Analysis of Papers Submitted

Introduction

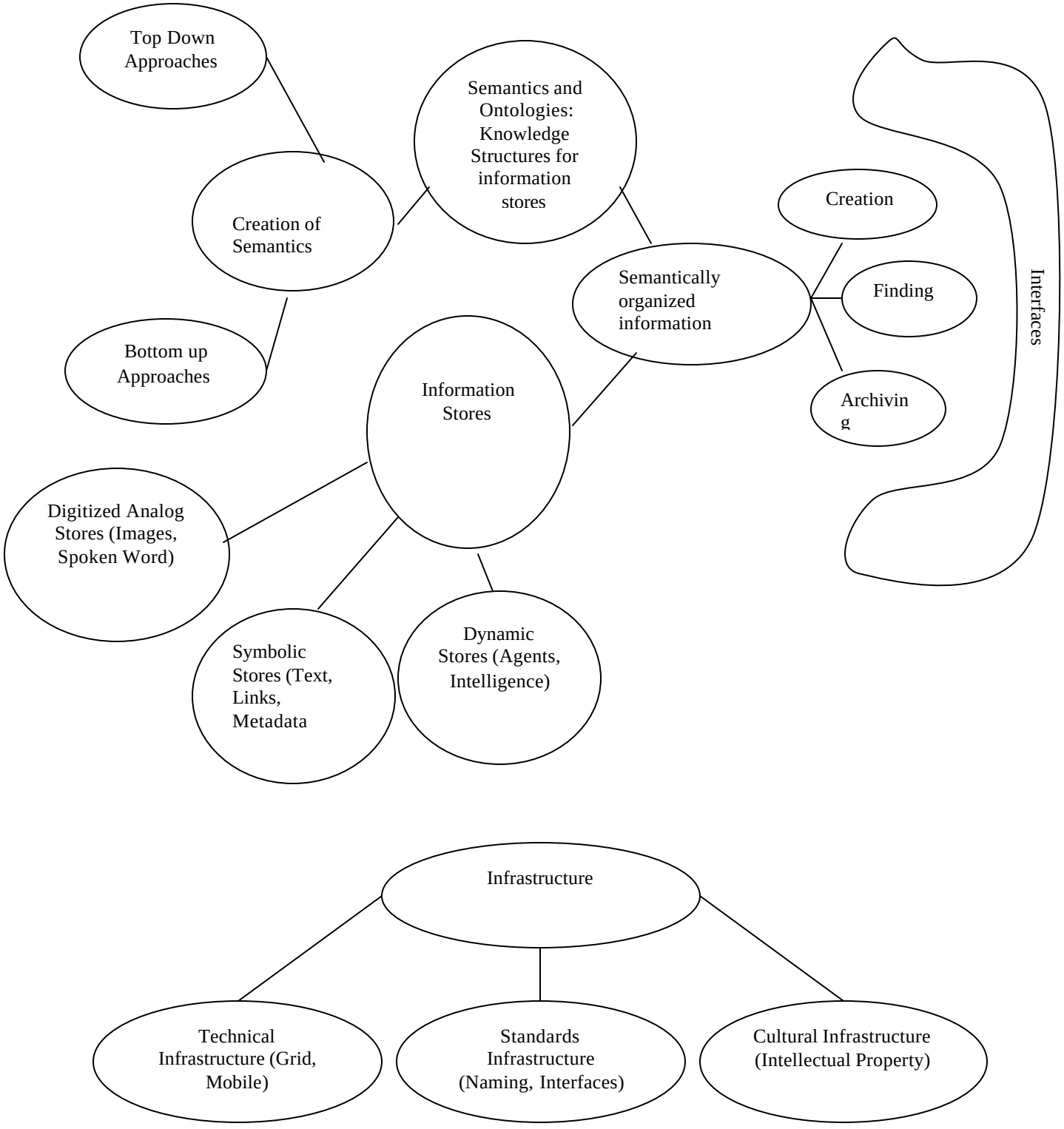
This is an analysis of the position papers prepared for the NSF workshop on post digital library futures. It has been conducted in parallel with the documents prepared by Ron Larsen. A comparison of the analyses finds that they are generally in agreement. This analysis develops a conceptual map of the issues identified and proposes a assignment of participants to breakout groups based on that mapping.

The diagram on the following page suggests a concept mapping of the participant position papers for the NSF workshop. The second diagram suggests several areas of this conceptual mapping that might serve to focus discussions. The table following the diagrams maps participant interests to the breakout groups. The top three areas of interest for each participant are predicted..

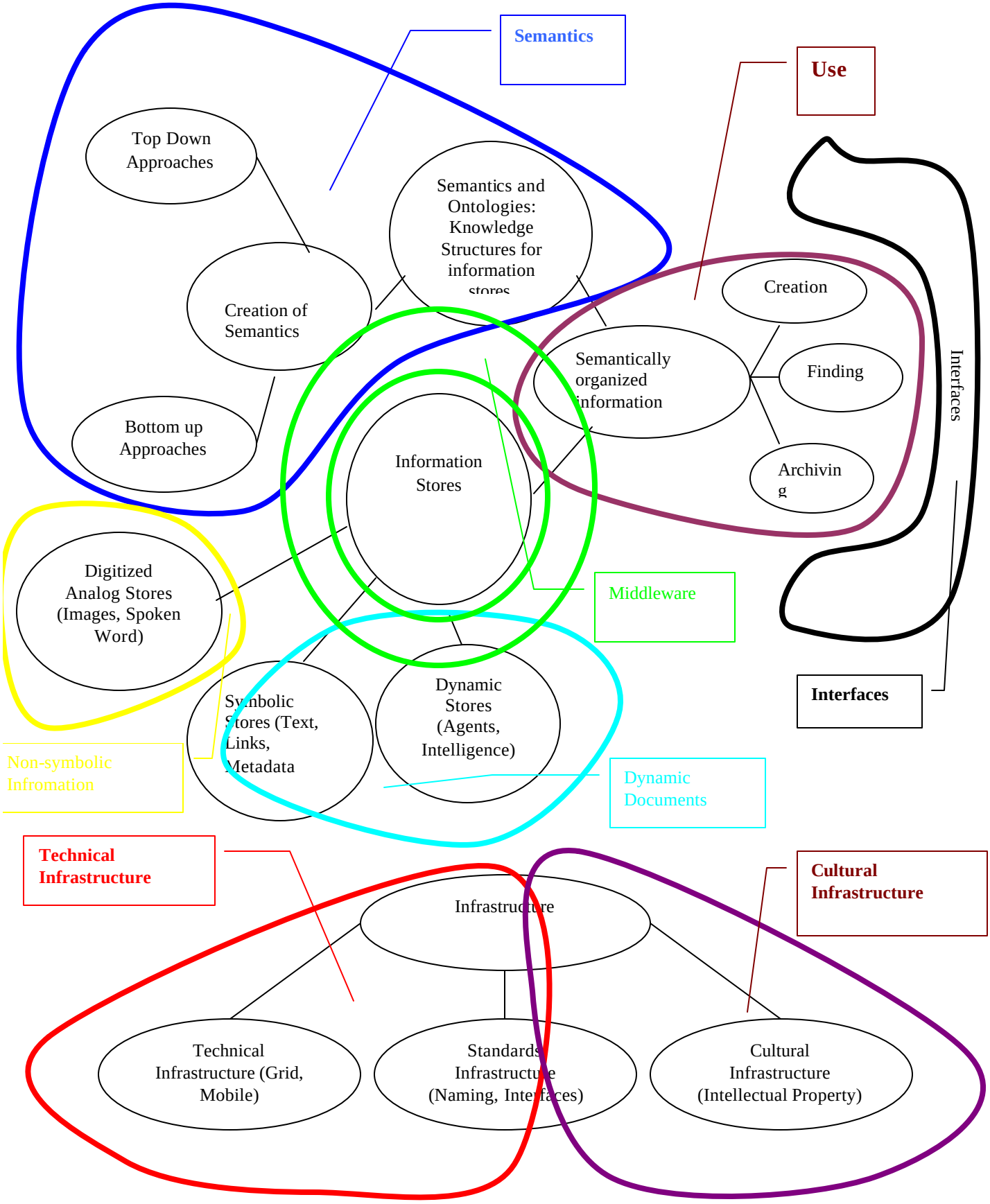
The diagram presented is based on a preliminary analysis of the papers but makes no effort to catch all of the topics or ideas presented in the papers. The diagram may be more understandable if the following points are kept in mind:

- The most dominant theme either explicitly or implicitly referenced in the papers is the development of semantics for the management of large information stores. Thus, while there are numerous information management issues, semantics is singled out for special treatment.
- Various papers explicitly addressed the development of semantics (the creation problem) – how do we create semantics or ontologies. Other authors talked about how the resulting information could be used (the use opportunities) given semantics in the information store. Some papers addres sed use explicitly and others talked about provenance, archiving or knowledge generation. A number of papers identified important areas that they were not addressing in the information life cycle. These various discussions led us to include a section not only on creation but use. That is, the issue of creating semantics and using managed information begs the broader issue of information life cycle or unit operations on information.
- A couple papers referenced significant attention to work with images or the spoken word. This suggests that there is implicit support for information stores of symbolic information in digital form – text documents, and explicit suggestions that important stores of digital information of non-symbolic nature – spoken words and images to be specific.
- There are a series of papers that address issues of infrastructure and they appear to be broken down into three categories – socio-political issues, technical issues, and standardization issues.

A Conceptual Map of Participant Comments and Interests



This diagram suggests breakout groups as shown below:



Breakout Group Details

The potential breakout groups are briefly described below by name, "advertising slogan", description, and potential questions or issues.

1. Semantics,( ), What are the issues, problems, and opportunities for the development of semantics to guide knowledge management. This would include:
    - What are the techniques for bottom up and top down generation of semantic information?
    - How are various distributed ontologies related?
2. Use,( ), What are the issues, problems, and opportunities related to uses of the systems that might be created. That is, how might they change finding information, using information, creating information, archiving information, etc.
    - What is the information life cycle
    - Is there a knowledge life cycle
    - What are the unit operations on ontologies
3. Non-Symbolic Information,( ), What are the issues, problems, and opportunities for the development of better semantics and processing of non-symbolic digital information?
    - How should digitized analog sources be treated and annotated?
    - What needs to be done to further speech and image recognition s?
4. Dynamic Information,( ), What are the issues, problems, and opportunities for the development of new more dynamic and intelligent forms of information – active documents, agents services, etc.
    - How will services impact the design of information stores?
    - What new semantics are required for services
    - How will API's impact the scope of efforts
5. Technical Infrastructure,( ), What are the technical infrastructure issues, problems, and opportunities that need to be addressed to allow these structures to emerge?
    - What standards are needed to support these activities.
    - What forms of object, process, and artifact transparency will be required?
6. Cultural Infrastructure,( ), What are the cultural and political issues, problems, and opportunities that need to be addressed to allow these structures to emerge?
    - How will intellectual property management impact the system?
    - How will new behaviors be transferred?
    - What kinds of business process reengineering are required?
7. Interfaces,( ), what are the kinds of interfaces and interactive systems required to make optimal use of these systems?
    - What new kinds of interfaces will be needed for personal portals
    - What kinds of visualization and augmentation tools will be required?
    - How will systems be assessed?
8. Middleware ,( ), What is the nature of the glue required to make construction and operation of distributed information systems possible.
    - What services will be defined as core?
    - How will services be found?
    - What services will be standardized?

Participant Assignment

The following table suggests priority groups for the participants. This analysis was conducted as a preliminary test of this system. The assumption is that participants will self select a breakout group or suggest another group. Assuming this analysis is correct, there would be 5 breakout groups, indicated by the columns with the grey cells in them.

	Semantics Create	Information Use	Analog Digital Stores	New Dynamic Forms	Infrastructure Technical	Cultural Issues	Interfaces	Middleware	Other
Reagan W. Moore	2				1			3	
Gio Wiederhold	2	1		3					
Hsinchun Chen	1	2			3				
Yi-Tzuu (Y.T.) Chien	3	2			1				
Jerry Goldman		1	2			3			
Kevin Kiernan		2	1	3					
Carl Lagoze	3			1	2				
Douglas W. Oard,		2	1				3		
Gary Marchionini		1			3		2		
Michael Lesk			1			3		2	
Bob Englund		2	1			3			
Bruce R. Schatz	1	2						3	
Gregory Crane	1	3				2			
Christine L. Borgman		1		3			2		
Dave Fulker	2	1					3		
Norman Wiseman		3			1			2	
Herbert Van de Sompel	1				2	3			
Ching-chih Chen	1	2					3		
Edward A. Fox	1	3			2				
Margaret Hedstrom	1		2			3			
Clifford Lynch		1				2	3		
J. Stephen Downie	2				3			1	