

Visualizing Information in Complex Environments

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Visualizing Deliberation to Enable Transparent Decision Making in Participatory Urban Planning



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Approach

We investigate different aspects and issues of Public Participation in Urban Planning and Decision-Making focusing on the key role of:

- ✓ knowledge and argument mapping
- ✓ deliberation practice, tracking and representation

to *enable more effective policy communication and public participation.*

We look at *Hypermedia discourse technologies* to help move us from a deliberation process which is often ephemeral, ill-structured and disempowering, to deliberation which is **persistent**, more **coherent** and **participatory**.

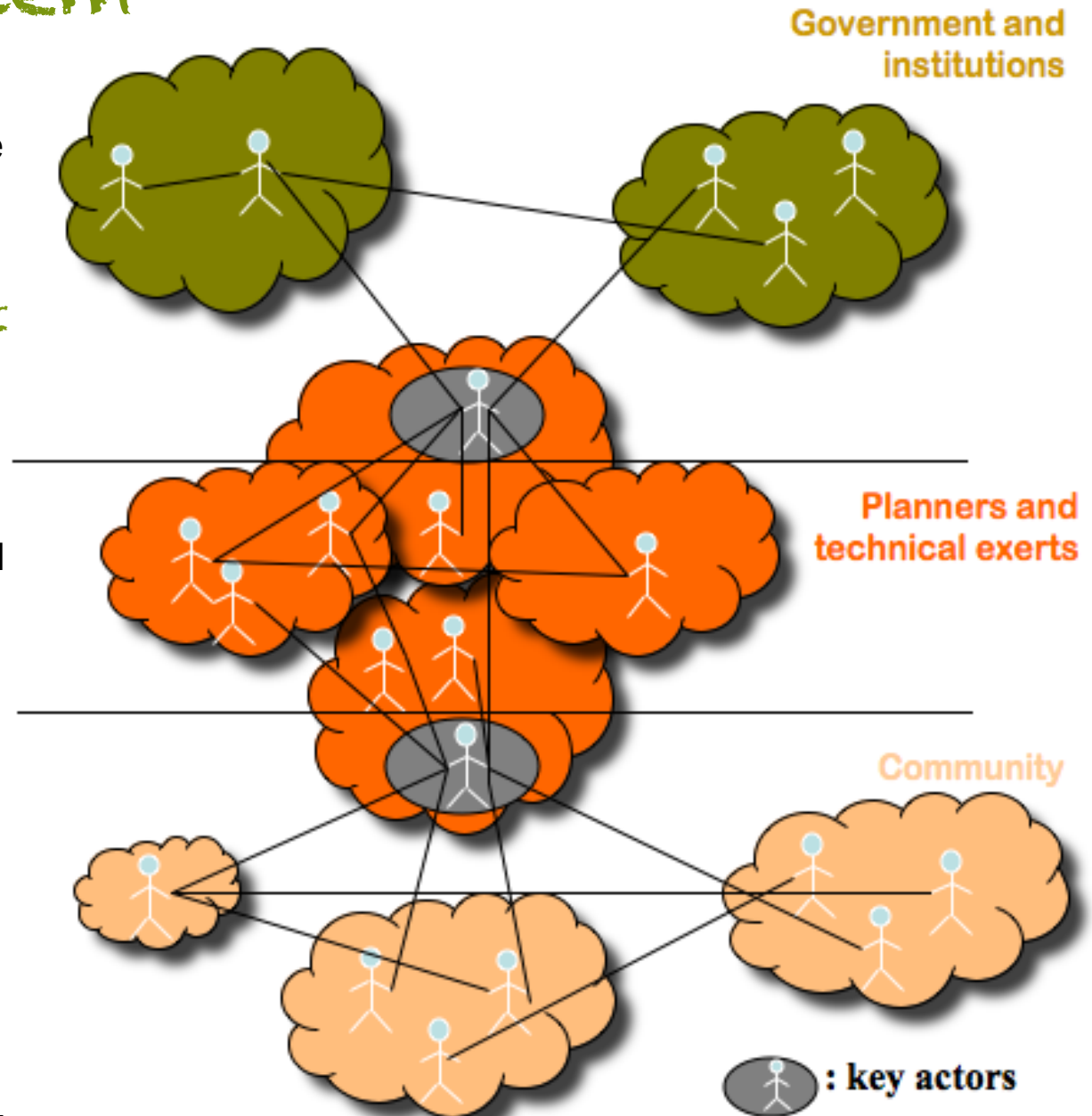
The Problem

Participatory Planning is a collaborative governance practice involving institutional and non-institutional stakeholders in a **collaborative process of deliberation** in order to:

- ✓ build multiple views of problems and resources
- ✓ achieve better informed and shared decisions

...it is difficult tracing the **intense process of information and knowledge exchange and production...**

...converts into a loss of **transparency and accountability** of the Decision Making Process itself.



Objective

We investigate the *role of deliberation* in participatory planning, with a specific emphasis on *making participatory design decisions*, therefore focusing not just on debating alternatives but also on making collaborative decisions (decisional power closer to the community).

The *challenge for the planner* is then to support deliberation by capturing and representing results of diverse planning conversations into a unique and coherent deliberation process, in which it is made clear what 'voices' have been listened to, in which social context, and how they affect the deliberation process toward planning decisions.

Where and How
does deliberation happen?

Formal
Planning
Arenas

vs

Informal
Planning
Arenas



Can the normally ephemeral deliberation process be made tangible as an object for critique and reflection?

The core of our work is to understand how this deliberation process can be captured and visualized using digital tools in appropriate ways, and to understand the practices and skillsets that this requires.

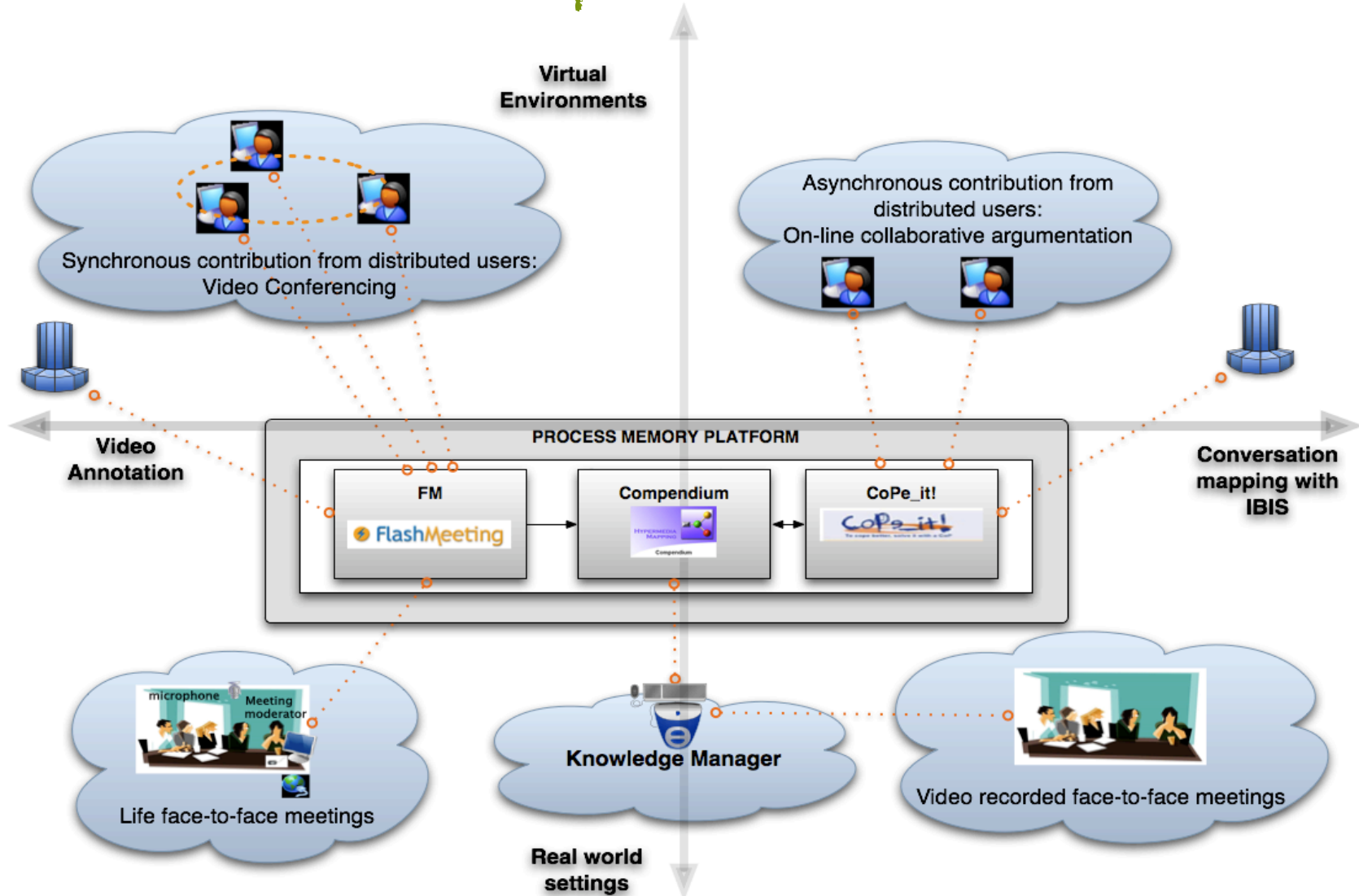
Capturing deliberation

The first issue: *Where does deliberation happen?*

	Communication Modes		Communication Environments		Communication Time		Planning Tasks		
Deliberation types	Co-located	Dispersed	Real World Settings (Offline)	Virtual (Online)	Synchronous	Asynchronous	Consultation	Design	Problem and Strategy Setting

- ✓ *Deliberation across planning tasks*: reusing the products of deliberation in one context, in other planning phases;
- ✓ *deliberation across communication time*: enabling synchronous and asynchronous communication in the same deliberation process;
- ✓ *Deliberation across communication modes*: enabling both co-located and dispersed stakeholders to be involved in planning discussion;
- ✓ *Deliberation across communication environments*: enabling integration between online and offline deliberation spaces;

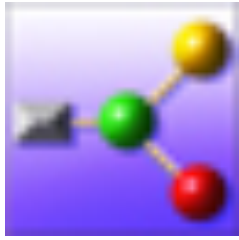
FM \leftrightarrow Compendium \leftrightarrow CoPe_it!



Enable the the integration of the captured information in a whole and coherent information flow which shapes the history of the whole deliberation process.

San Pietro Piturno: A Participatory Planning Process carried out by Engineers Without Frontiers (I.S.F.) (association for social promotion of cooperation and development) within the community of San Pietro Piturno (Southern Italy)





Compendium

“it’s like Excel, but for knowledge”

<http://compendium.open.ac.uk/institute>

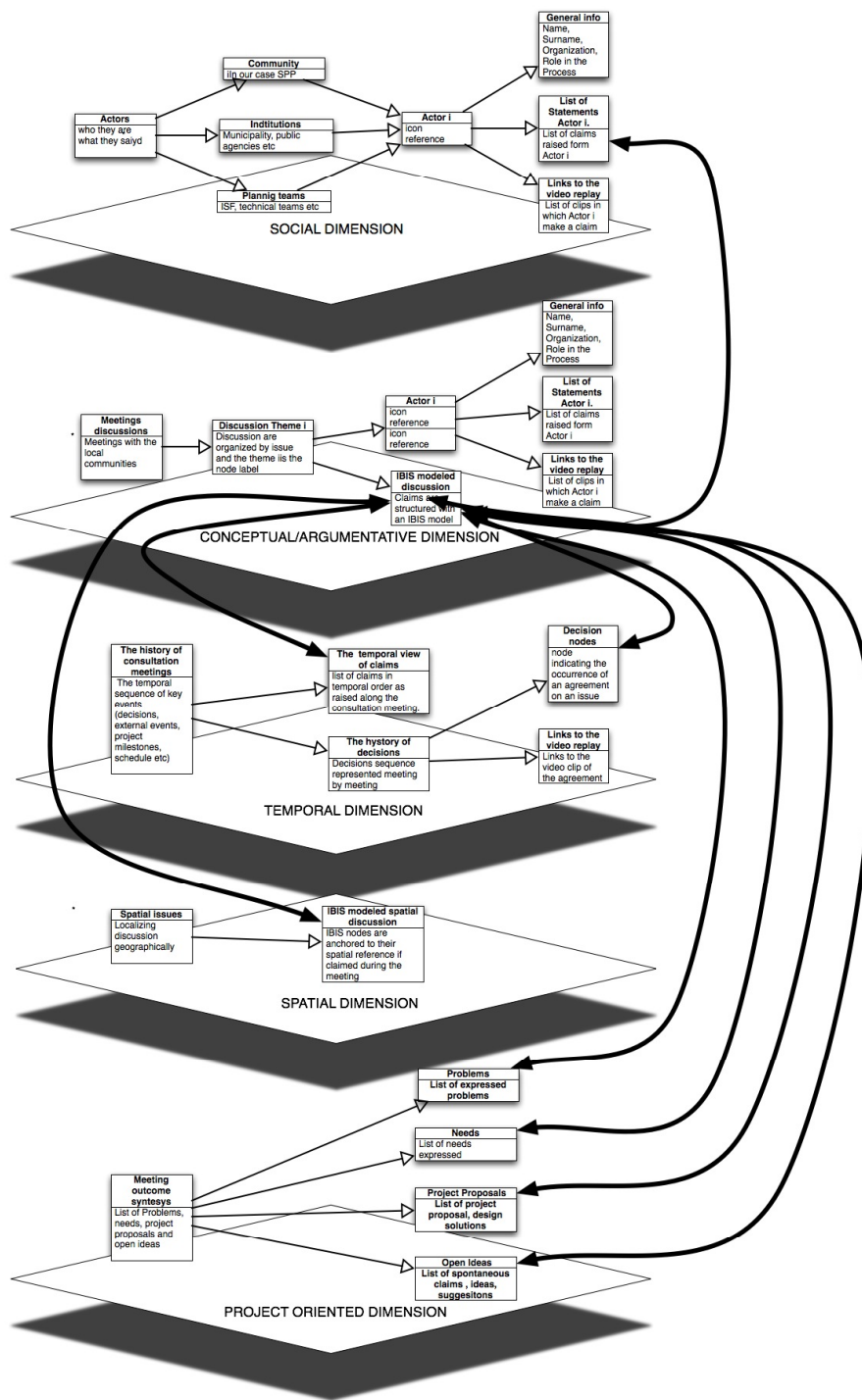
Compendium: a sensemaking tool to map and manage deliberation

Compendium is a hypermedia and sensemaking tool that we used as a Knowledge Management system to store, structure and represent deliberation contents, so as to capture, index, and visualize the issues, options and arguments generated.

An information architecture has been specifically designed to represent deliberation as **hypermedia knowledge maps**. In this architecture, information units are contributions by stakeholders during deliberation.

Each contribution is represented as a node in the hypermedia database, and is indexed according to 5 key descriptors of the deliberation process, which are organized coherently against five dimensions of participatory planning processes: *social, argumentative, spatial, temporal and project oriented/causal.*

The Information Architecture



Social Dimension

Argumentative Dimension

Temporal Dimension

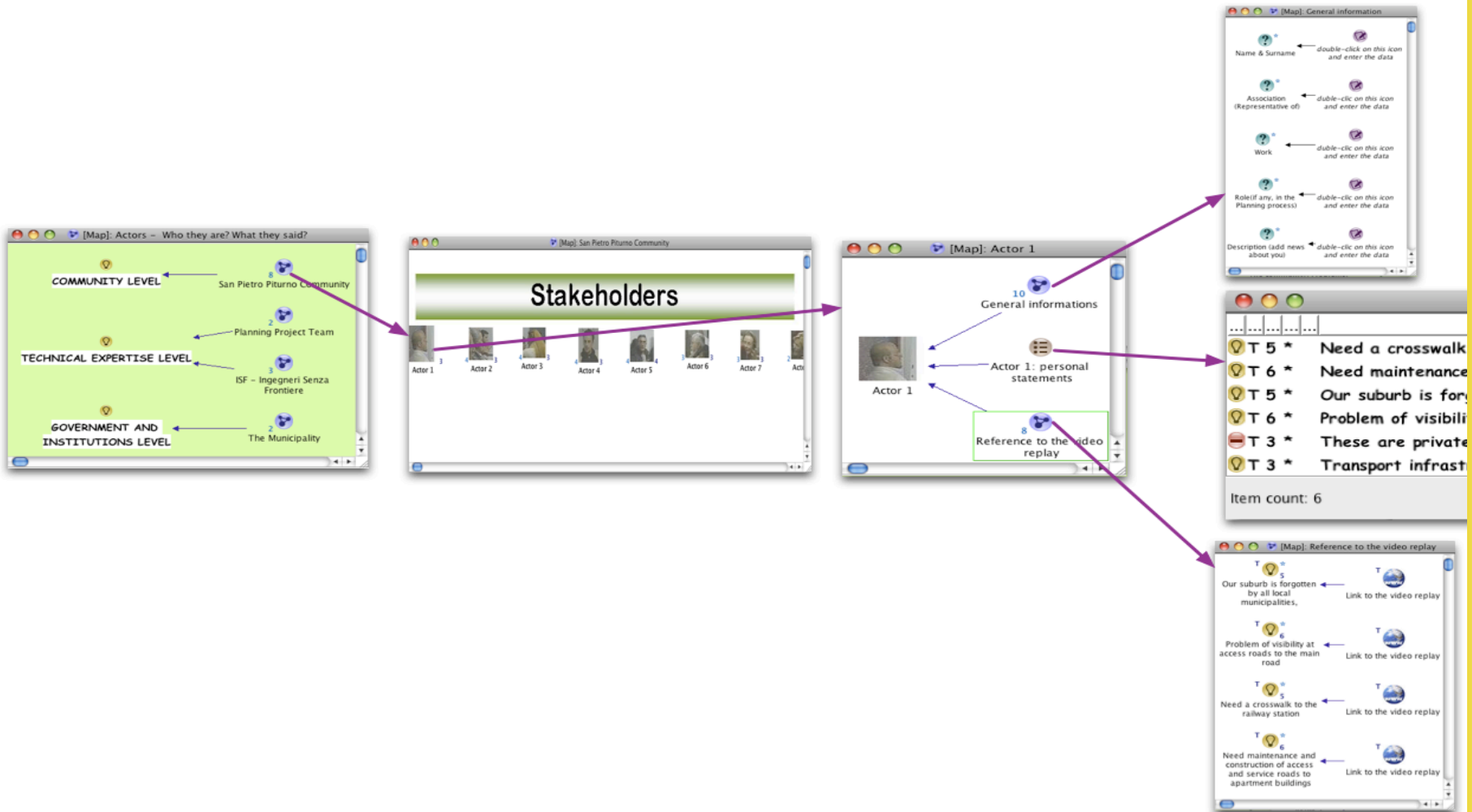
Spatial Dimension

Project Oriented Dimension

By modeling the five views of the deliberation process as a hypermedia space, Compendium provides a *multidimensional repository* for the deliberation process, organized in content and context sub-repositories, in which every actor's statement can be explored according with its social, dialogical, spatial, temporal and causal-argumentative context.

Compendium demo...

The screenshot displays the Compendium software interface. The main window, titled "[Map]: San Pietro Piturno", features a light green background. On the left side, a vertical list of navigation links is shown, each with a small globe icon and a number: "15 How to navigate in the system?", "7 Actors - Who they are? What they said?", "10 Consultation meeting: Contents and Dialogues", "10 Localize the discussions", "4 The history of Consultation Meetings", and "4 The Technical Plan: 'The Neighborhood Agreement' Project". On the right side, the text "SAN PIETRO PITURNO" is prominently displayed in large green letters, with "Memory Support System" written below it in orange. In the bottom right corner, there is a logo for "SPP Mem 2" with the text "What is this?" and the number "12". The interface includes a top toolbar with various icons for navigation and editing, and a bottom toolbar with a "Data Connection" dropdown set to "Derby: Default" and a "10 secs" timer.

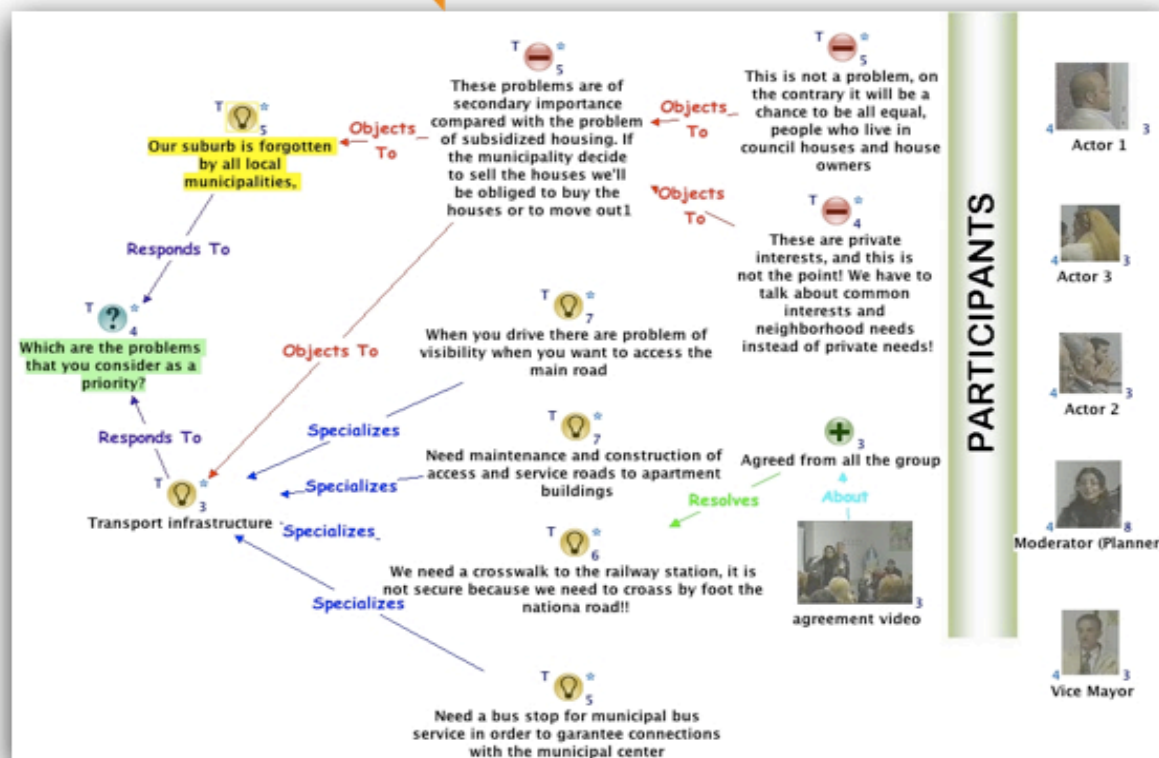


Social View Exploration Path


[List]: Actor 1: personal statements

Label
T 7 * Need maintenance and construction of access and se...
T 5 * Our suburb is forgotten by all local municipalities,
T 4 Actor 1: personal statements
T 4 First Discussion
T 3 Problems:
T 3 Reference to the video replay
T 6 TEMPORAL VIEW OF STATEMENTS ALONG THE CONSULTATION MEETINGS
T 7 * When you drive there are problem of visibility when...

Item count: 6 Show More



Dialogical/Argumentative View


5 
FIRST CONSULTATION MEETING
April 12th


hyperlink

0 
SECOND CONSULTATION MEETING
April 28th




[Map]: FIRST CONSULTATION MEETING April 12th


2  first agreement of the group

2  Second agreement of the group

related to

Related to

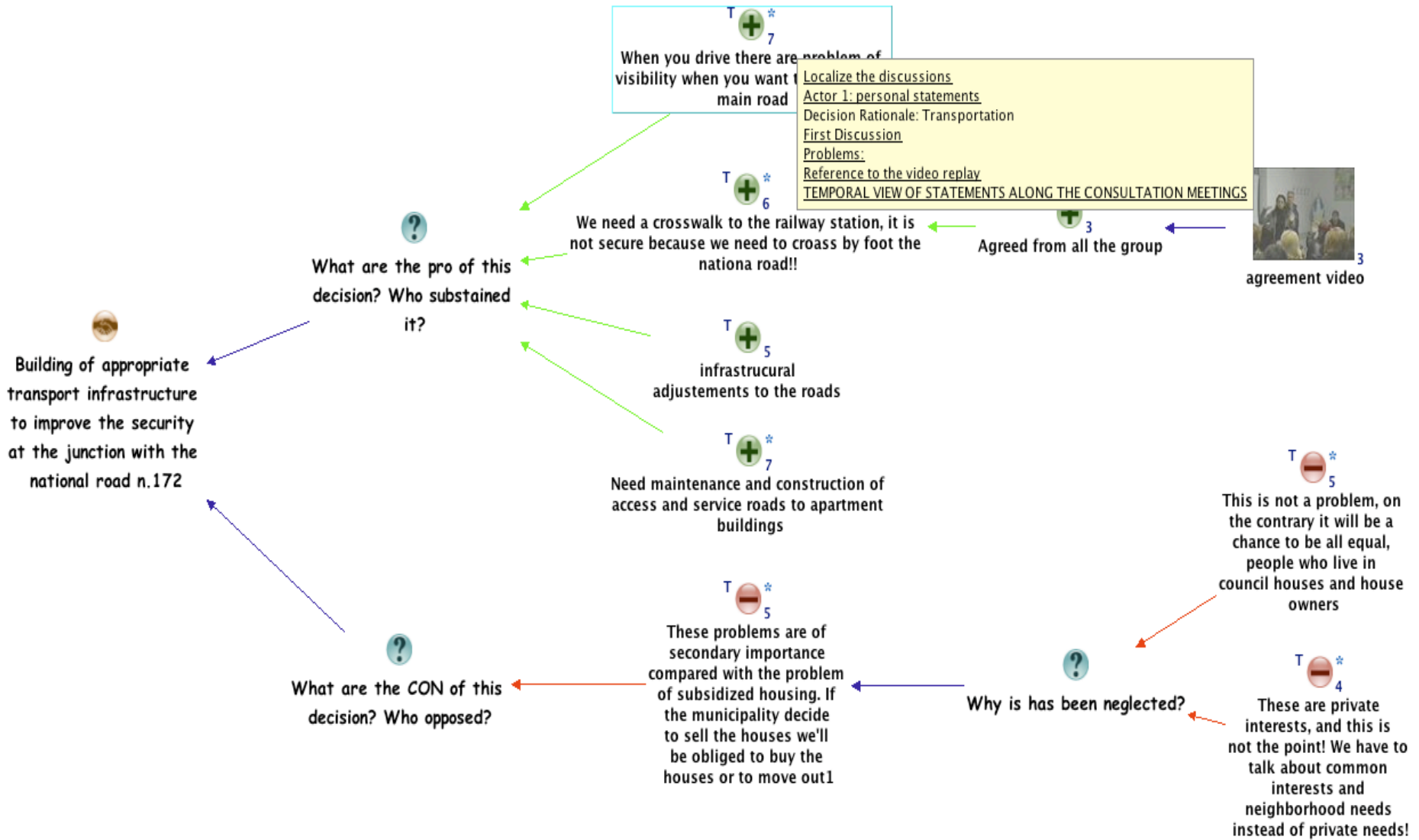
2  Video of the Agreement

2  Video of the Agreement

< [Map]

39 
TEMPORAL VIEW OF
STATEMENTS ALONG THE
CONSULTATION MEETINGS

Temporal View of Deliberation contents



Design Rationale View backed on deliberation contents

Safari File Edit View History Bookmarks Window Help (Charged) Thu 01:17

FM Memo

http://flashmeeting.open.ac.uk/fm/fmm.php?pwd=4bc7d8-7942&jt=00:00:55

Minutes FM Memo

30-03-07 text4

snaps files urls chat list

00:05 video

05:05 video

10:05 video

15:05 video

video

see URLs open snaps

00:01:01 00:05 20:03

video

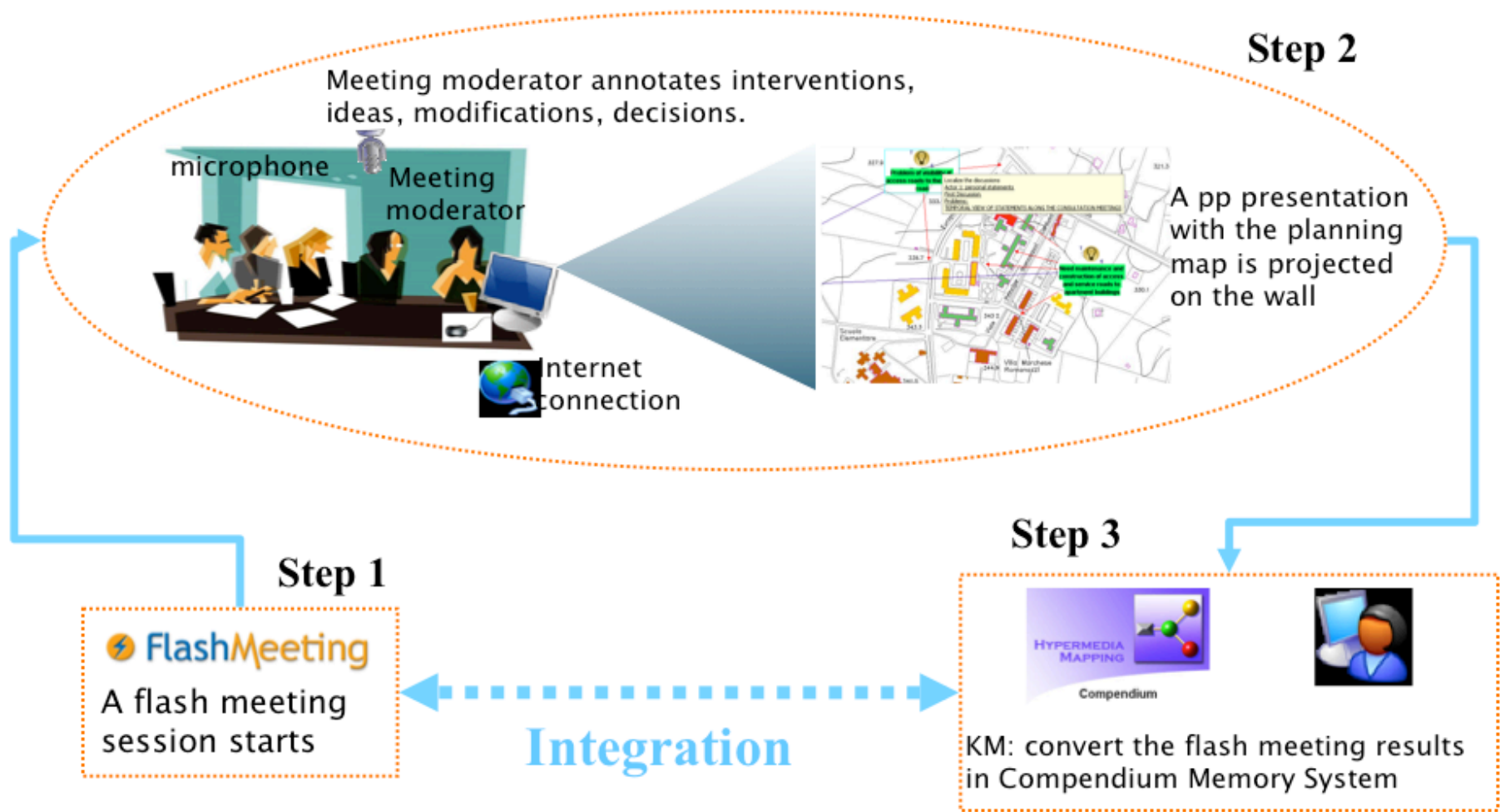
Improving transparency in deliberation capture and representation

We presented results of the post-hoc analysis of meetings' videos in which a knowledge engineer extracted images, information, and knowledge claims transcribing and editing the videos and then structured these data in the hypermedia database.

This operation introduces a **relevant level of discretion**.
The integration between Compendium and FM tries to solve this problem.

Video of meetings can be annotated on the fly during the meeting with FM and then annotations can be imported in Compendium hypermedia database.

FM for video recording and annotation in face-to-face meeting



Compendium-FM Demo

Home Window

[Map]: Compendium-Flash Meeting integration- Milton Keynes MASTERPLAN



4

During the meeting
2007.04.19



<http://flashmeeting.open.ac.uk/fm/8f06bc-8201>



4

Tue, 24 Apr 2007
11:20:00:
Compendium-Flashmeeting
integr

Compendium - FM integration

In Compendium environment, FM-videos annotations are converted in indexes to the video-replay and are used as references for the knowledge claims and concepts.

In this way, when navigating the meeting contents, users can replay the meeting pointing to the moment in which the specific claim has been done. This feature is a powerful enhancement to capturing deliberation because it makes the deliberation process fully transparent.

The integration enables:

- ✓to represent and reconstruct the deliberation process memory
- ✓to allow the planning team to navigate and reuse the contents of those meetings
- ✓to allow video annotation both for at distance and face-to face- meetings.

Asynchronous online deliberation: Compendium-CoPe_it! integration

Traditional methods of deliberation and public participation normally require face-to-face, synchronous interaction between citizens, planners and decision makers.

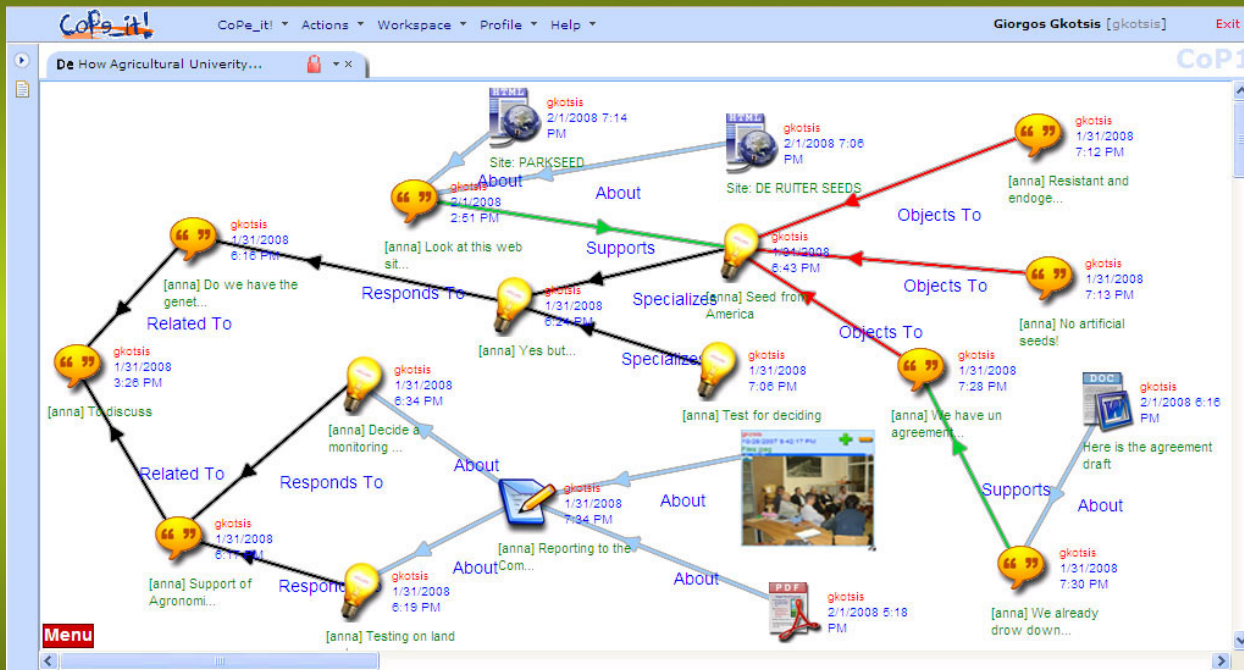
Asynchronous online deliberation platforms may, at least for those comfortable with the internet, reduce the costs of participation while enlarging the participation base.

We therefore integrated the offline Compendium tool with CoPe_it!, a web-based tool supporting collaborative argumentation and decision-making in online communities of practice

(Karacapilidis and Tzagarakis 2007).



Compendium



CoPe_it!
integration
demo...

Evaluation

Three case studies have been briefly described in which Compendium, FM and CoPe_it! were proof tested to capture deliberation around different planning activities.

CASE STUDY	Phase of the Participatory Process	Time of Deliberation Capture	Meeting Environment	Information Resources
SPP – San Pietro Piturno	Consultation Meetings	Post hoc, through analysis of the video replay	Face-to-face meetings.	Videos and actors interviews
TG – Torre Guaceto case study	Community Groups Meetings	On going phase	Face-to-face meetings and virtual meetings	Live-meeting participation, meeting videos, audio records, and actors' interviews
MK – Milton Keynes Master Plan	Team group meeting	On going phase	Face-to-face meetings.	Live-meeting participation, meeting videos, screencast, note-keeping maps

Case Studies

The **main aims** of the case studies were:

- ✓ to test the information structure and deliberation contents taxonomy and how effective it is to reconstruct and represent the deliberation process;
- ✓ To test the usability of the three technologies
- ✓ To test the effectiveness of the deliberation process memory system, that is to say: how easy is for users to extract relevant information from the hypermedia database to solve specific tasks.

Evaluation data was gathered from three sources:

- ✓ Semi-structured interviews with representatives at different organizational levels (community, technical and political) including an NGO, Decision Makers, Institutions and Spatial Planners
- ✓ Lab-based observations: Behavioral observations of two pairs, plus four individuals planning experts exploring the Compendium system,
- ✓ Questionnaires: issued to planning students

Evaluation Results: potentials and challenges for participatory planning

- ✓ Enthusiastic reaction from ISF: “We’d like to use the system as a memory system for our organization to remember best practices and mistakes”.
- ✓ The knowledge structure was able to support multiple strategies of exploration. Users demonstrated that it was straightforward to discover and infer the role of tags and icons by simply exploring the system.
- ✓ None of the encountered usability problems can be ascribed to the software (Compendium), but rather depend on:
 - user’s capability and attitude toward the task, and
 - knowledge manager’s skills in issue mapping

Evaluation Results: potentials

- ✓ **A system for reflection and understanding** and not for getting answer: A tool to understand the wider social and spatial context of deliberation
- ✓ **A tool of inquiry** and as such they suggest using it to discuss with the community about design alternatives and possible problems solutions; it offers **a different way to give voice to people that would not have one otherwise**
- ✓ **A tool for monitoring and evaluating** planning performances in terms of degree of knowledge base used, fulfilment of community demand, identification of excluded voices

Evaluation Results: challenges

Discretionary Classification:

- ✓ a general concern that the classification of claims is discretionary and entrusted to “the expert planner”. This opens the possibility of misinterpreting stakeholders’ intentions or meanings, or prematurely framing the problem setting by narrowing free concept interpretation.
- ✓ Once the platform moves to the web, a ‘folksonomic’ social tagging approach could be provided to ensure that classification is open to all, or to appointed stakeholders, as negotiated within the project.

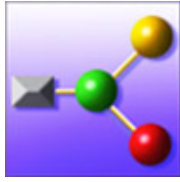
Evaluation Results: challenges

Growing of Information Complexity: How to Select Relevant Information and Knowledge

The risk is to reduce too much the grain of the information to trace and then to augment the amount of information and knowledge fragments to interpret and manage

This makes such a detailed remembering not only useless but also counterproductive

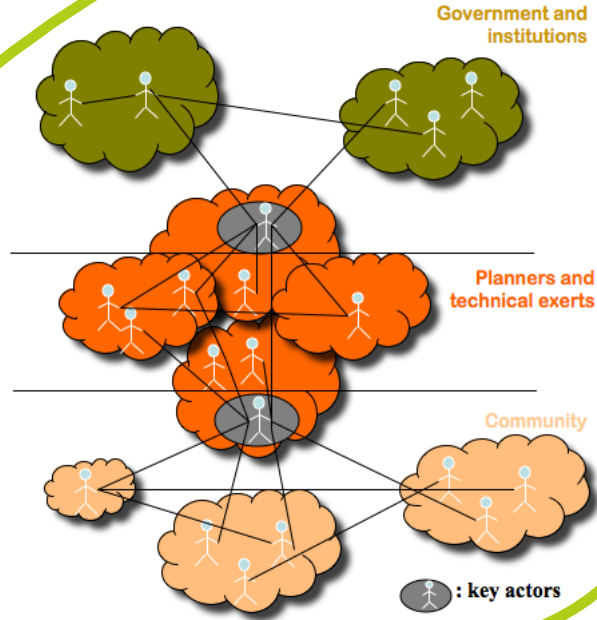
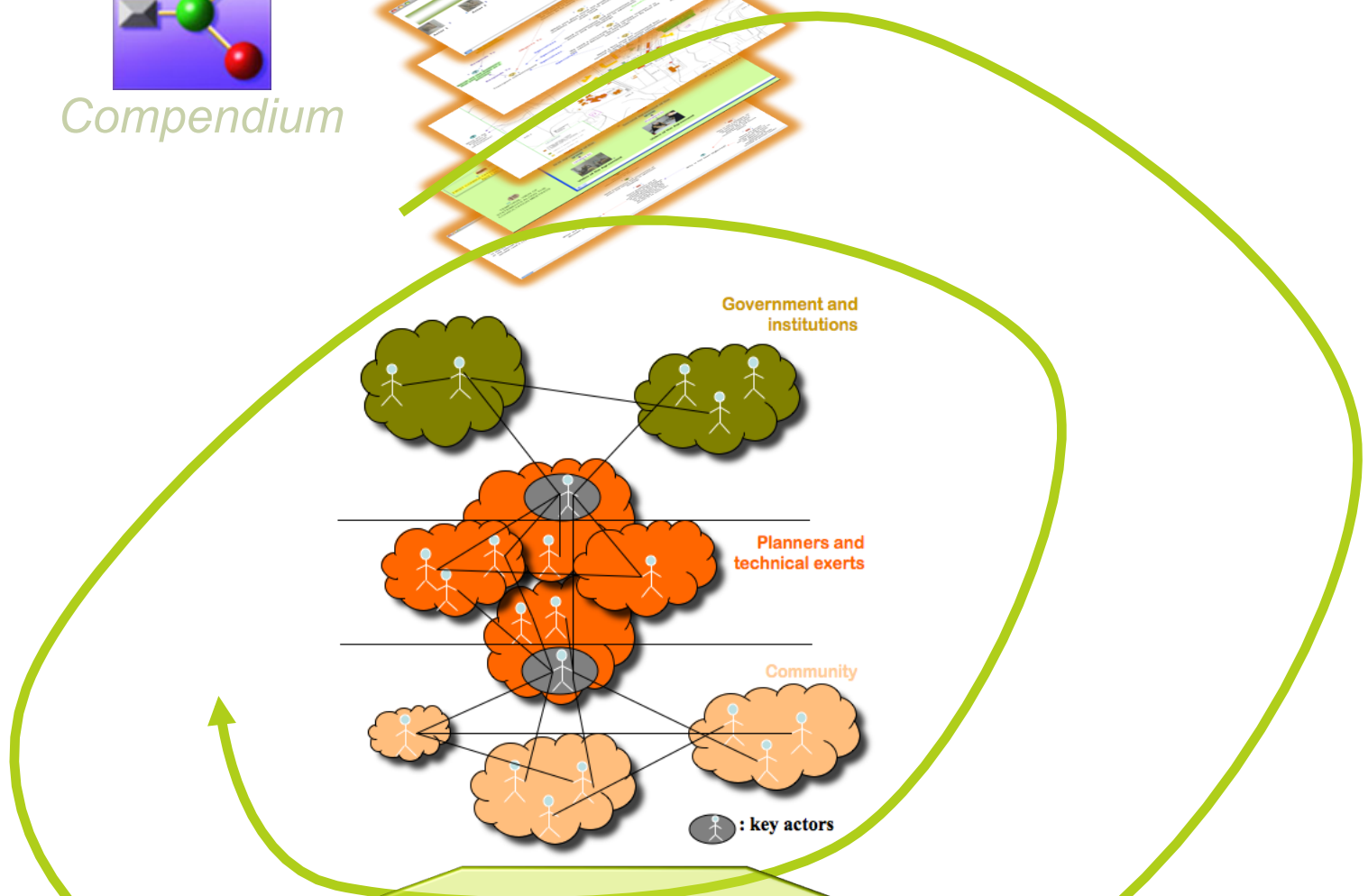
Future efforts needs to be devoted to explore methods to screen between relevant knowledge to trace and the “noise” which just need to be forgotten in order to focus our attention on what matter in the specific moment and for the specific people involved



Compendium



Creating structure



cohere 
>>> make the connection

Crowdsourcing
participation

The techno-political problem of Democracy



Compendium

“What are the skills, methods and tools to facilitate inclusive deliberation processes?”

“How do we build a collective voice without the need of intermediation?”

cohere 
>>> make the connection

Two Research Strands

✓Improving transparency:

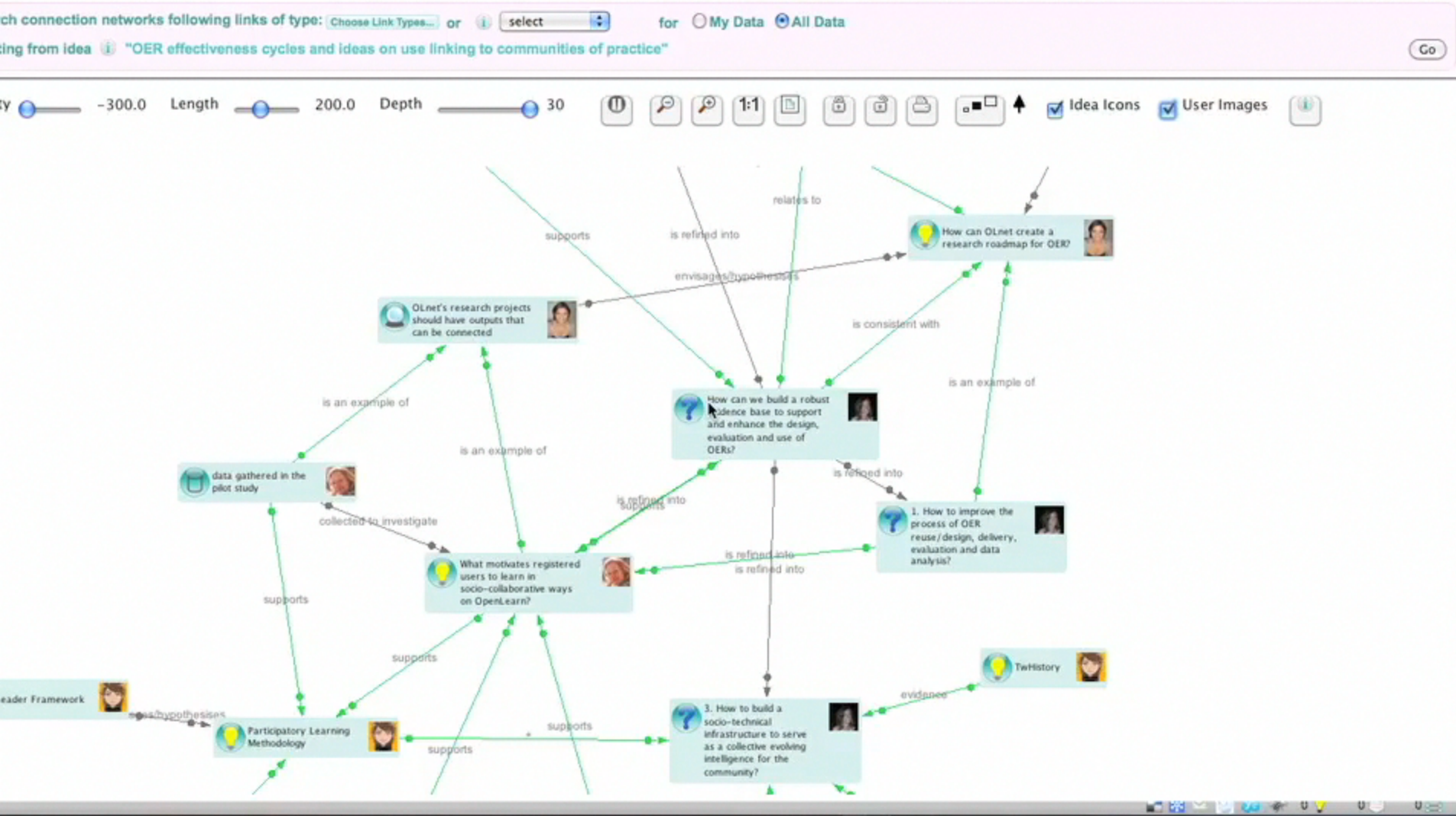
Supporting deliberation capturing and Visualization

By recording deliberation and discourse digitally to make it possible to interrogate later on and use deliberation contents to actively inform decision making

✓Empowering Community voices and ideas:

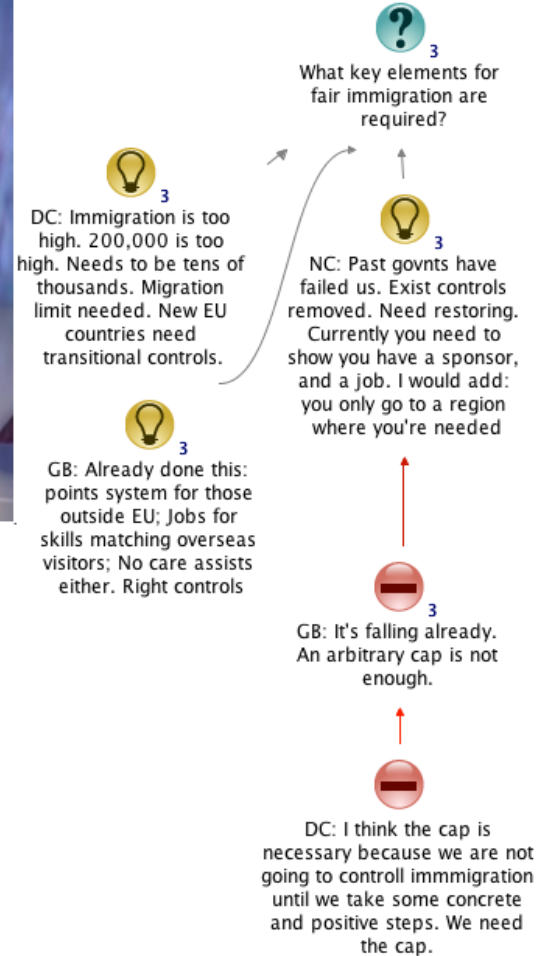
Facilitating Open Public Inquiry and Collective Intelligence

By developing a “virtual agora” for open inquiry on common policy issues



Watch the demo video at: <http://www.youtube.com/watch?v=Fcn2ab9PYo4>
Watch the Open Deliberation model video at: <http://www.youtube.com/watch?v=vthygbKA2Mg>

To Communicate and Analyze Public Debate



Visit <http://www.youtube.com/watch?v=WPF64UXFER0&feature=youtu.be&hd=1> to watch the demo movie



NASA e-science field trials



Simulated distributed Mars-Earth planning and data analysis tools for Mars Habitat field trial in Utah desert, supported from US+UK

www.kmi.open.ac.uk/projects/coakting/nasa

Issue/concept mapping

- 

17 75
What is Global Argument.net?
- 

8 75
Navigating these Argument Maps
- 

11 75
One War, Many Theories
Michael Cohen
- 

55 75
Who are against the war?
- 

39 75
Who are pro war?
- 

18 75
What concepts can help us to understand the war?
- 

43 75
How could the Iraq invasion be understood?

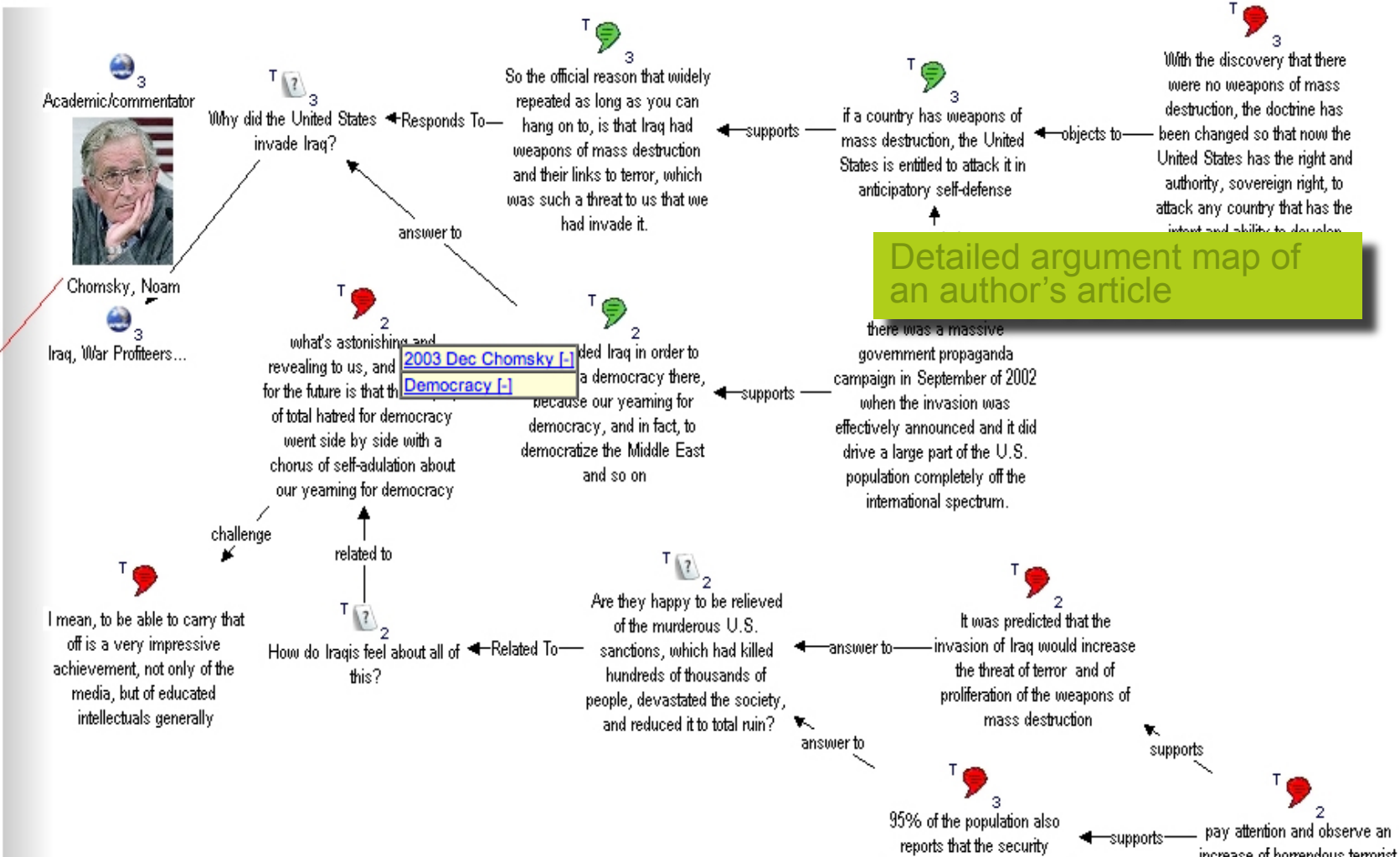
<p>3 Prof.international affairs  25 2003 Feb Walt [-]</p>	<p>3 Editor/commentator  25 2003 Mar AliTank [-]</p>	<p>3 Political philosopher  23 2003 Aug Gray [-]</p>	<p>3 Moral philosopher  11 2003 Sep Gaita [-]</p>	<p>3 Prof sociology  13 2003 Nov Mann [-]</p>	<p>3 Academic/commentator  23 2003 Dec Chomsky [-]</p>	<p>3 Historian/journalist  18 2003 Dec Manne [-]</p>	<p>3 Writer/commentator  23 2003 Dec Krauthammer [-]</p>
<p>3 Iraq: The War Debate</p>	<p>3 The price of occupying Iraq</p>	<p>3 'Bush and Blair deceived about its impact on Iraq'</p>	<p>3 The war against Iraq was not a last resort</p>	<p>3 The Incoherent Empire</p>	<p>3 Iraq, War Profiteers...</p>	<p>3 Who are against the war? What are the war's causes? What ethical principles are at stake?</p>	<p>2 Iraq in the USA</p>
<p>3 Int.relations academic/editor  20 2002 Sep Harries [-]</p>	<p>3 Academic/author  30 2003 Feb Mearsheimer [-]</p>	<p>3 Prof political science  35 2003 Feb Waltz K. [-]</p>	<p>3 Int.relat academic/commentator  21 2004 Mar Fukuyama [-]</p>	<p>3 Former Aust foreign minister  19 2004 Jul Evans</p>	<p>3 Just War and Human</p>	<p>3 Arguing about War</p>	
<p>3 On Prudence and Restraint in Foreign Policy</p>	<p>3 Keeping Saddam in a Box</p>	<p>3 Deterrence and Rogues</p>	<p>3 Roundup: Historians' Take on the News</p>	<p>3 invasion of Iraq was illegal</p>	<p>3 Author/former adviser to US sect state  16 2005 Jan Karzai [+]</p>		
<p>3 Academic/author  19 2002 Pollack [+]</p>	<p>3 Journalist/commentator  28 2003 Feb Kristol [+]</p>	<p>3 Journalist  32 2004 Jan Friedman [+]</p>	<p>3 Philosopher  23 2004 Feb Scruton [+]</p>	<p>3 Journalist/commentator  19 2004 Jun Krauthammer [+]</p>	<p>3 The Threatening Storm: The Case for Invading Iraq</p>		
<p>3 The Threatening Storm: The Case for Invading Iraq</p>	<p>4 Iraq: The War Debate</p>	<p>4 Liberal Hawks Reconsider the Iraq War</p>	<p>4 Kant and Iraq</p>	<p>5 Iraq History Lesson</p>	<p>4 A Higher Realism</p>		

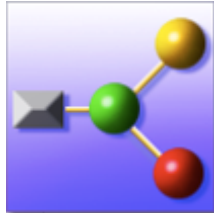
Mapping the ideas, themes and arguments in a complex debate (Iraq)

An overview map of pro-invasion authors

Issue/concept mapping

- 17 75 What is Global Argument.net?
- 8 75 Navigating these Argument Maps
- 11 75 One War, Many Theories Michael Cohen
- 55 75 Who are against the war?
- 39 75 Who are pro war?
- 18 75 What concepts can help us to understand the war?
- 43 75 How could the Iraq invasion be understood?

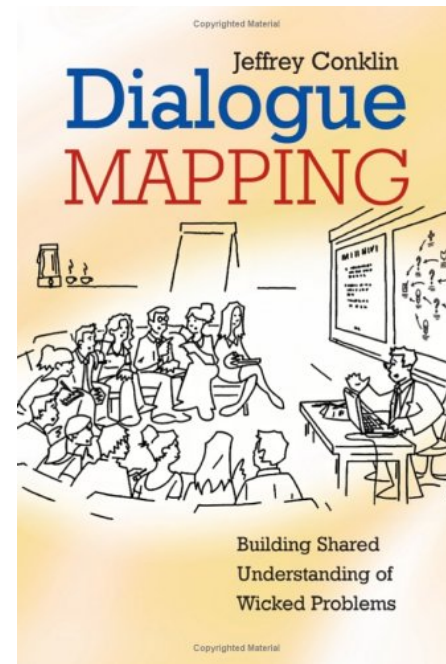
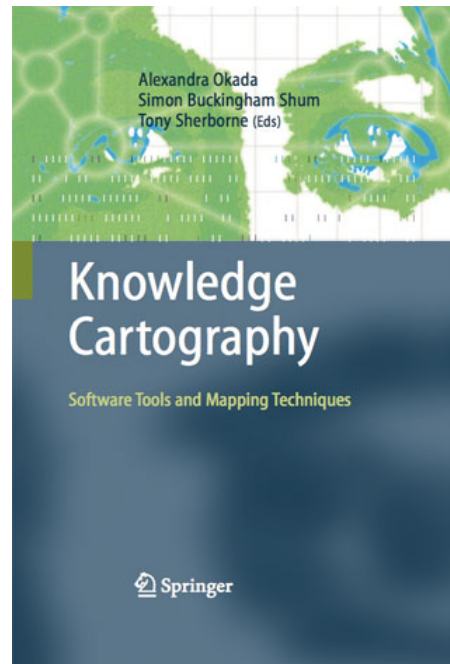
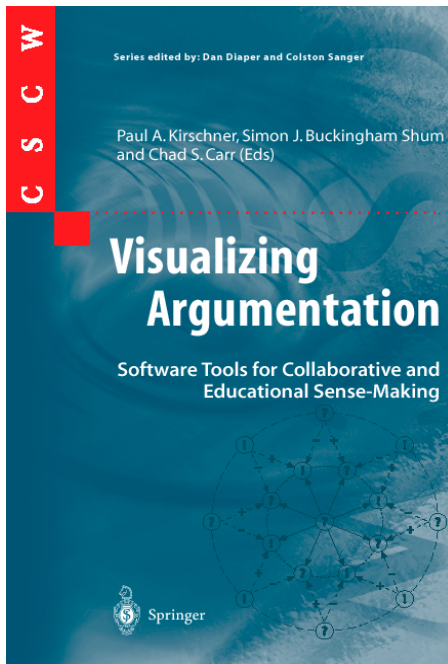




Compendium
Institute

cohere 

KNOWLEDGE MEDIA
KMi
I N S T I T U T E



<http://projects.kmi.open.ac.uk/hyperdiscourse>

Many thanks
Anna De Liddo

References for Compendium and Cohere: Semantic Web Annotation and Knowledge Mapping

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