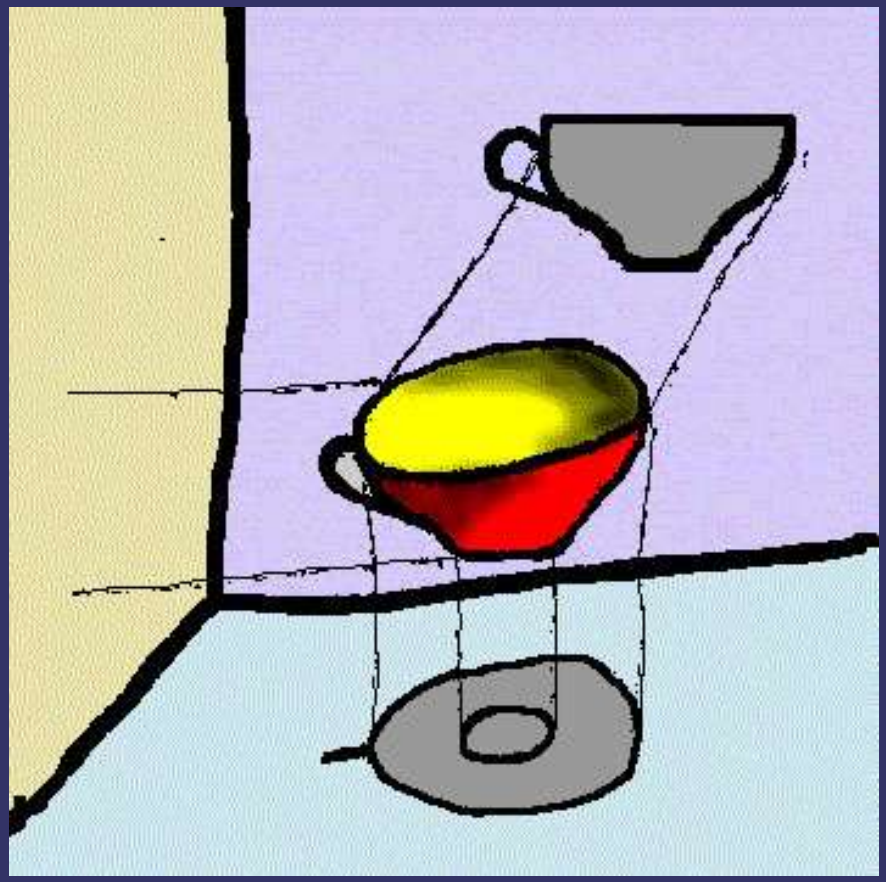
Bringing structure to Information



- The vertical dimension

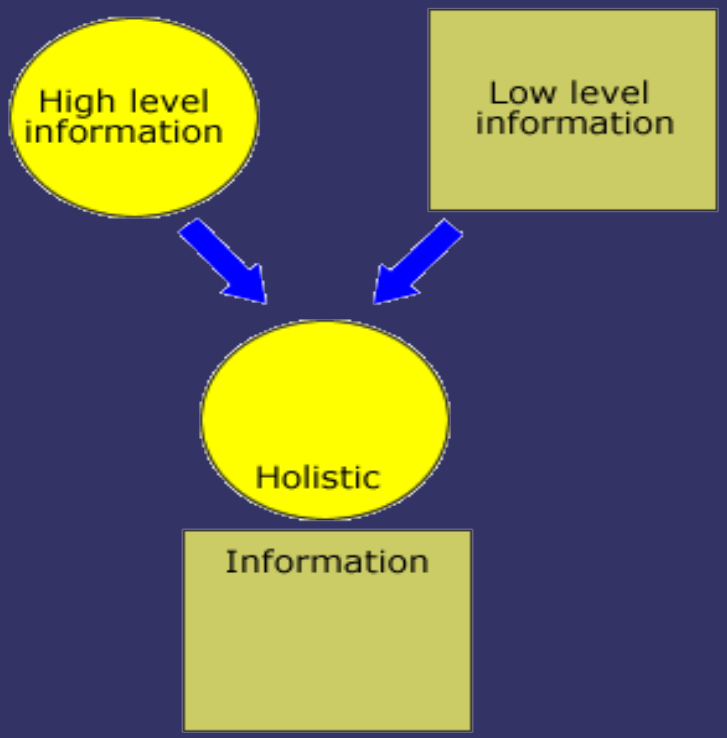


Bringing structure to Information



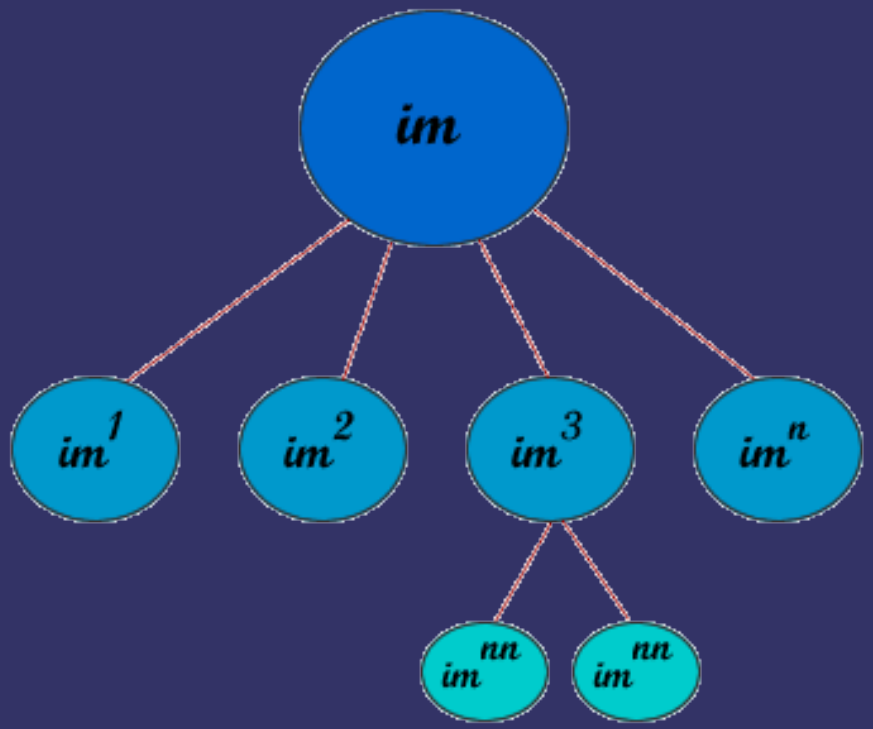
- The horizontal dimension
- The scope determines the view

Bringing structure to Information



- Holistic information

Coherent Wole



- To tame complexity, modular, hierarchical, organization is needed
- Polyscopic presentation is hierarchical and modular
- The whole should be logially coherent and be made up by separate views

Polyscopic information structuring and navigation

- Polyscopic modeling methodology provides a framework for structuring information based upon the notion of scope
- Abstraction has proven to be the key to tackling the complexity of computer programming
- Polyscopic navigation is based upon the principle of “ the scope determines the view”

The Polyscopic Methodology Criteria

- The Perspective criterion states that information needs to allow us to see the described issue or phenomenon as a whole, in correct proportions, with nothing essential left obscure or hidden.

The Polyscopic Modeling Criteria

- The Nourishment Criterion draws due attention to subtle ways in which information influences our values, emotions, preferences, habits, etc.

The Polyscopic Methodology criteria

- The Relevance Criterion states that information must be prioritized according to the purpose that information needs to fulfill

The Polyscopic Modeling Criteria

- The Foundation Criterion states that information must be reliable and verifiable (or proven)

Combining Topic Maps with polyscopic structuring and naviation

- The Topic Map data model is suitable for implementing the polyscopically structured information.

Implementing the vertical abstraction

- Superclass / subclass, type / instance, part / whole, high-level / low level constructs
- Typing or Association where topics play high / low roles?
- Modules that contain gradually more detailed information. Low level modules should be able to play the role of high level modules for further low level information.
- Should occurrences be considered low-level topics themselves?

Implementing the horizontal abstraction

- Topic Maps map very well to the horizontal abstraction of polyscopic aspects
- Aspects would be computed on basis of scoped ocurrences
- Topic Maps better than other markup since it gives possibility of leaving some of the abstraction to the syntax

Implementing the structural abstraction

- Polyscopic Document structure and navigation
- Most of the implementation would have to happen on the application layer
- High / low levels would have to be computed on basis of syntax
- Good navigational structures and ontologies needed to combat the GOTO problem

Do Topic Map authors use the TM data model to its fullest?

- Will the everyday user be able to use the TM data model efficiently?
- Users show problems in structuring content using the TM data model
- Is there a need for a formalized TM polyscopic design pattern to help users design good information

An Example

- Flexplearn, a prototype flexible e-Learning application
- Health map, a tentative example..

Concluding Remarks

- To remedy information overload, information structuring needs to be based on a methodology
- We need a way to produce information that is adapted to our changing needs

Thanks for your attention!

rolfbg@grace.uio.no