



PRAISE Meeting

Iceland, September 18-20, 2004

From Keywords to Ontology

Fulvio Corno
Politecnico di Torino





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**Why are we bothering to define
concepts?**

~~**From Keywords to Ontology**~~

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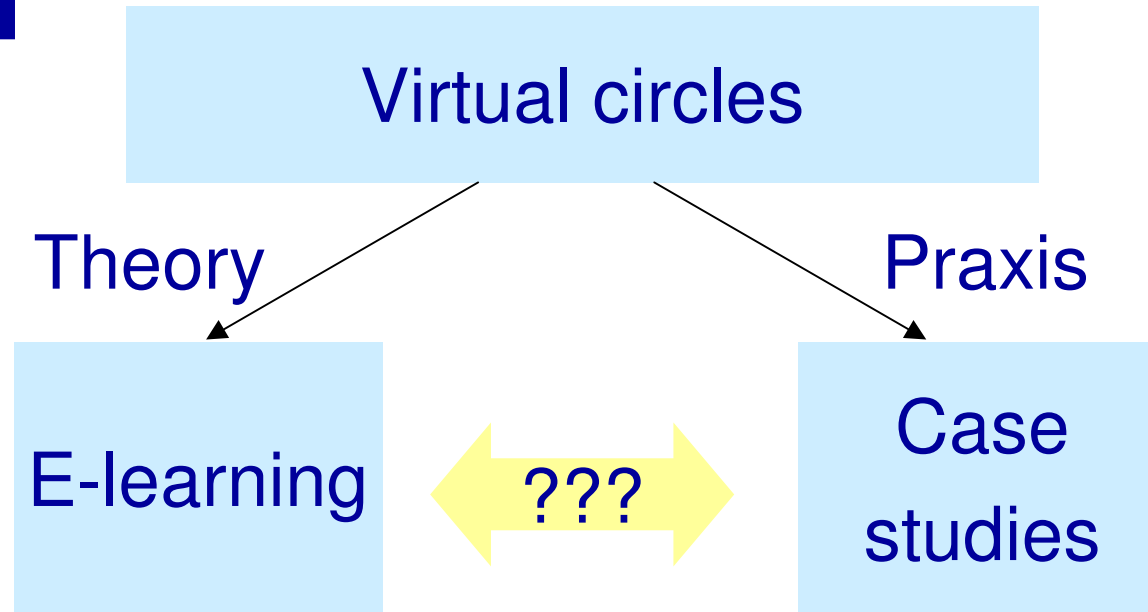
Summary / Goal

- Recall the context of the CABLE+PRAISE projects
- Goal of the “semantic” feature
- Structure of the shared ontology
- Working on the ontology





General setting





From lectures to case studies

Course Module A

introduction...

- Learning to use CABLE
How to use VLE
- Prove tecniche
Prove tecniche di costruzione del modulo SFEP
- mcq
mcq

Upload a file here.
Create a new resource here.
Bring rooms or resources here.

Google Search

Dictionary

Thesaurus

Related Case Studies





From lectures to case studies

The screenshot shows a web browser window displaying a course module page. The page title is "Course Module A". Below the title, there is a table with columns for "Owner", "Title", and "Date modified". The table contains several entries, including "unicode3", "unicode2", "test for unicode", "Educându-ne copiii", "Avand grija de altii", "Luptand impotriva drogurilor", "Educating our children", "DoubleApostroph 1+1", "Caring for the others", and "ETUDE DE CAS N°5".

Owner	Title	Date modified
sm00ay	unicode3	2004-06-14
sm00ay	unicode2	2004-06-14
sm00ay	test for unicode	2004-06-12
dchir	Educându-ne copiii	2004-05-20
dchir	Avand grija de altii	2004-05-20
dchir	Luptand impotriva drogurilor	2004-05-20
dchir	Educating our children	2004-05-20
Perredemo	DoubleApostroph 1+1	2004-05-20
dchir	Caring for the others	2004-05-20
CEMEA	ETUDE DE CAS N°5	2004-05-18

Below the table, there are links for "Google Search", "Dictionary", and "Thesaurus". At the bottom of the page, there is a "Related Case Studies" link. A cartoon character in a green suit is pointing to this link, and a large orange arrow points from the link to the table above.





Navigating case studies

Cable
(Case Based E-Learning for Educators)

Home Case study Log out

Add | Edit | Search | **Search similar** | Delete

Case study

ETUDE DE CAS N°3

C.S. est directeur d'une MJC qui accueille en majorité des enfants scolarisés en primaire et au collège, issus de classe moyenne.

Depuis un mois, une dizaine de jeunes de 16 à 20 ans viennent régulièrement au foyer de la MJC. Ils sont soit en voie de déscolarisation, soit au chômage. Ils tiennent des propos très critiques sur les animateurs et plus particulièrement sur ceux de l'espace emploi-formation du Service Municipal de la Jeunesse.

Ils viennent en groupe. Ils restent dans le foyer, le soir en particulier, sans participer aux activités, toutes qualifiées de « ringardes », pour disent-ils, « casser le temps ». Bruyants, ils crient, chahutent et se bousculent. Ils ont peu de contacts avec les autres jeunes. Leur présence dérange les autres adhérents, surtout les adultes.

Ils ignorent les animateurs qui doivent leur demander régulièrement de baisser leur niveau sonore, sauf M.N., qui habite leur pâté d'immeubles ; avec lui, ils font des parties de ping-pong ou de baby-foot, « se charrient » et discutent.

Le président du conseil d'administration rencontre C.S.. Il s'inquiète des rumeurs qui circulent. On parle de rackets et de trafics illicites dans la M.J.C.

Le même jour, le groupe s'inscrit, en bloc, à la prochaine sortie de week-end organisée par M.N.

Scene: Ces jeunes critiquent les animateurs, ne communiquent pas. Bruyants, ils crient, chahutent, ignorent les animateurs, sauf un qui habite la même cité qu'eux. Leur présence dérange les adultes adhérents de la MJC.





Navigating case studies

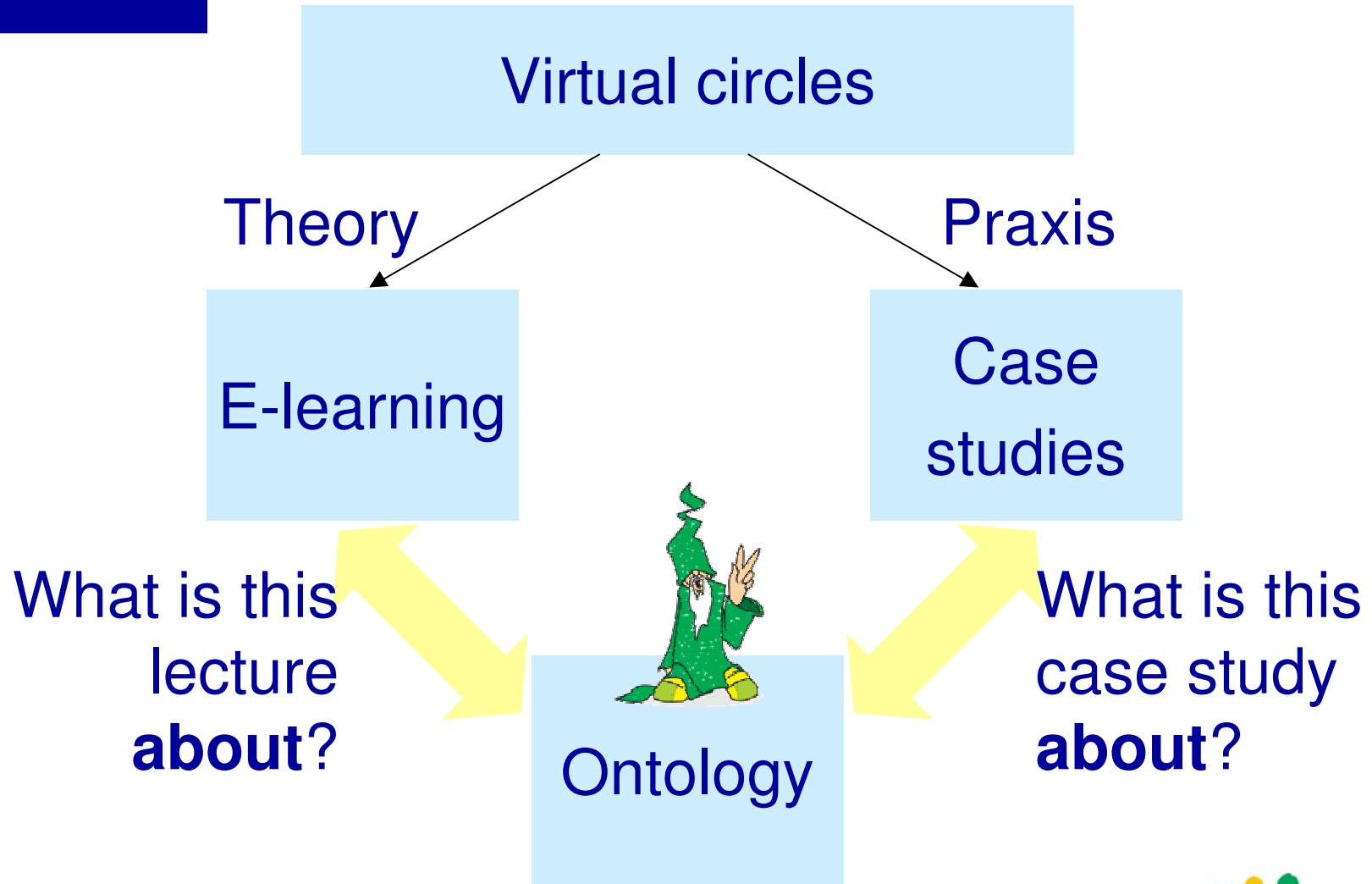
The screenshot shows two overlapping Netscape browser windows. The background window displays a search results page for 'Cable (Case Based E-L...)' with a search bar and a 'Search similar' button. An orange arrow points from this button to the foreground window. The foreground window shows a detailed view of 'Course Module A' with a table of case studies.

Owner	Title	Date modified
sm00ay	unicode3	2004-06-14
sm00ay	unicode2	2004-06-14
sm00ay	test for unicode	2004-06-12
dchir	Educându-ne copiii	2004-05-20
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Perredemo	DoubleApostroph 1+1	2004-05-20
dchir	Caring for the others	2004-05-20
CEMEA	ETUDE DE CAS N°5	2004-05-18





General setting





What needs to be in the ontology?

«The hierarchical structuring of knowledge about things by subcategorising them according to their essential (or at least relevant and/or cognitive) qualities»

Source: The Free On-line Dictionary of Computing, © 1993-2004 Denis Howe

- **Concepts**
 - Derived from Keywords
 - Shared
 - Unambiguous definitions
 - Different languages/cultures
- **Relationships**
 - Concept containment
 - Other relationships (limited support)



Example

chair

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e Learning



Directorate-General for Education and Culture



Example

- A piece of furniture consisting of a seat, legs, back, and often arms, designed to accommodate one person.
- A seat of office, authority, or dignity, such as that of a bishop.
 - An office or position of authority, such as a professorship.
 - A person who holds an office or a position of authority, such as one who presides over a meeting or administers a department of instruction at a college; a chairperson.
- The position of a player in an orchestra.
- Slang. The electric chair.
- A seat carried about on poles; a sedan chair.
- Any of several devices that serve to support or secure, such as a metal block that supports and holds railroad track in position.

chair



Example

•A piece of furniture consisting of a seat, legs, back, and often arms, designed to accommodate one person.



chair



Example



chair



seat



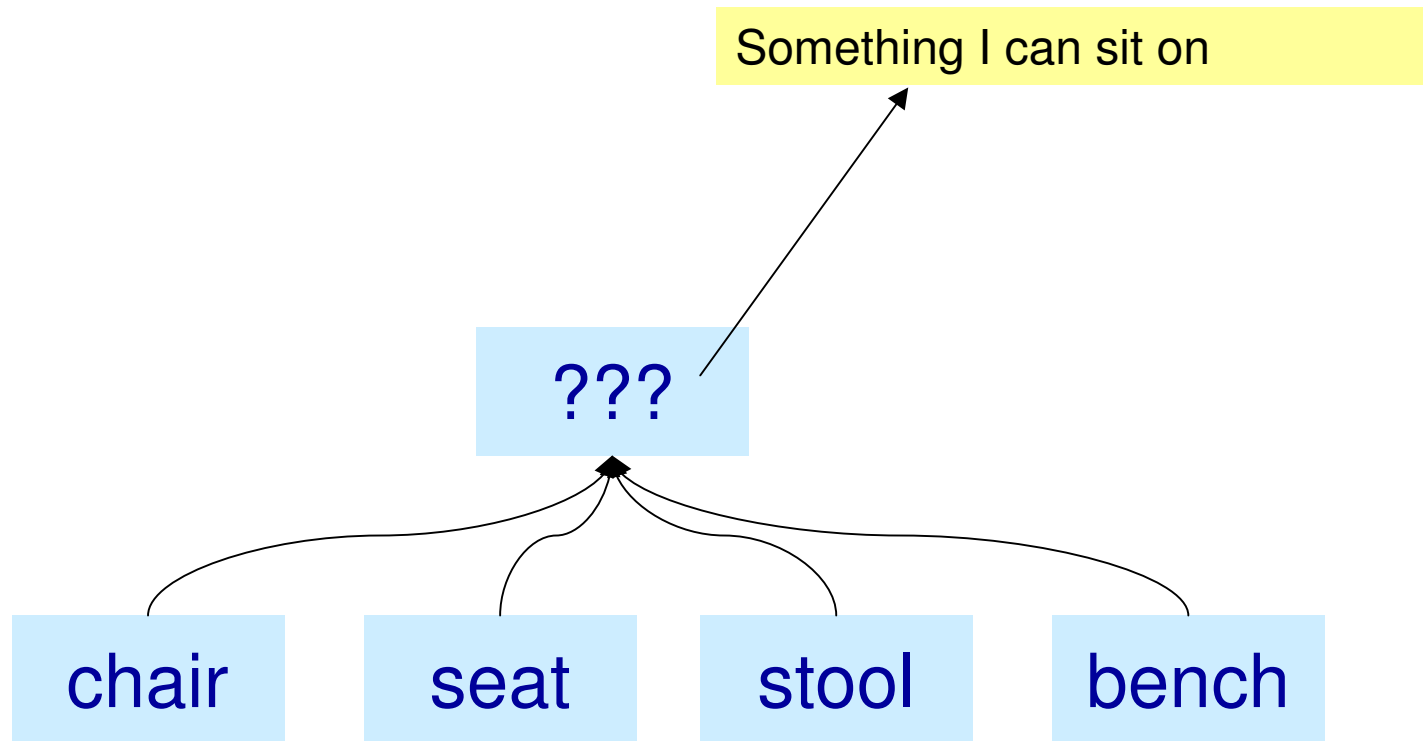
stool



bench

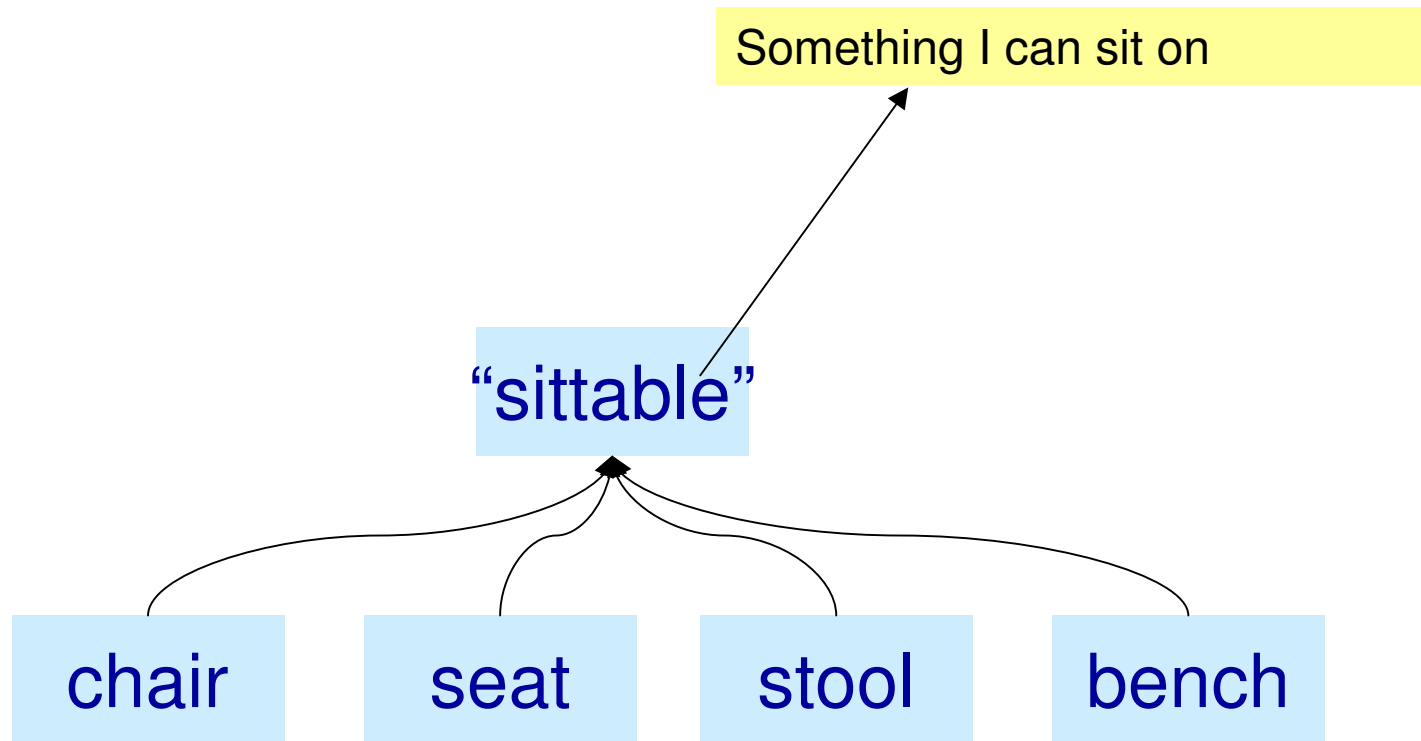


Example



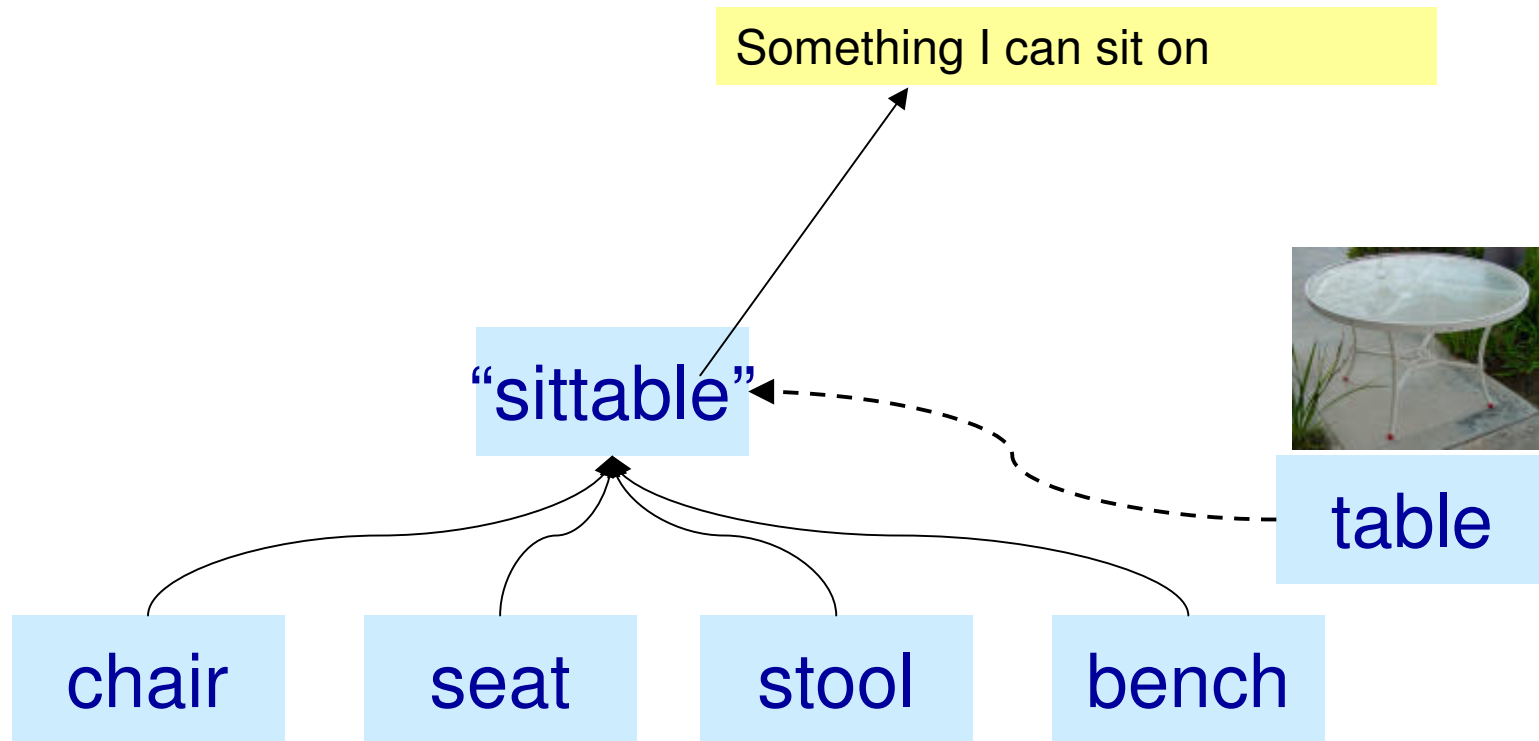


Example



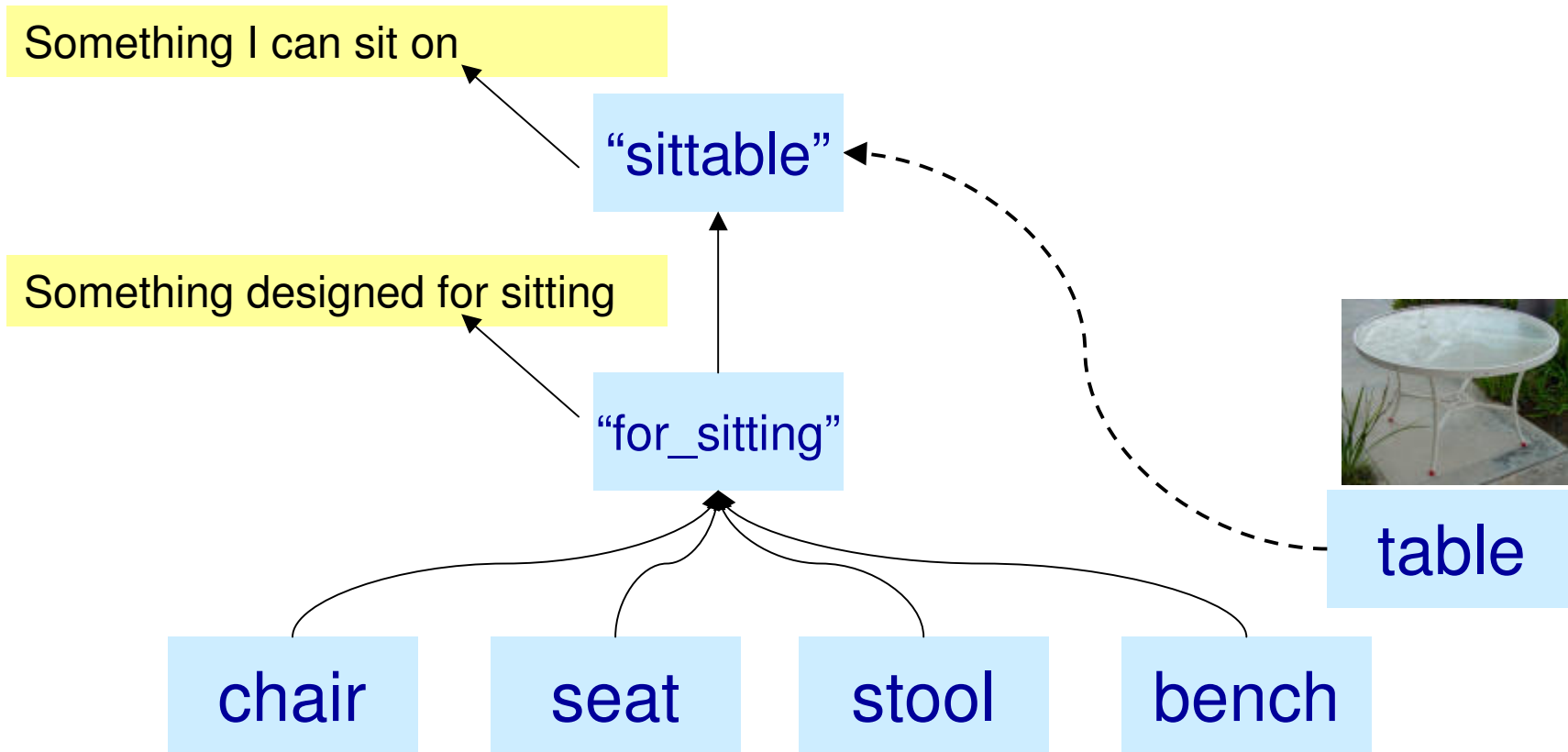


Example



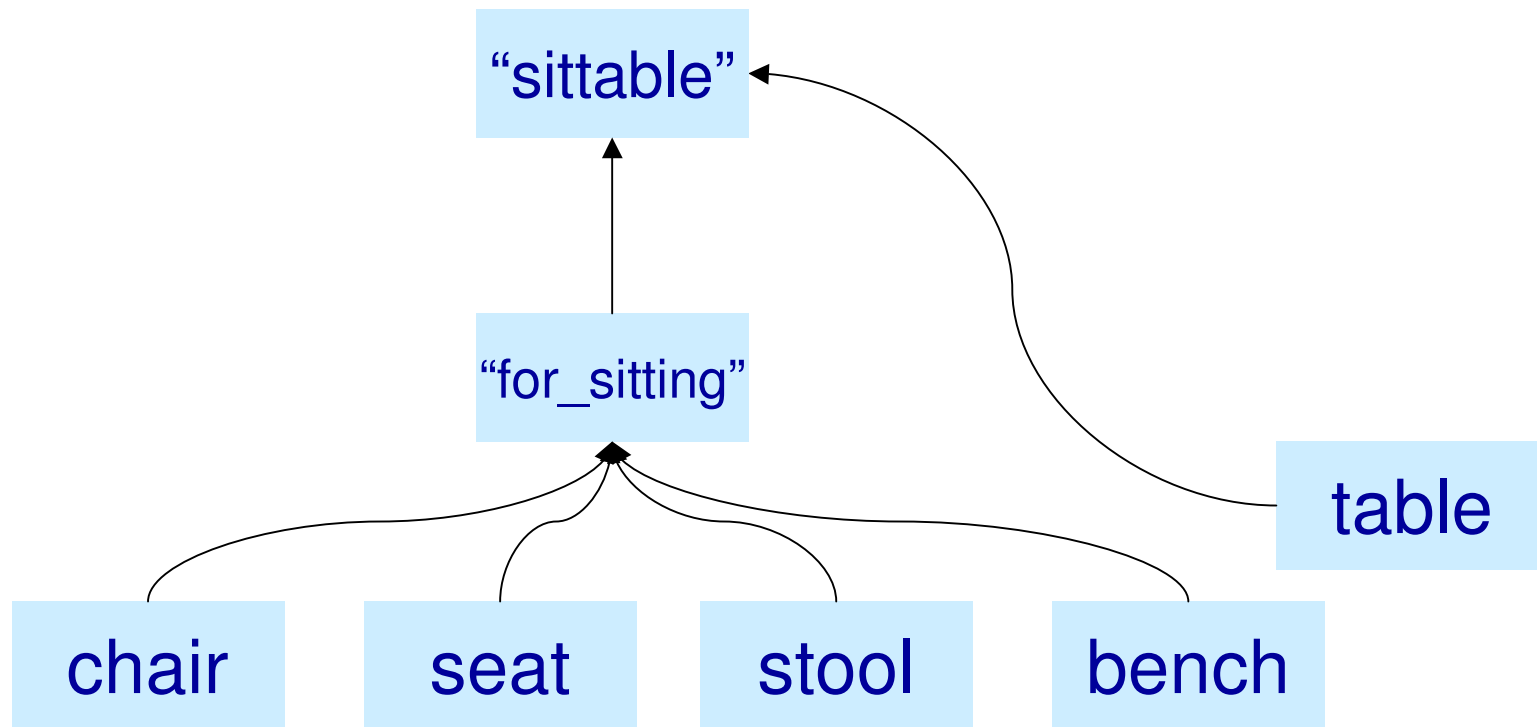


Example



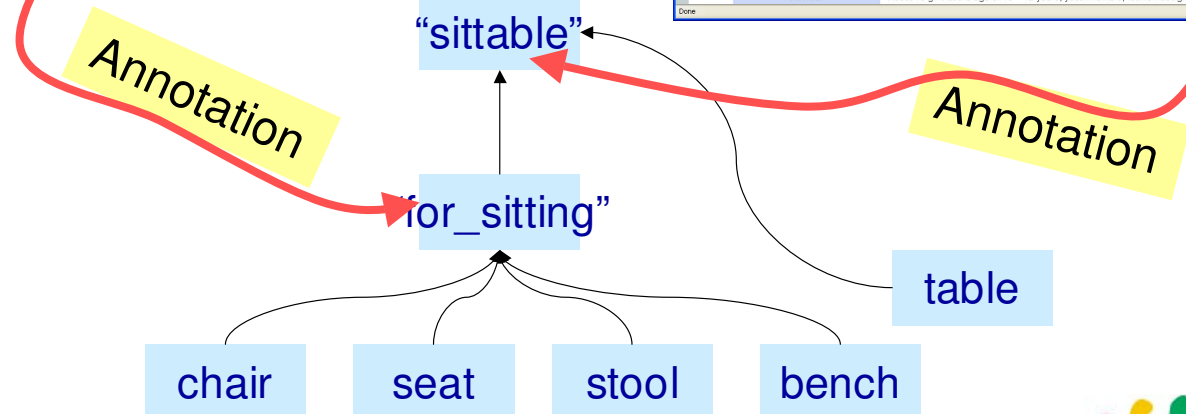
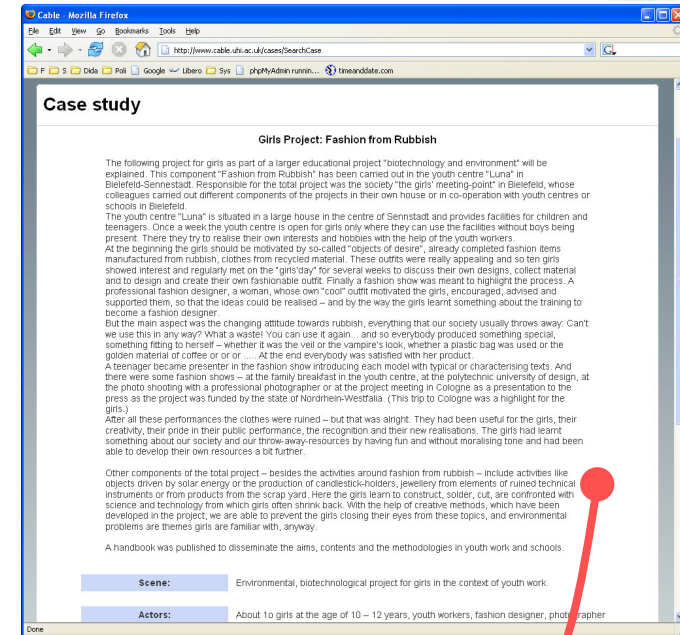
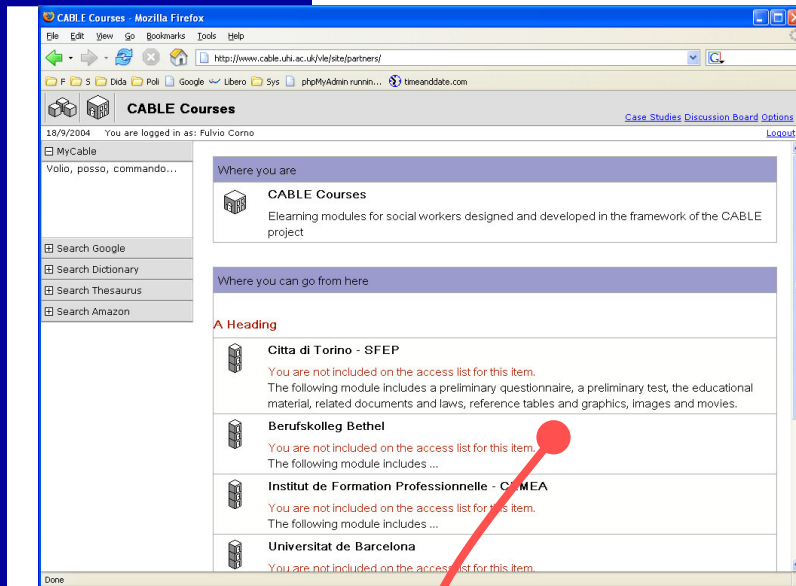
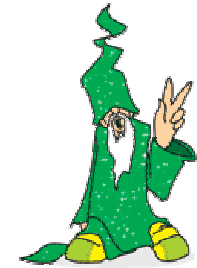


Ontology structure





The wizard's trick





Ingredients



- Concepts
 - Shorthand name (internal use)
 - Synthetic title (to display in menus)
 - Definitions (real unambiguous shared definition)
- Relationships among concepts
 - is_a
 - Other
- Annotations
 - For case studies
 - For learning modules



Concepts

Synthetic title

Furniture to sit on

“sittable”

Shorthand name

Definition

Some piece of furniture that can be used to sit on, either by design or by its shape.



Internationalization



“sittable”

Shorthand name

Synthetic title

Furniture to sit on

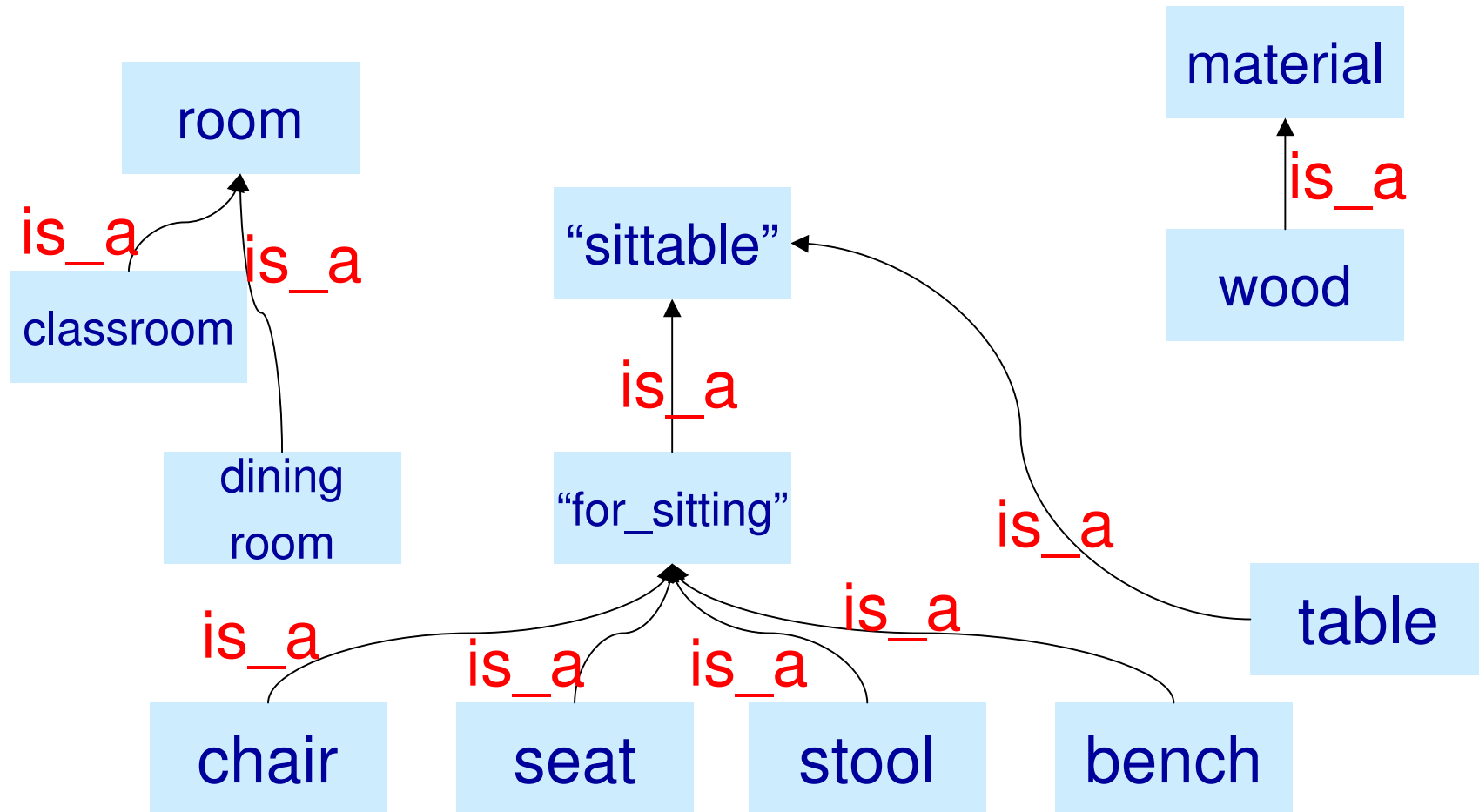
Definition

Some piece of furniture that can be used to sit on, either by design or by its shape.



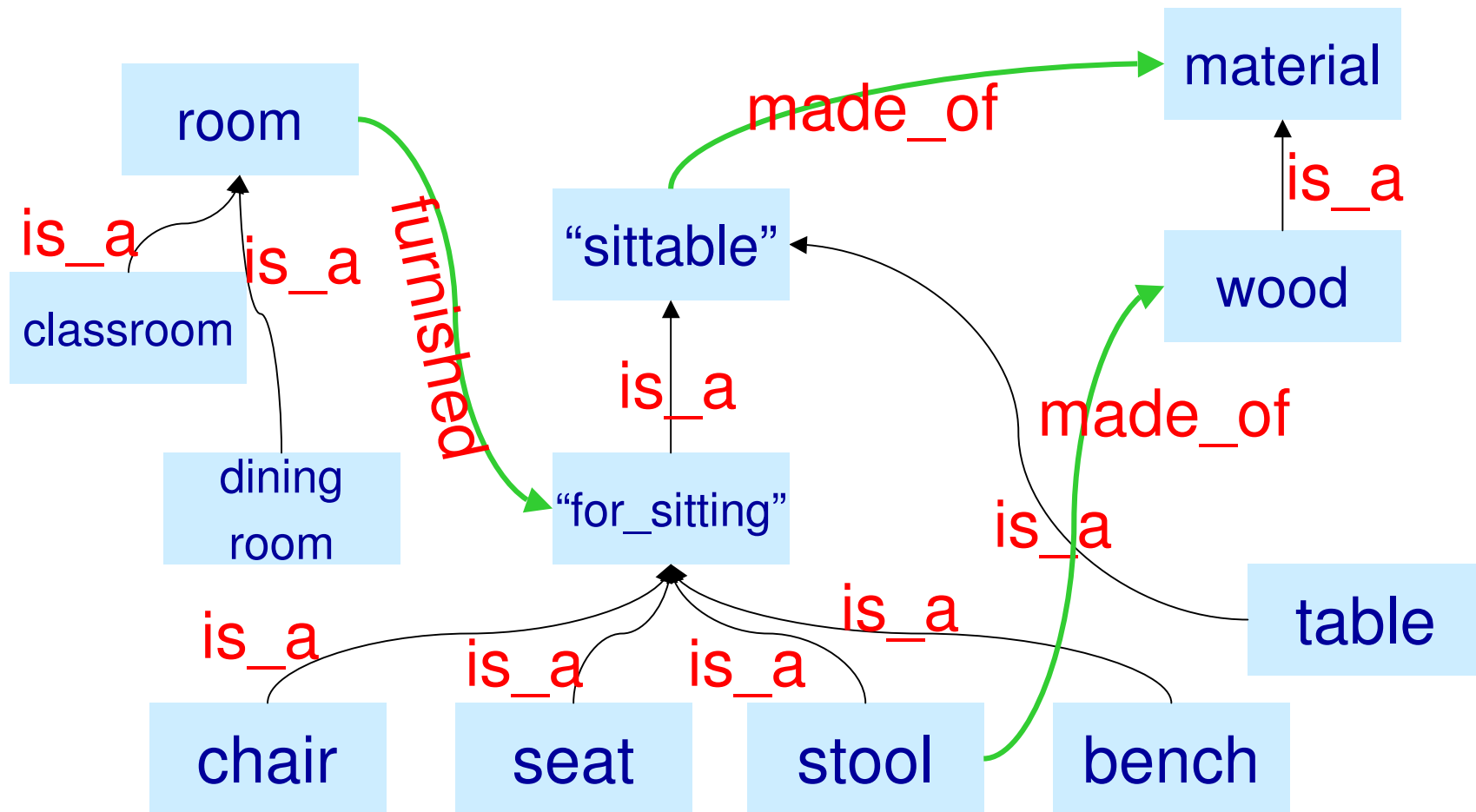


Relationships





Relationships





Beware!

- Do not worry about relationships, for now!
- Relationships will emerge from concept definitions
- More important and urgent:
 - List relevant concepts
 - Provide definitions
 - Check, validate, discuss concepts and definitions



Annotations

- The author of a Case Study specifies the **concepts** relevant to the case
- The author of a didactical module (Bodington “room”) specifies the **concepts** relevant to the module
- Easy to use interface!



Annotation interface (I)

Ontology navigator: select the concepts to be associated to *resource xxx*

- A [-] [Class 1](#) (+)
- [+] [Class 1-1](#) (+)
- B [+] [Class 1-2](#) (+)
- ◆ [Class 1-3](#) (+)
- [-] [Class 2](#) (+)
- ◆ [Class 2-1](#) (+)
- ◆ [Class 2-2](#) (+)
- ◆ [Class 2-3](#) (+)
- ◆ [Class 2-4](#) (+)
- ◆ [Class 2-5](#) (+) C

Ontology navigator: select the concepts to be associated to *resource xxx*

- [-] [Class 1](#) (+)
- Language-dependant definition of the Ontology Class
- ◆ [Class 1-2](#) (+)
- [-] [Class 2](#) (+)
- ◆ [Class 2-1](#) (+)
- ◆ [Class 2-2](#) (+)
- ◆ [Class 2-3](#) (+)
- ◆ [Class 2-4](#) (+)
- ◆ [Class 2-5](#) (+)



Annotation interface (II)

Concepts related to *resource xxx*

- Class 1-3: definition
- Class 1-2-4: definition
- Class 2-3: definition

Next

Ontology navigator: select the concepts to be associated to *resource xxx*

- [\[-\] Class 1](#) (+)
 - [\[+\] Class 1-1](#) (+)
 - [\[+\] Class 1-2](#) (+)
 - [♦ Class 1-3](#) (+)
- [\[-\] Class 2](#) (+)
 - [♦ Class 2-1](#) (+)
 - [♦ Class 2-2](#) (+)
 - [♦ Class 2-3](#) (+)
 - [♦ Class 2-4](#) (+)
 - [♦ Class 2-5](#) (+)



Annotation interface (III)

Concepts related to *resource xxx*

		<i>not relevant (remove)</i>	<i>slightly relevant</i>	<i>relevant</i>	<i>highly relevant</i>	
♦	Class 1-3	definition	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
♦	Class 1-2-4	definition	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
♦	Class 2-3	definition	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>






Do we agree?

And, How can we proceed from a practical point of view?






Practical Methodology (I)

- Ontology working group
 - One representative per partner
 - Proposes concepts, definitions, relationships
 - All partners contribute to **validation** and translation
- Case studies
 - Enough cases to be representative of the domain
 - For now, free-form keywords
 - Along time, formalized keywords 
 - At the end of the project, navigation interface



Practical Methodology (II)

- Didactical modules (for CABLE)
 - Define formative needs and learning methodology
 - Assign relevant keywords 
 - At the end of the project, navigation interface for annotation
- Technical development
 - E-Learning platform
 - Case studies database
 - Annotation interface
 - “Search relevant case studies ” buttons



Ontology development

