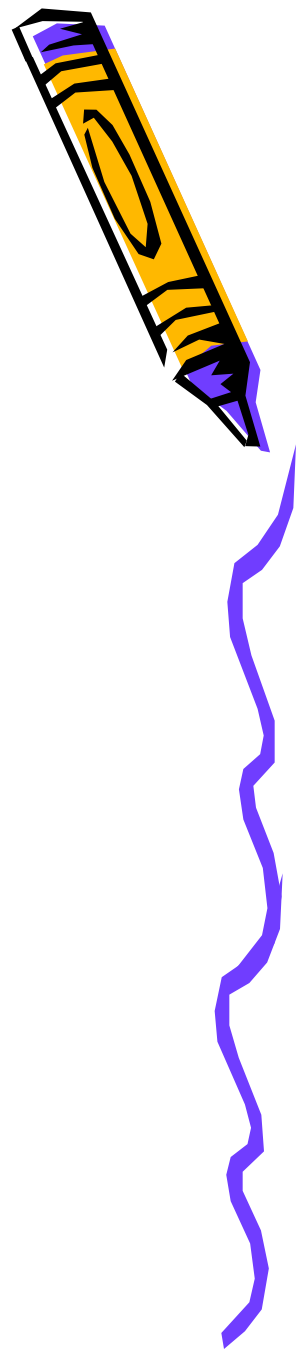




Representation of collaborative Knowledge: from knowledge engineering to Knowledge Management

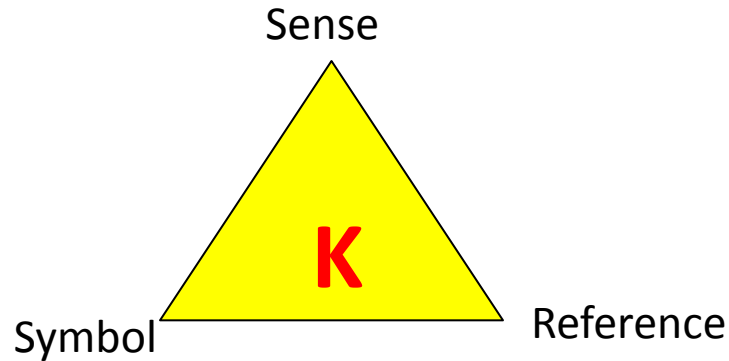
Nada Matta, Xinghang Dai, François Rausher
Tech-CICO Lab.
University of Technology of Troyes- France
nada.matta@utt.fr,
xinghang.dai@gmail.fr, françois.rausher@utt.fr

Outline

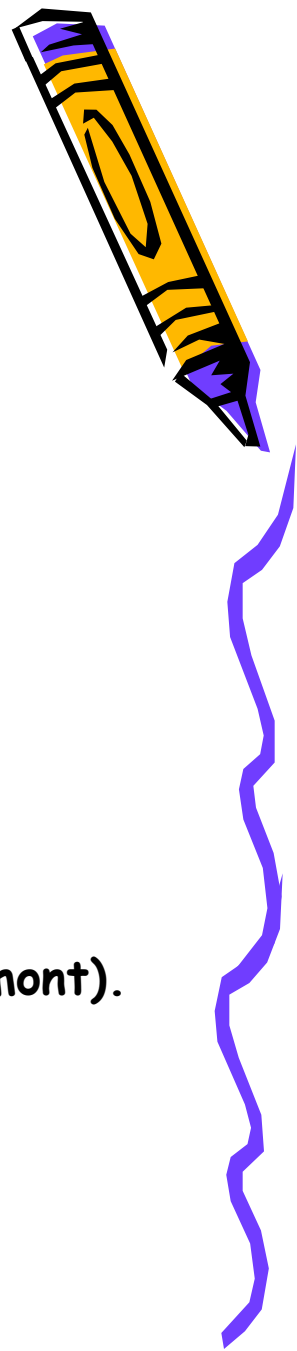


- Knowledge
- Knowledge management and Knowledge Engineering
 - Definitions
 - Process
 - Knowledge Capitalization approaches
 - Semantic web vs social semantic web
- Cooperative Knowledge
 - Definitions
 - Traceability and capitalization approaches
 - Knowledge from cooperative decision making
 - Knowledge from communication
 - Aggregation & classifications

Knowledge

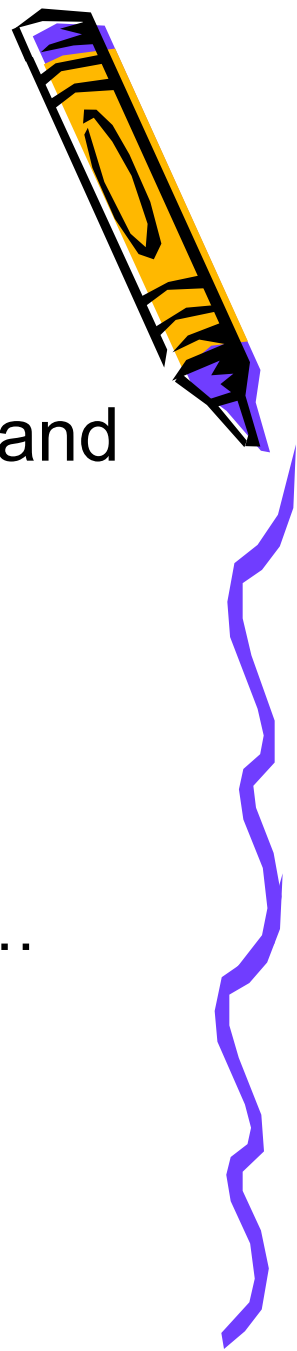


Knowledge is data, information **used** in a given **context** (Bachimont).
We can speak about tacit and explicit Knowledge (Polyani).



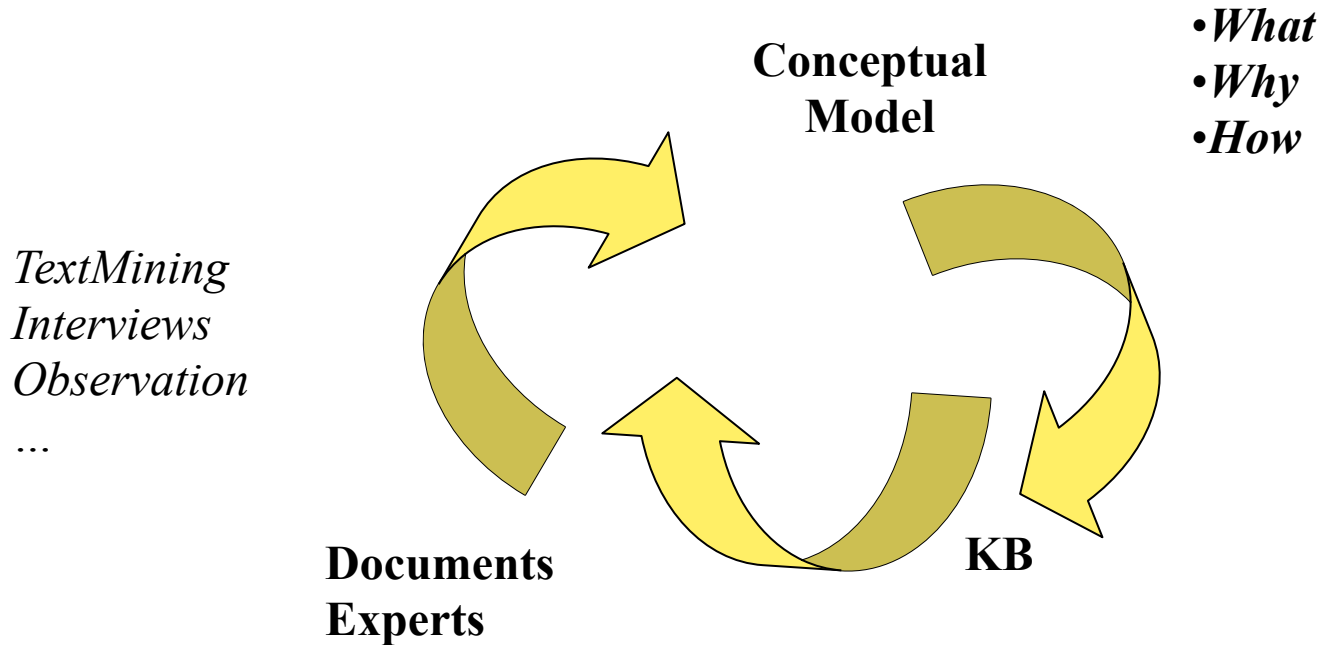
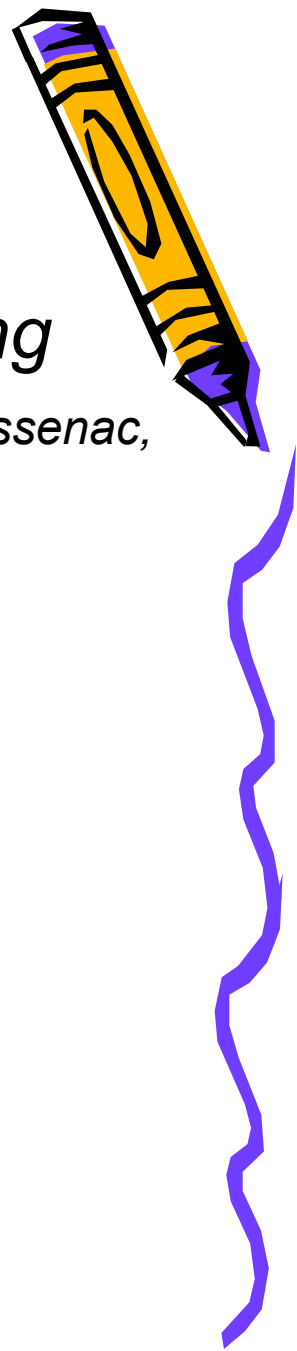
Reference and Context

- How to keep track and represent Context and reference:
 - Objectives<->Subjectives
- How to organise Learning :
 - Communication : Forum, social network, Community of practices, ...
 - Training systems: Best Practices, examples, ...
- How to handle perenity of K Sharing:
 - Mobility, retirment, ...
 - Animation, ...

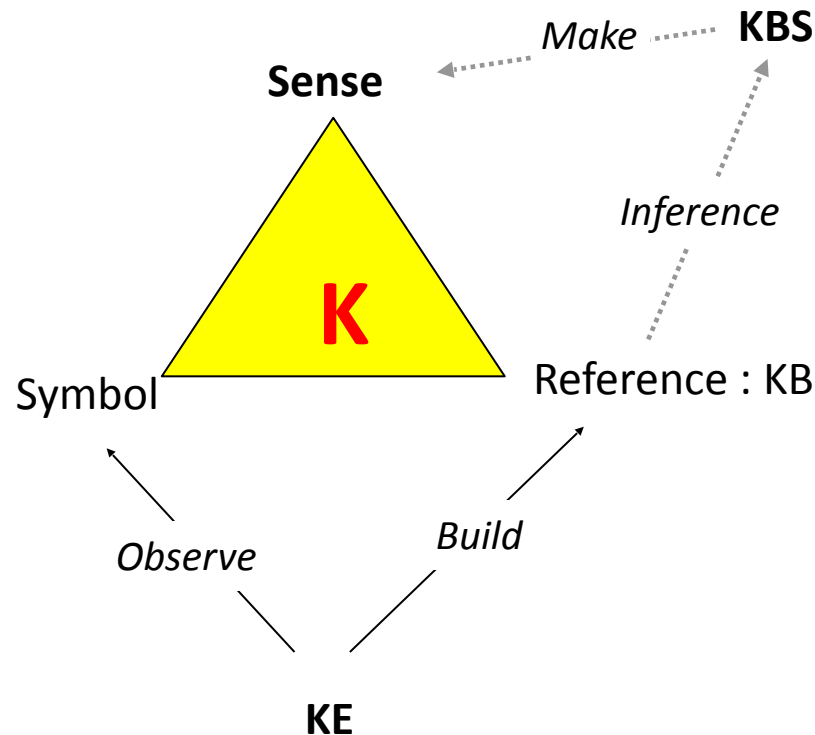


Knowledge Engineering

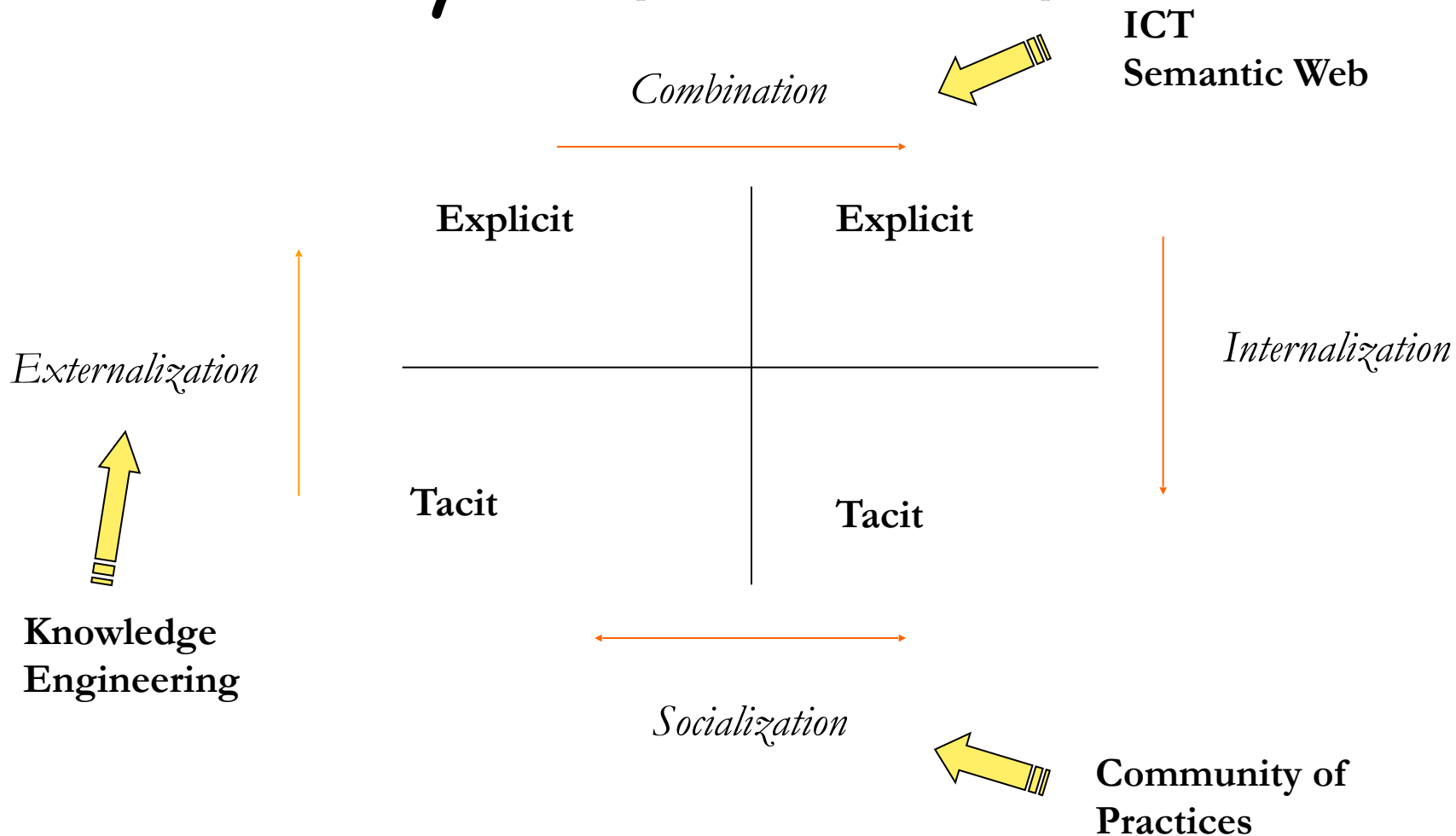
Knowledge engineering is an approach allowing problem solving extracting and modelling [Aussenac, Bradshaw], [Newell]



Knowledge Engineering Principles

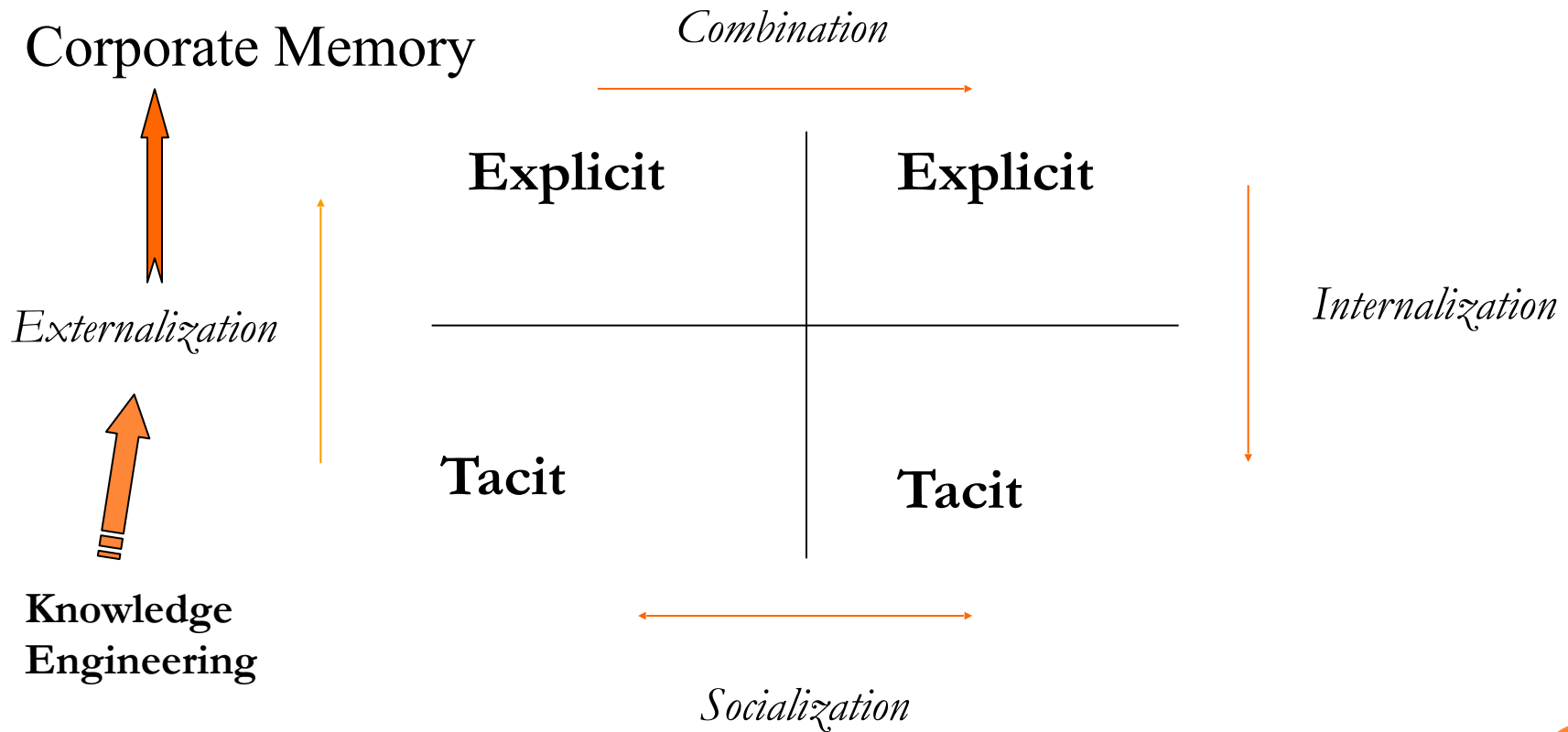


Knowledge Management Cycle [Nonaka & Takeushi]



KNOWLEDGE MANAGEMENT CYCLE

[NONAKA & TAKEUSHI]



CORPORATE MEMORY

« A corporate memory is a persistent and explicit representation of knowledge and information of an organization » [Van Heijst, 96], [Dieng et al, 03]

Several memory types: Profession memory,
project memory, management memory

PROFESSION MEMORY

Profession memory is the externalization of the knowledge produced in and for a given domain

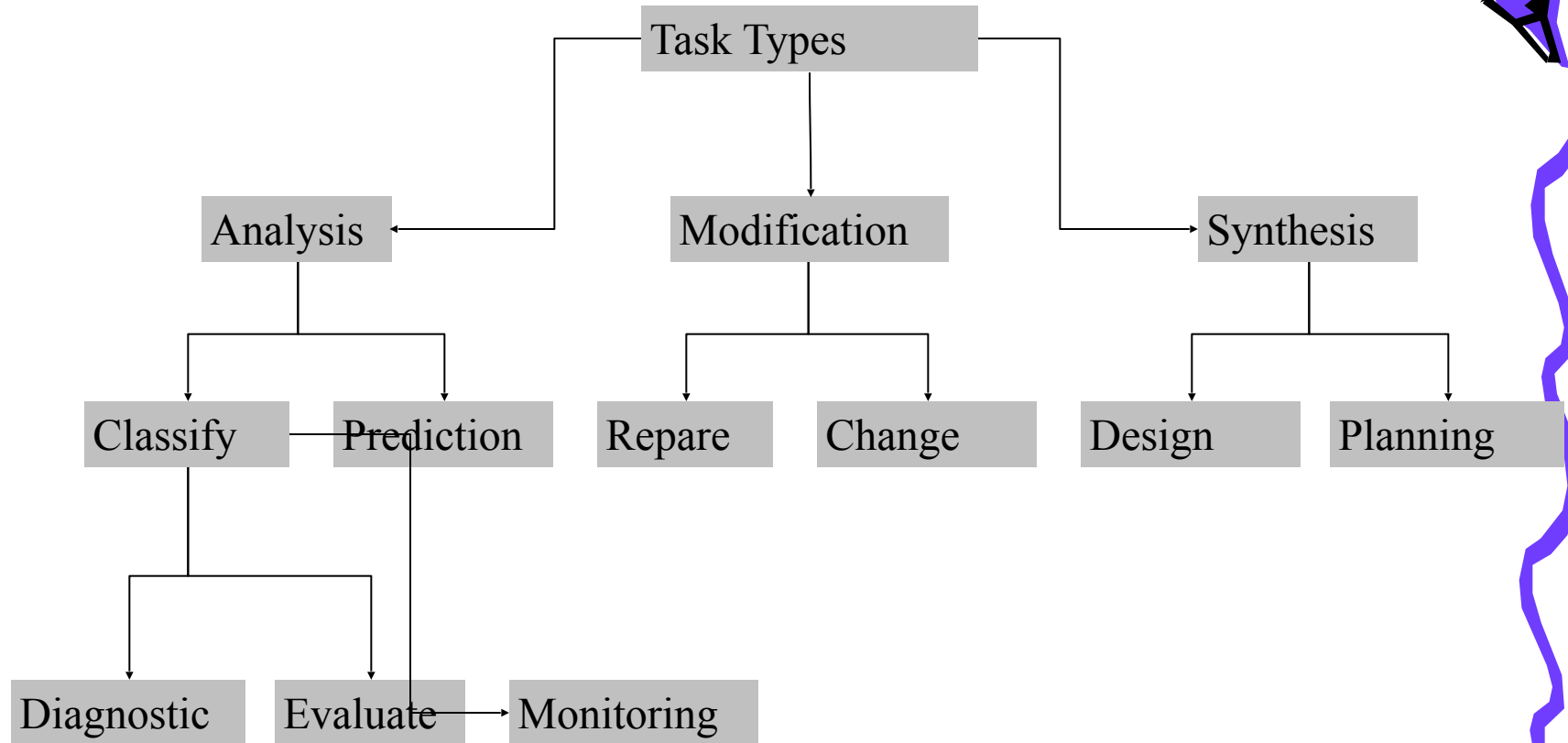
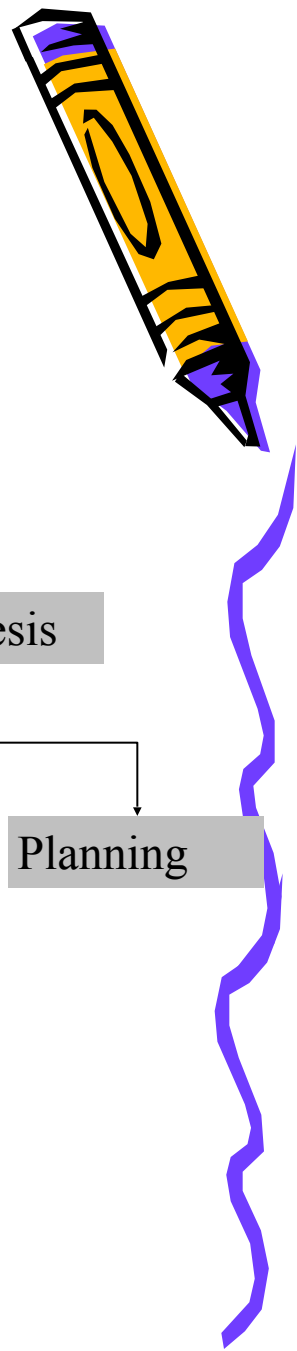
- Structure :
 - Definition of the problem (or the process)
 - Problem solving methods
 - Description of manipulated concepts

Knowledge Engineering approaches

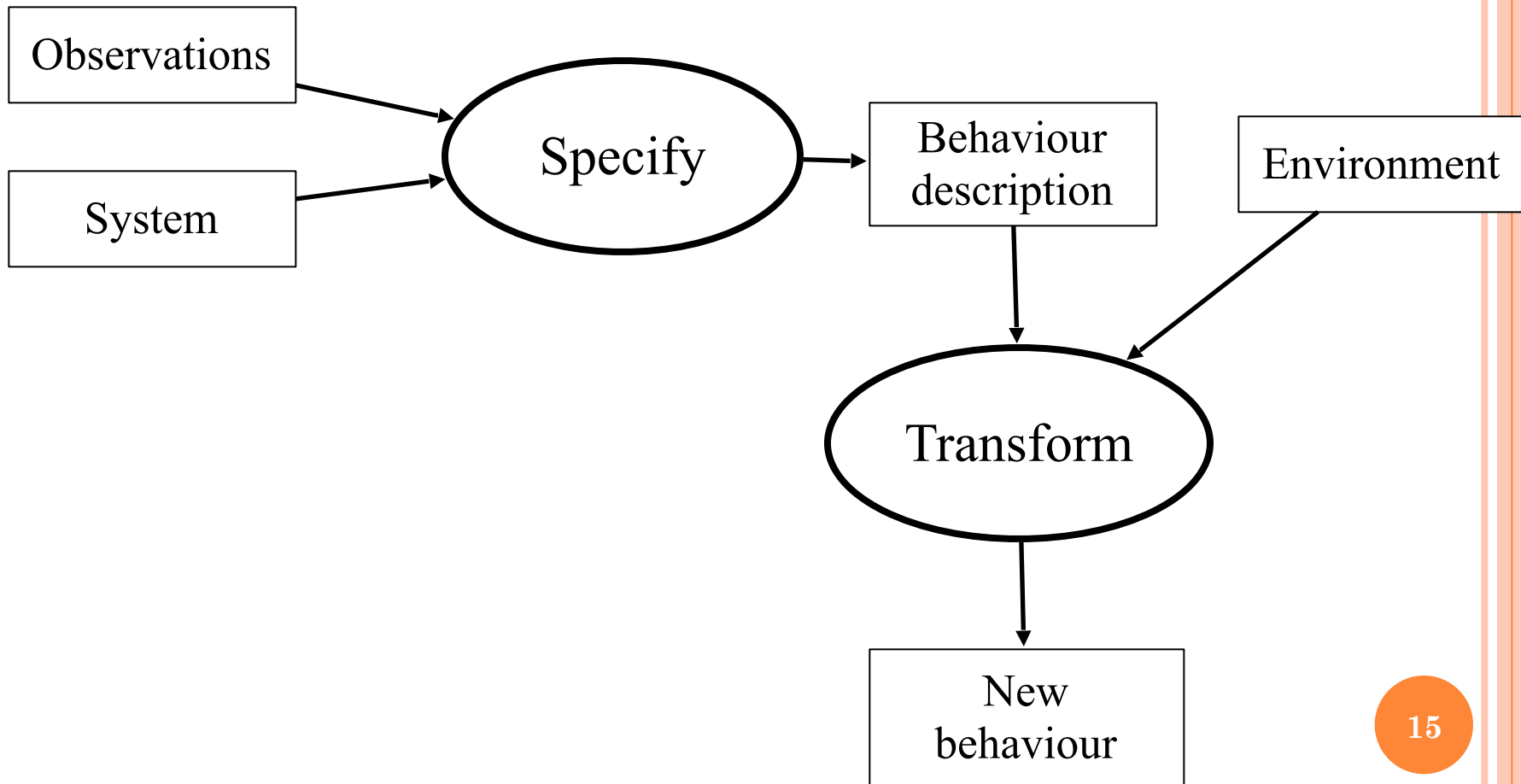


- CommonKADS (Breuker, Shreiber, Fensel)
 - Generic models as guides for modelling
- MASK (Ermine)
 - Graphic Presentation of models as guide for learning

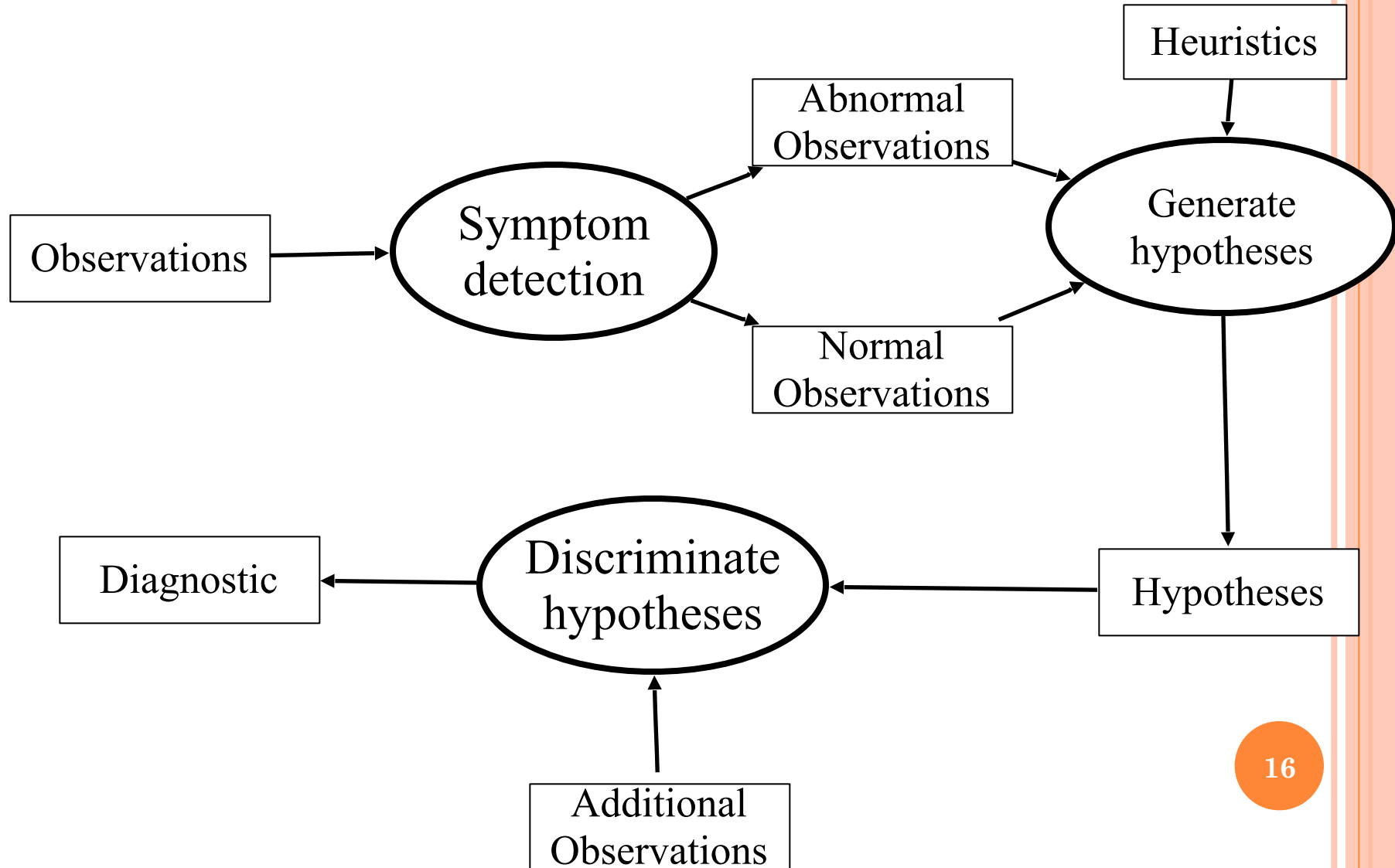
CommonKADS: Task Types



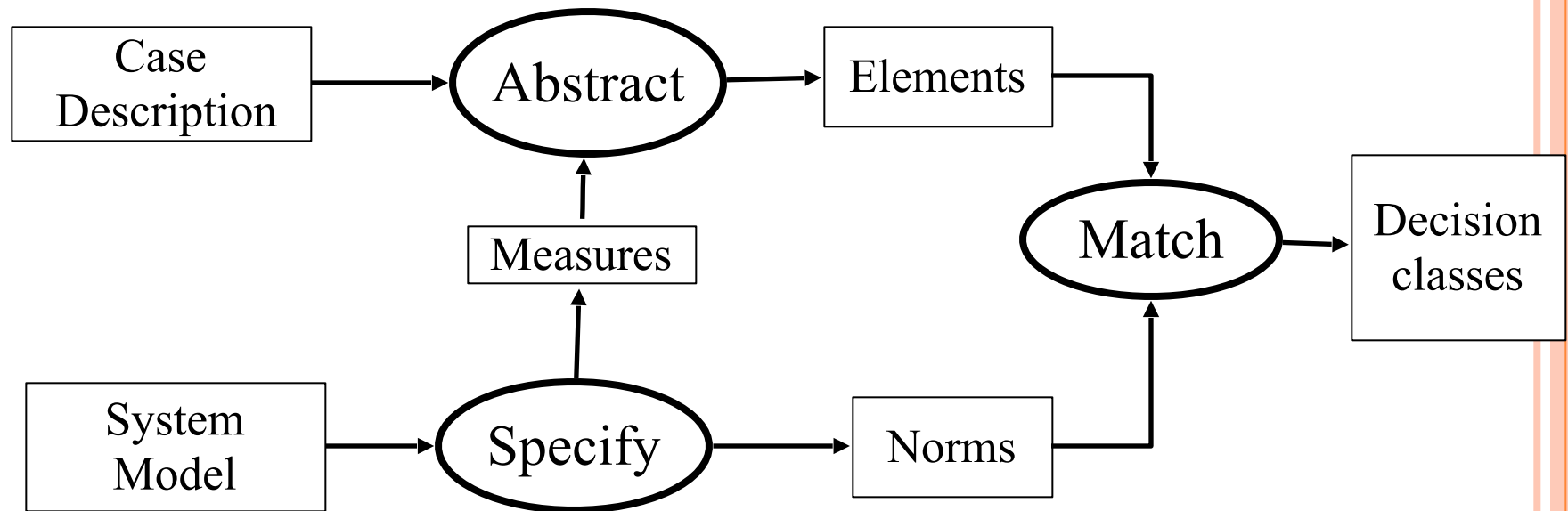
Prediction



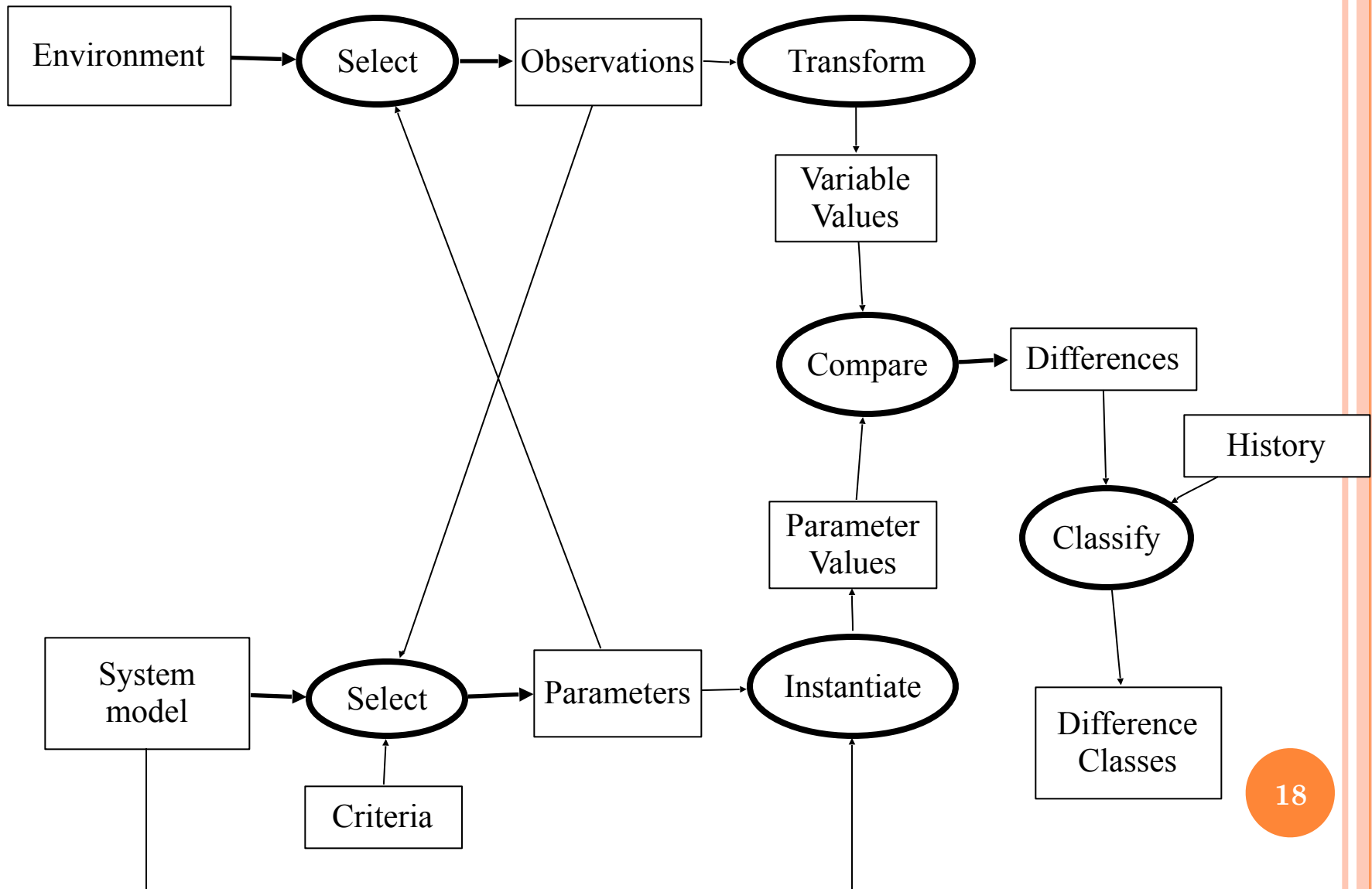
Diagnostic



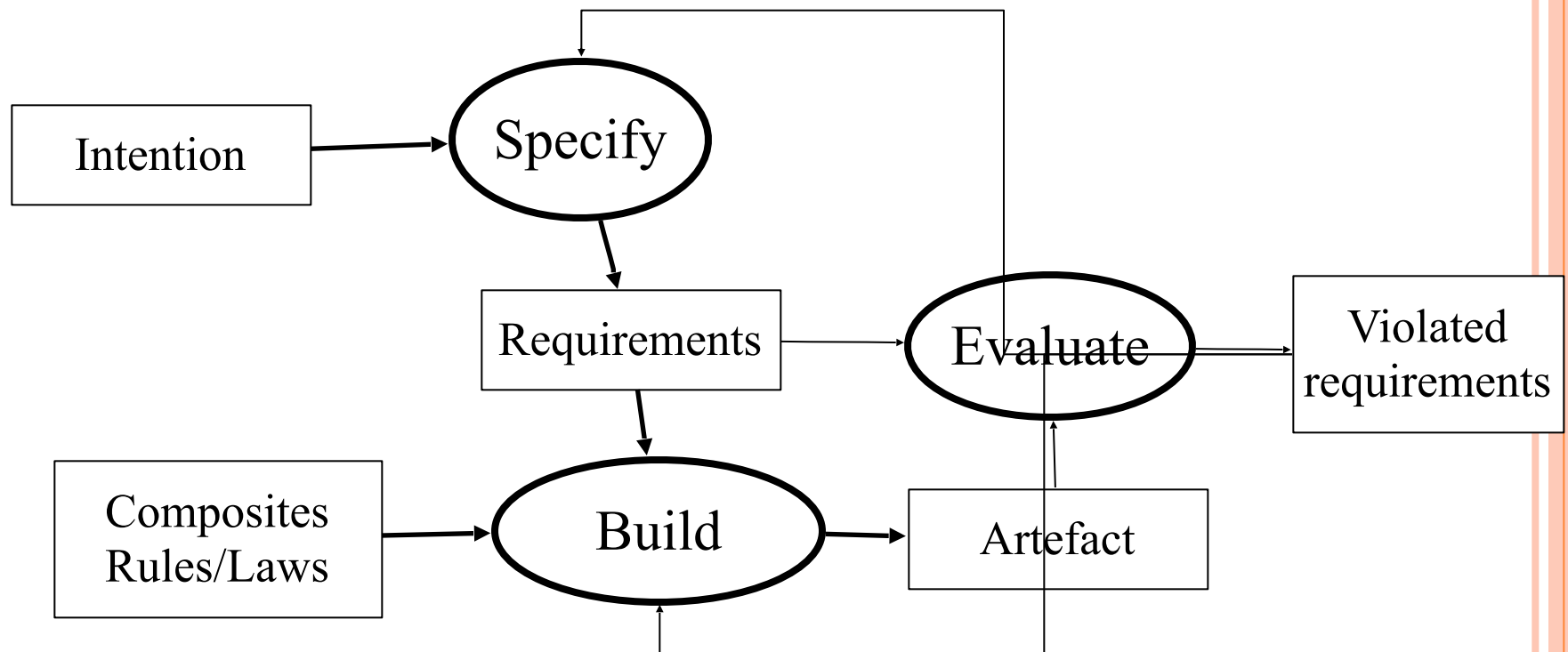
Evaluate



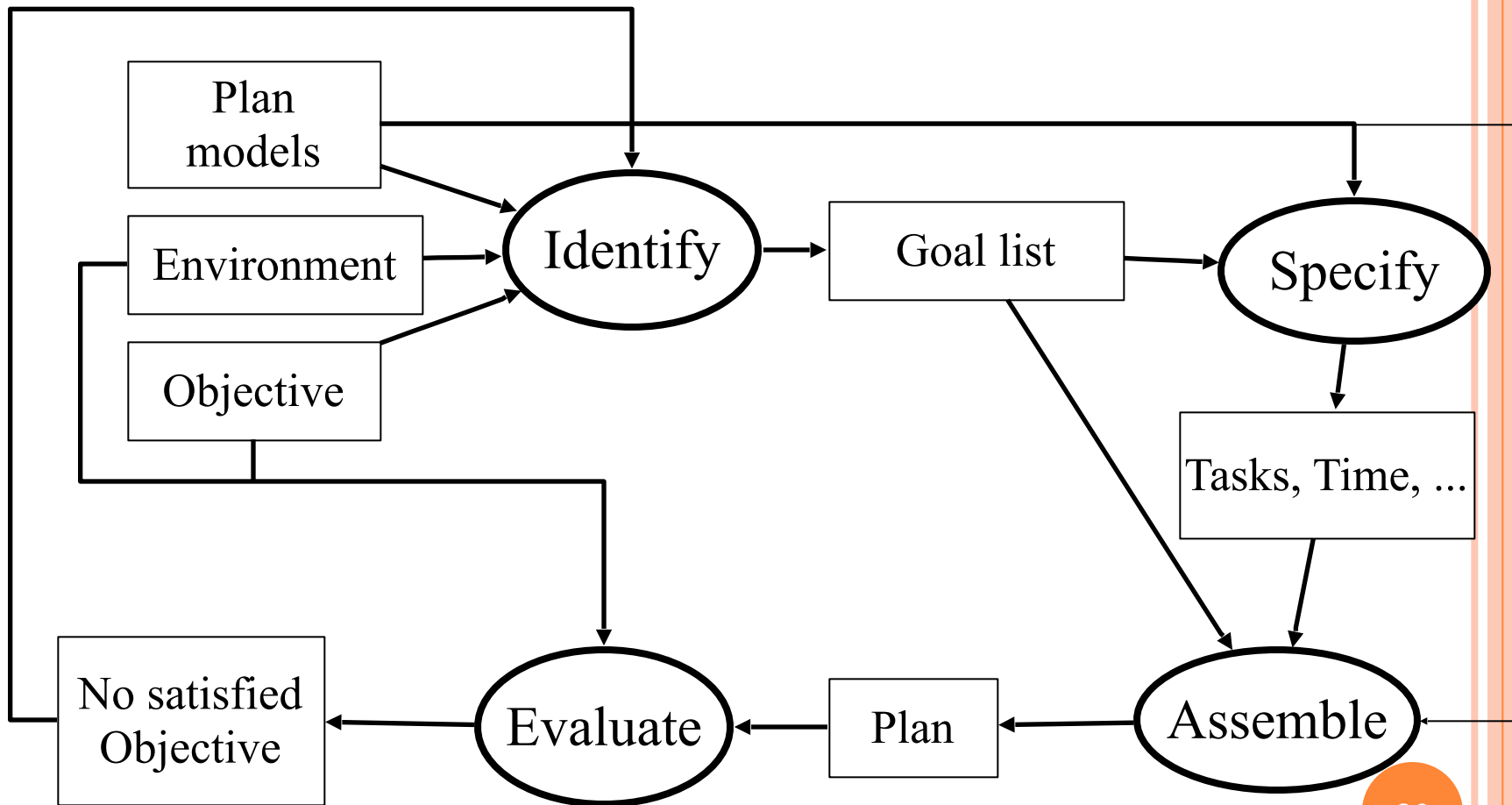
Monitoring



Design



Planning



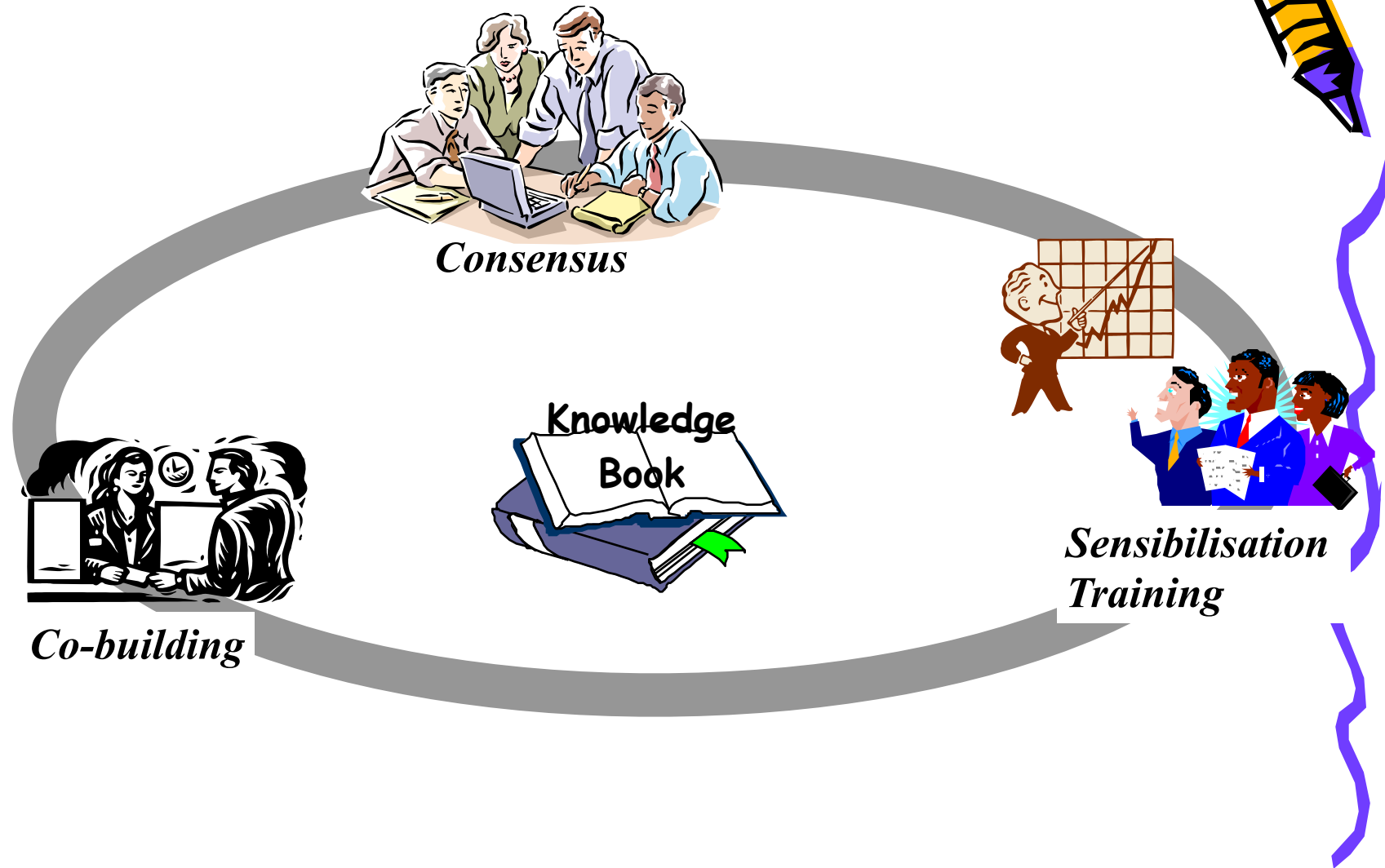
CML : CONCEPTUAL MODELLING LANGUAGE

	Level	Entity
Problem solving	<i>Task</i>	<i>Task, Task structure</i>
	<i>Inference</i>	<i>Inference, Inference structure</i>
Domain	<i>Domain</i>	<i>Concept, relation, expression, attribute</i>

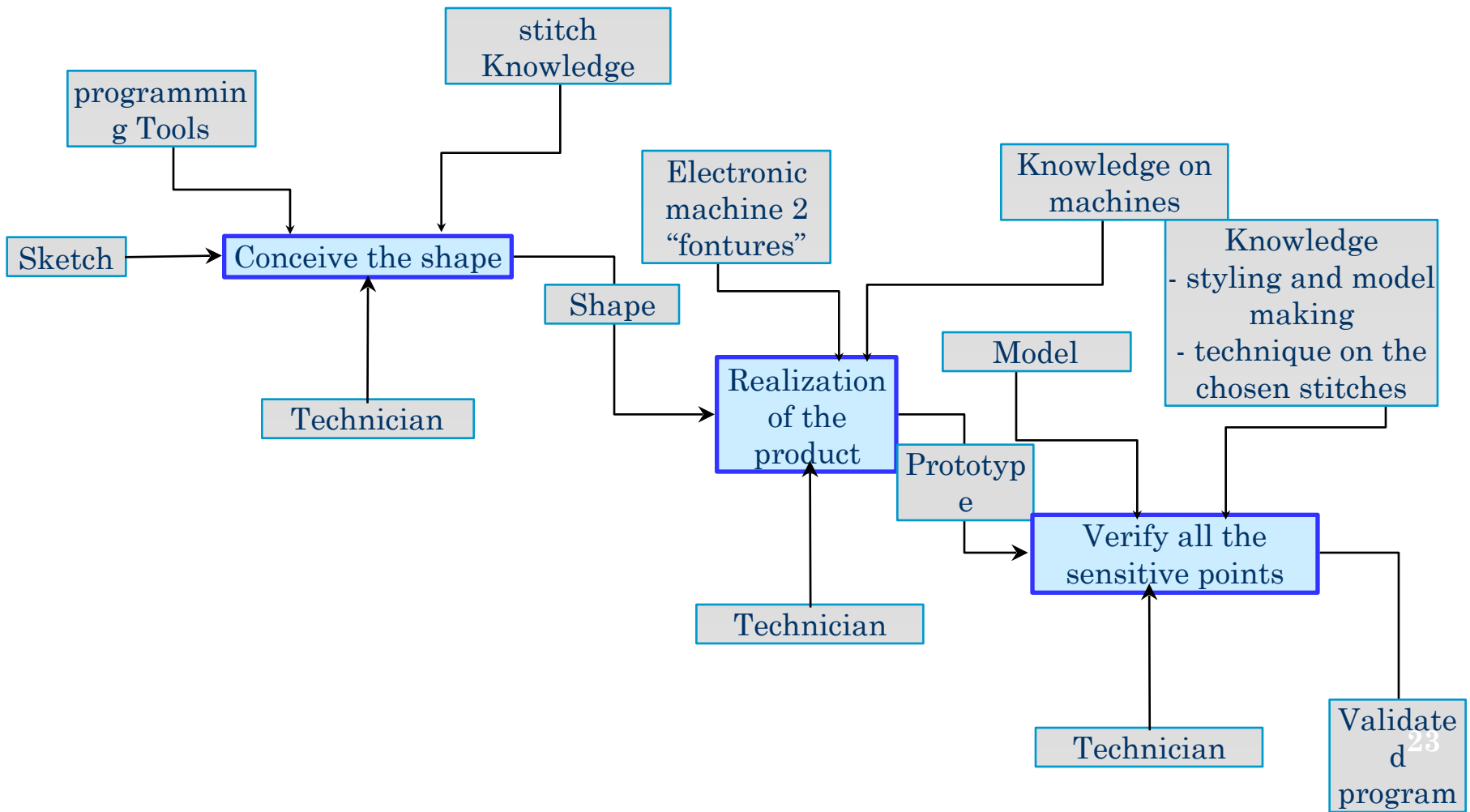
CML : CONCEPTUAL MODELLING LANGUAGE

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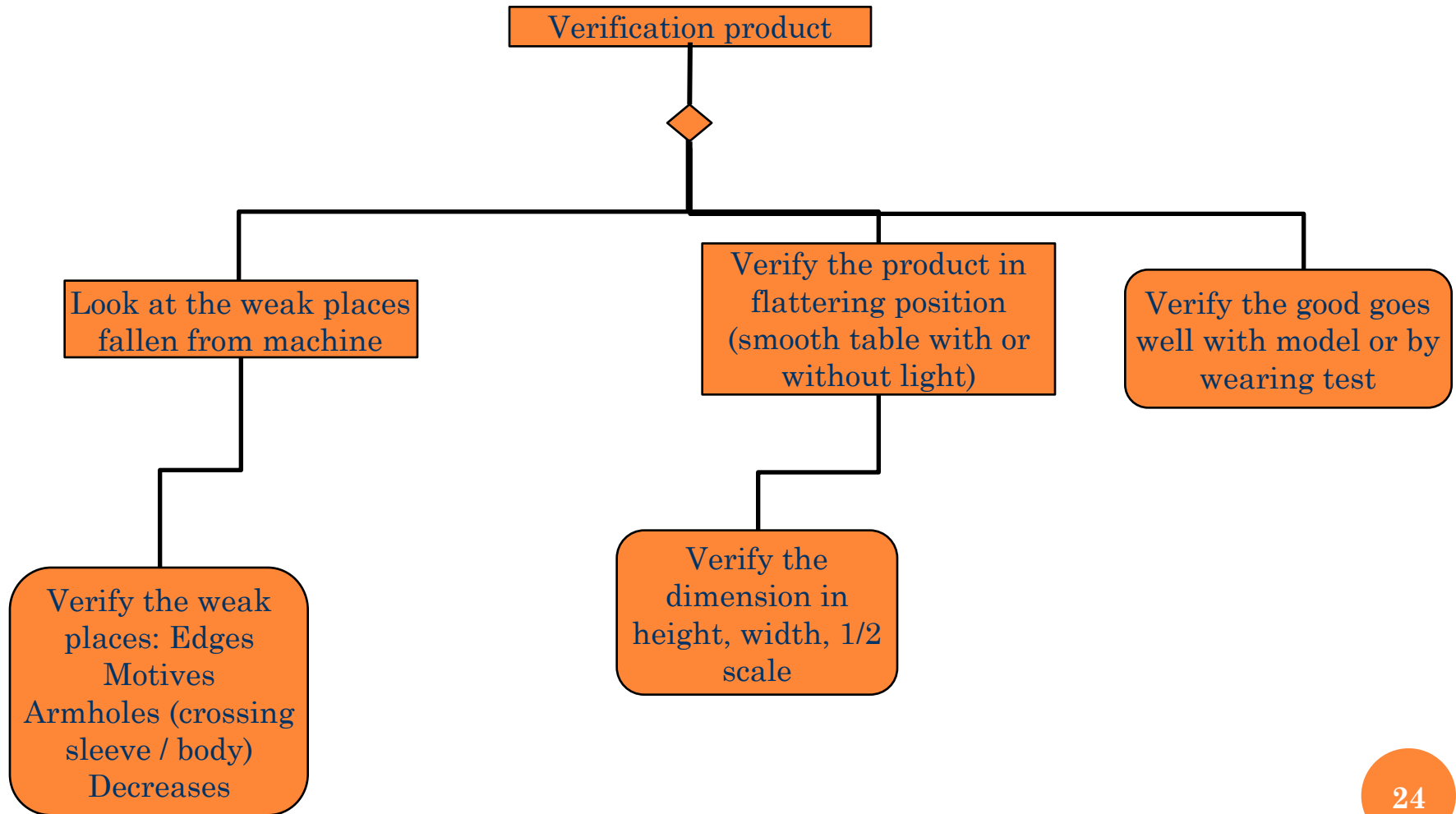
The MASK Method



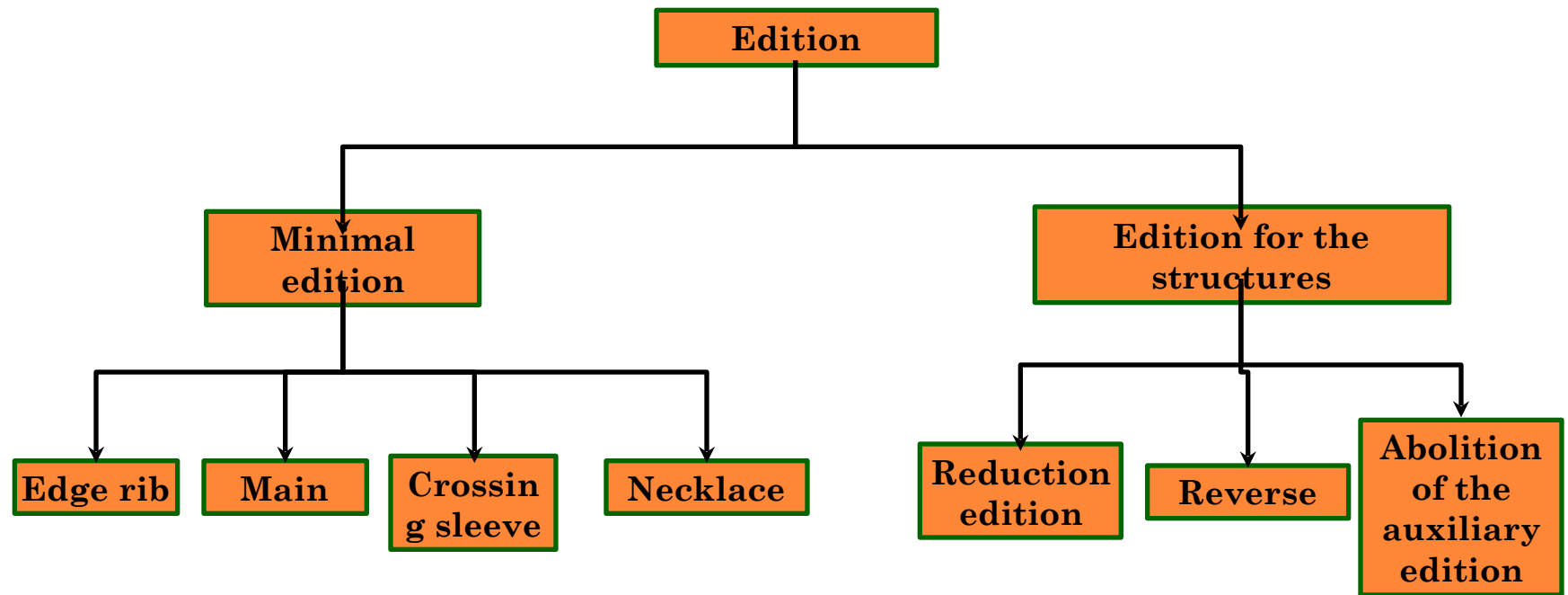
PROCESS MODEL



PB SOLVING MODEL



CONCEPT MODEL



REFERENCES

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- CommonKADS Library for expertise modelling, Reusable problem solving components, J. Breuker and W. Van de Velde (Eds), IOS press, Amsterdam, 1994
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- [Nonaka et al, 95] Nonaka I., Takeuchi H.: *The knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation*. Oxford University Press, 1995
- Ermine J.L. – *Les systèmes de connaissances*, Eds. Hermès 1996 (2nd Edition 2000)
- Méthodes et Outils pour la gestion des connaissances, R. Dieng, O. Corby, A. Giboin, J. Golebiowska, N. Matta, M. Ribière, Dunod, 2000
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- CASTILLO, O., et MATTA, N. A knowledge acquisition system for the French Textile and Apparel. Knowledge-Based Intelligent Information and Engineering Systems: 9th International Conference, KES 2005, 14-16 September 2005, Melbourne. 6 p.
- CASTILLO, O., et MATTA, N. An operational learning system definition. 19th International Joint Conference on Artificial Intelligence IJCAI 2005 – Workshop on knowledge Management and Organizational Memories, 1-5 August 2005, Edimbourg. 12 p.
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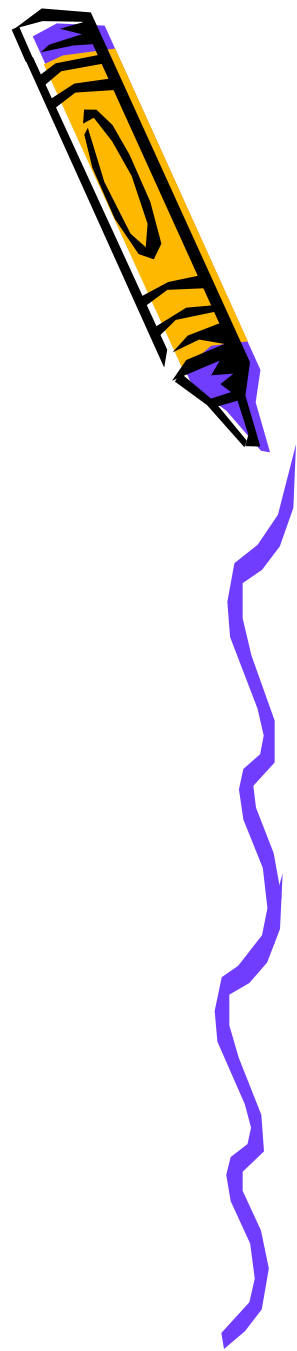


Ontology and semantic web



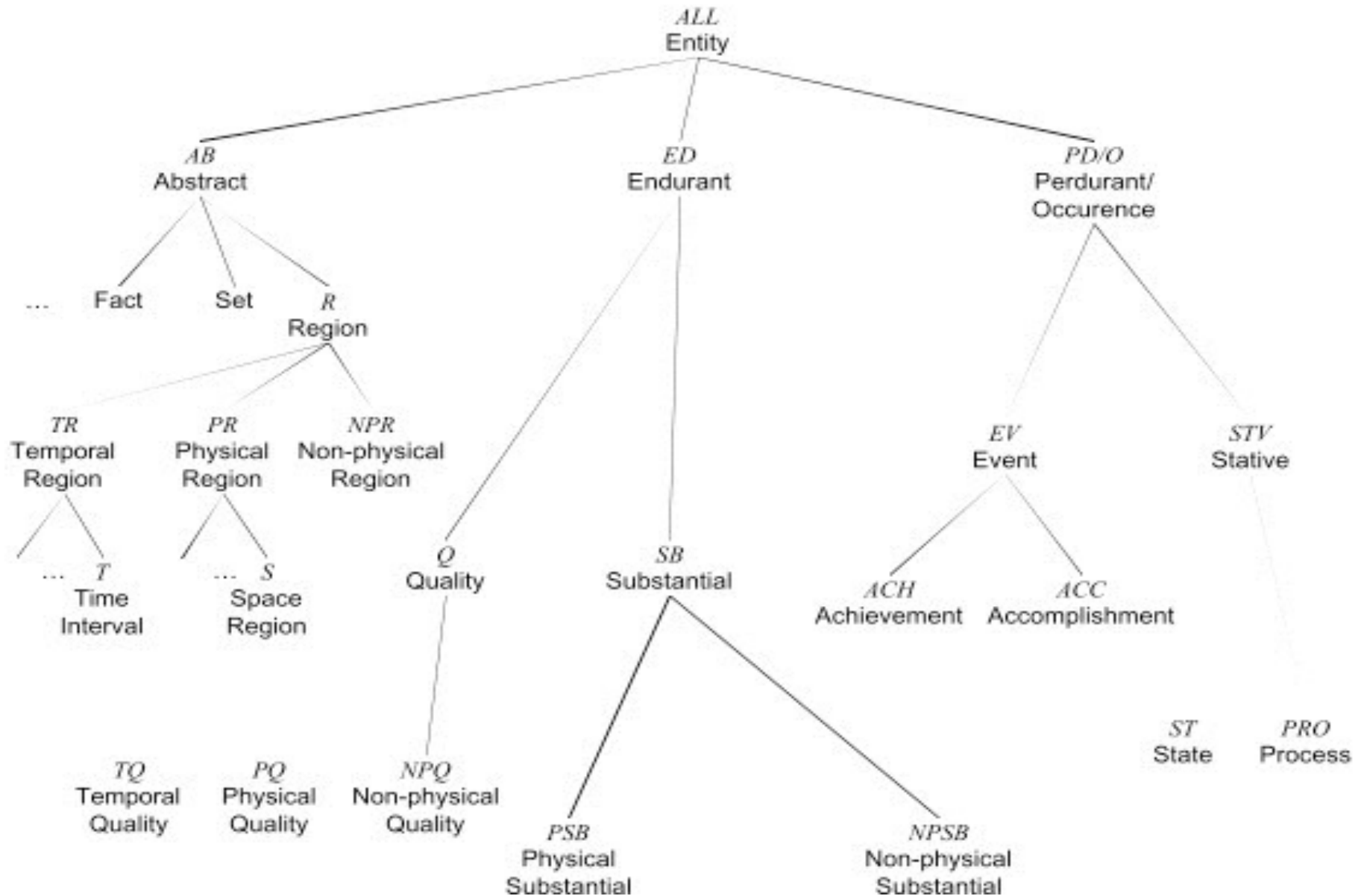
- Ontology as "Onto": Being, "logia": discourse, reasoning
- Ontology in philosophy : being study, his properties and modalities (Aristotle, Cohen, Meyer)

Several levels of Ontology (Guarino)



- Ontology as *Guides* to model domain:
- top level, Domain level and Application level

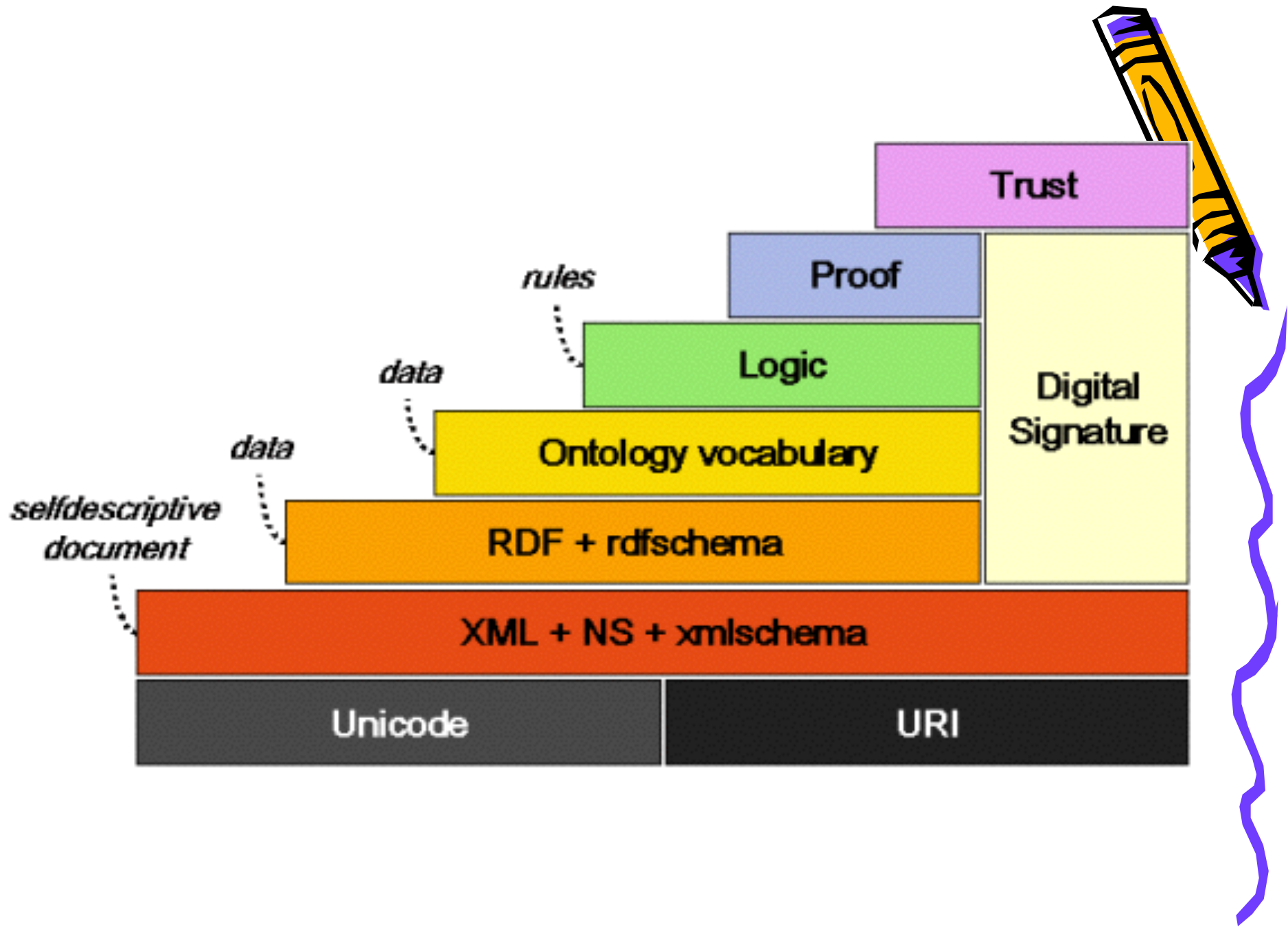
Top level (Guarino)



Semantic Web [Berners-Lee]

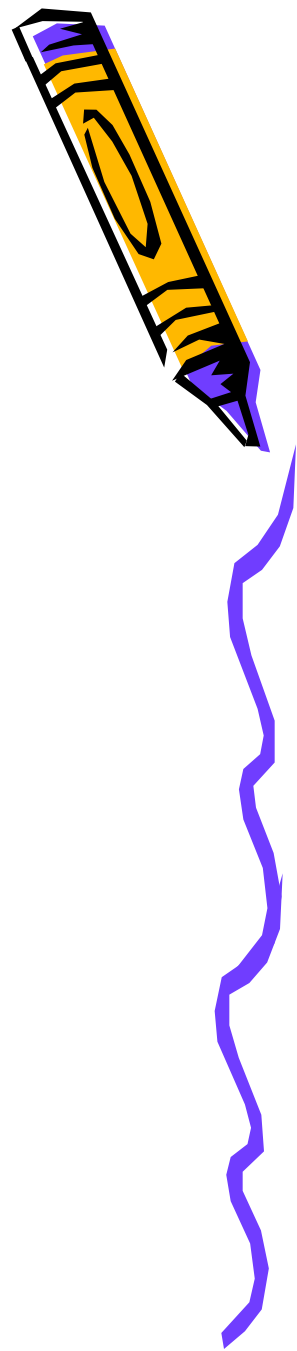
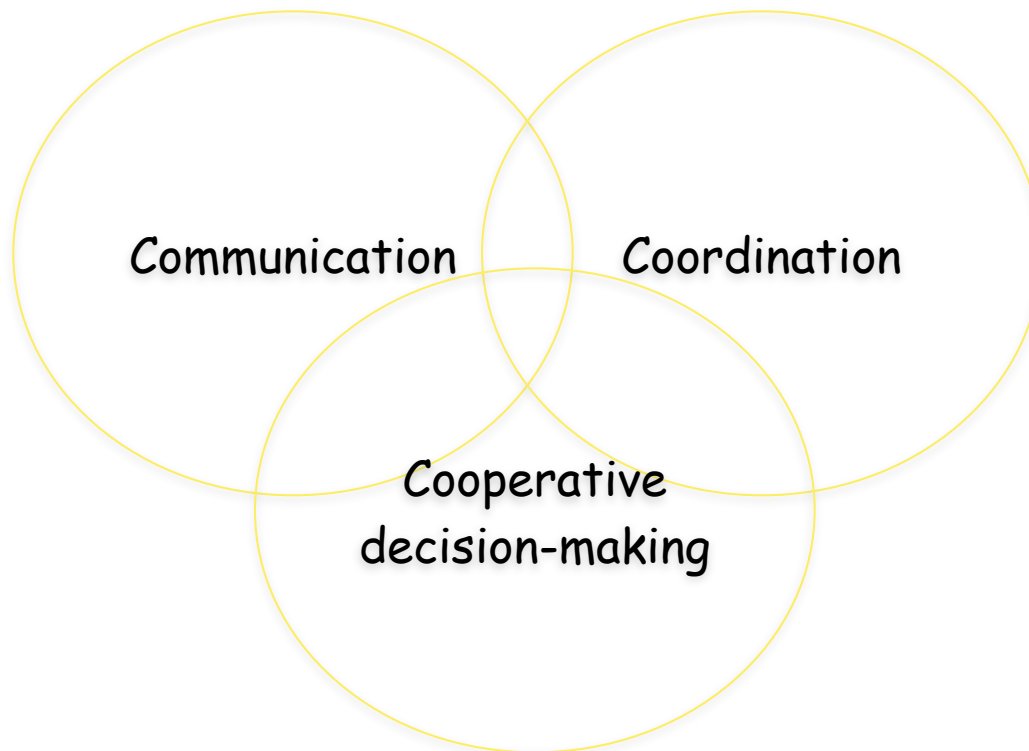


- The **Semantic Web** is an evolving extension of the World Wide Web in which the semantics of information and services on the web is defined, making it possible for the web to understand and satisfy the requests of people and machines to use the web content.

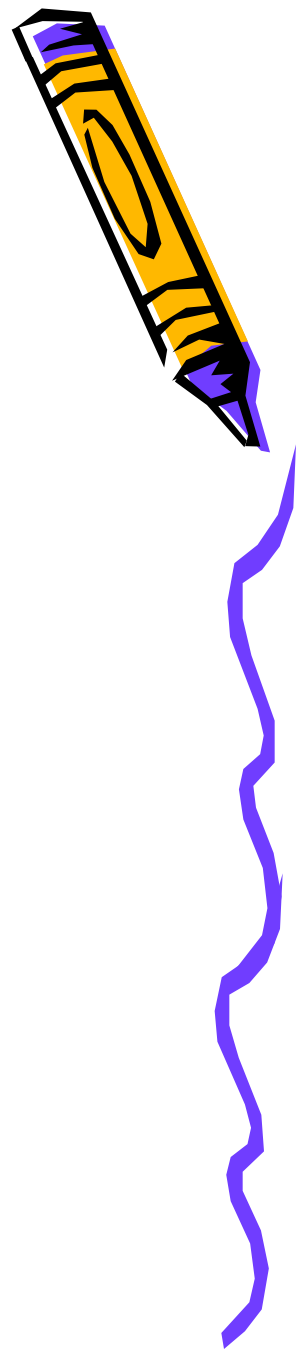


Cooperative activity

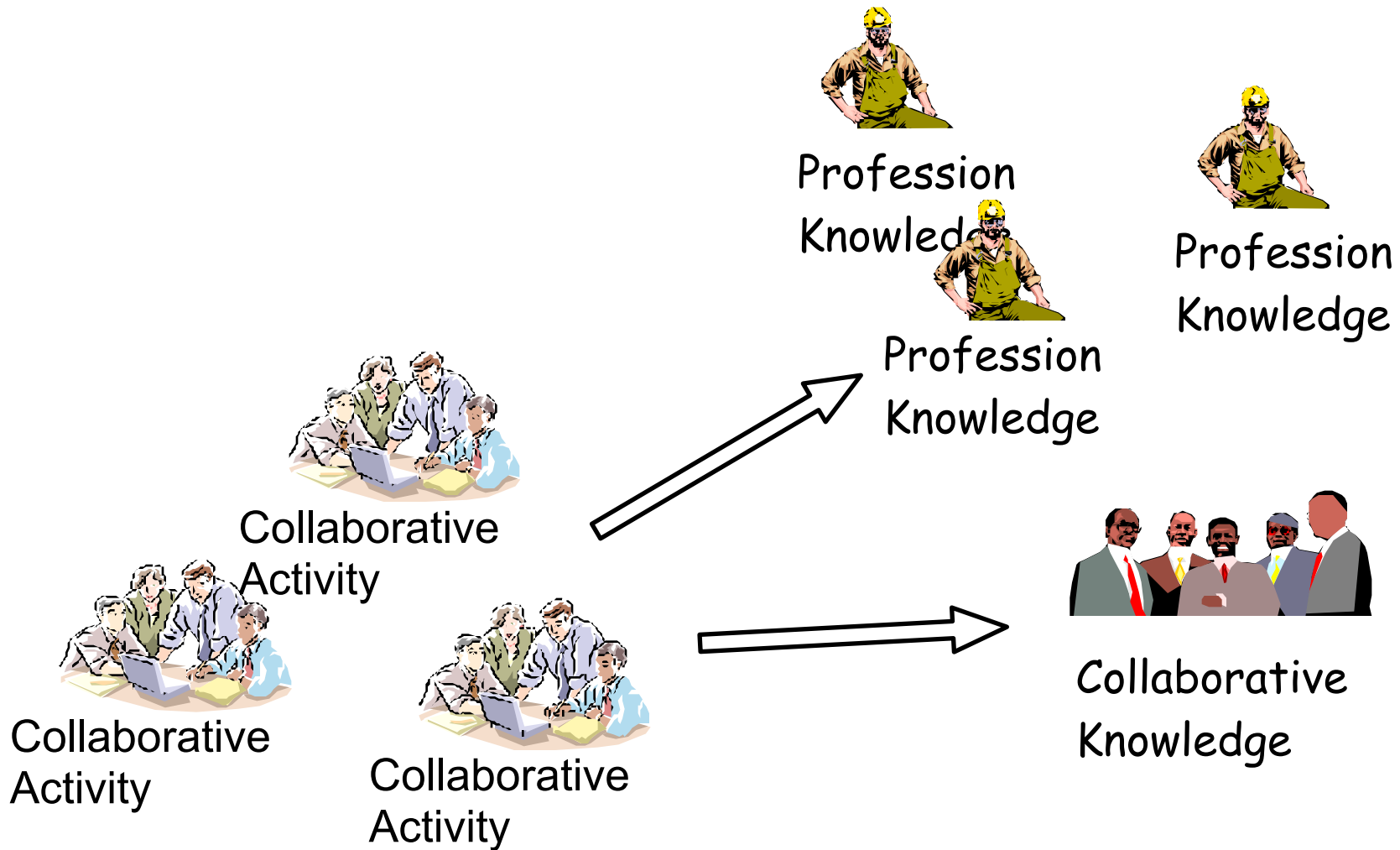
A cooperative (collaborative) activity is an activity handling concurrently by a group of actors having the same goal (Schmidt et al)

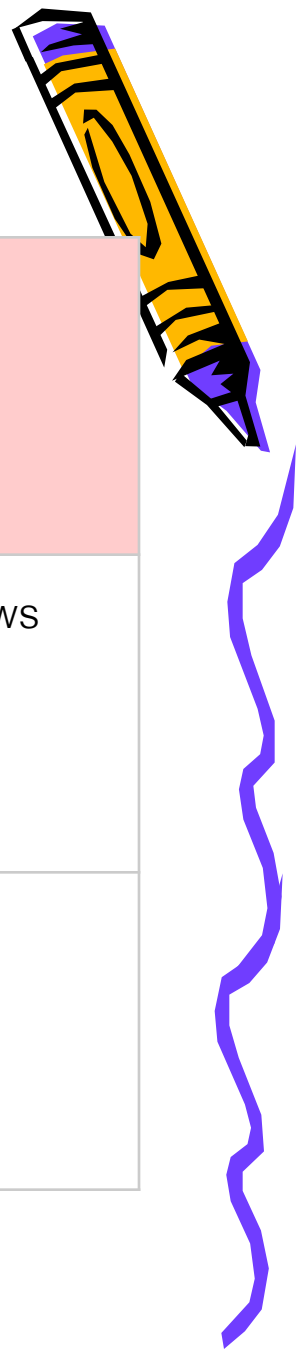


Knowledge from
cooperative activity



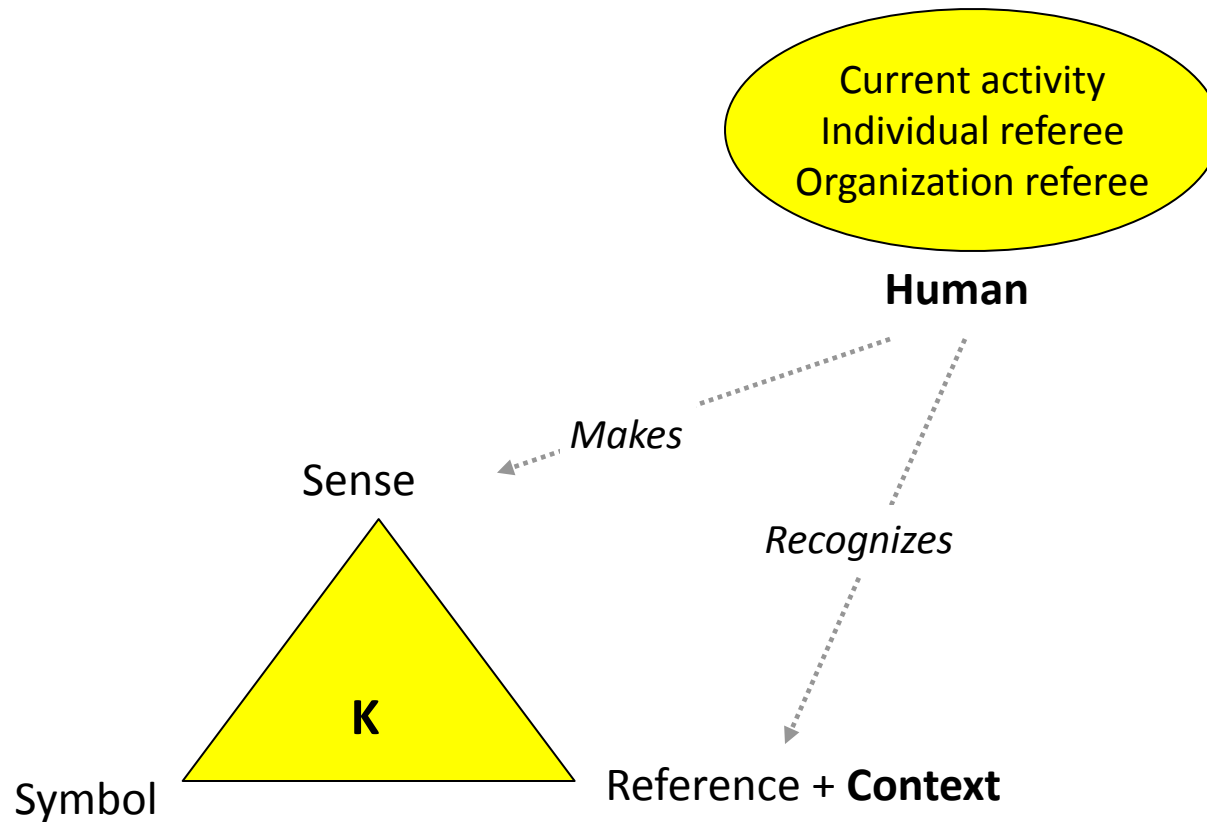
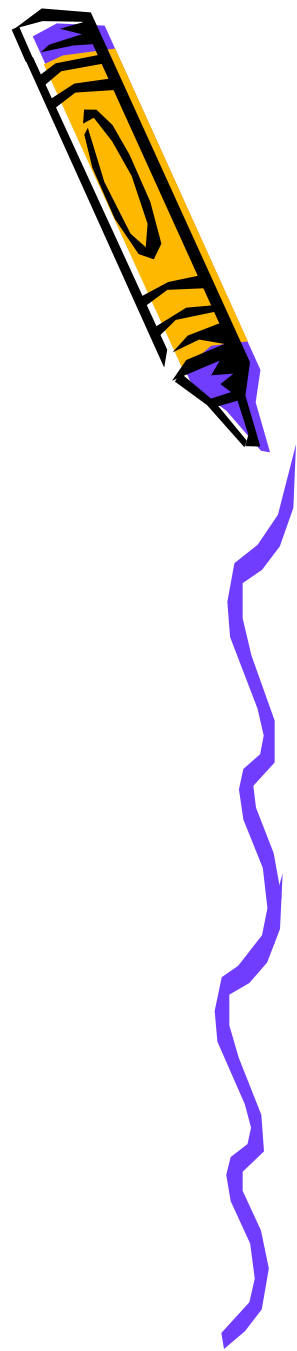
Knowledge from collaborative activity



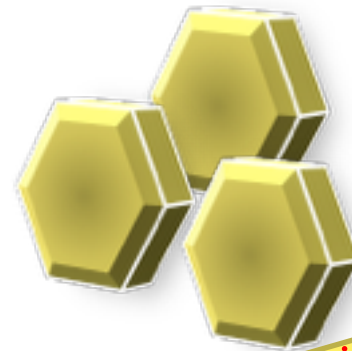
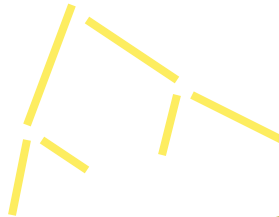


Knowledge	Nature	Dimensions	Capturing
Individual	• Semantic • Exeperience	• One domain • Tasks, concepts, strategies	• Expert Interviews • Textmining • DataMining • Conceptual modelling
Collaborative	• Episodic • Experiments	• Multi-domans • process, roles, skills, • Arguments, collaborative decision • Directives, constraints	• Traceability • Classification, agregation

Challenge



Traceability and capitalization of knowledge



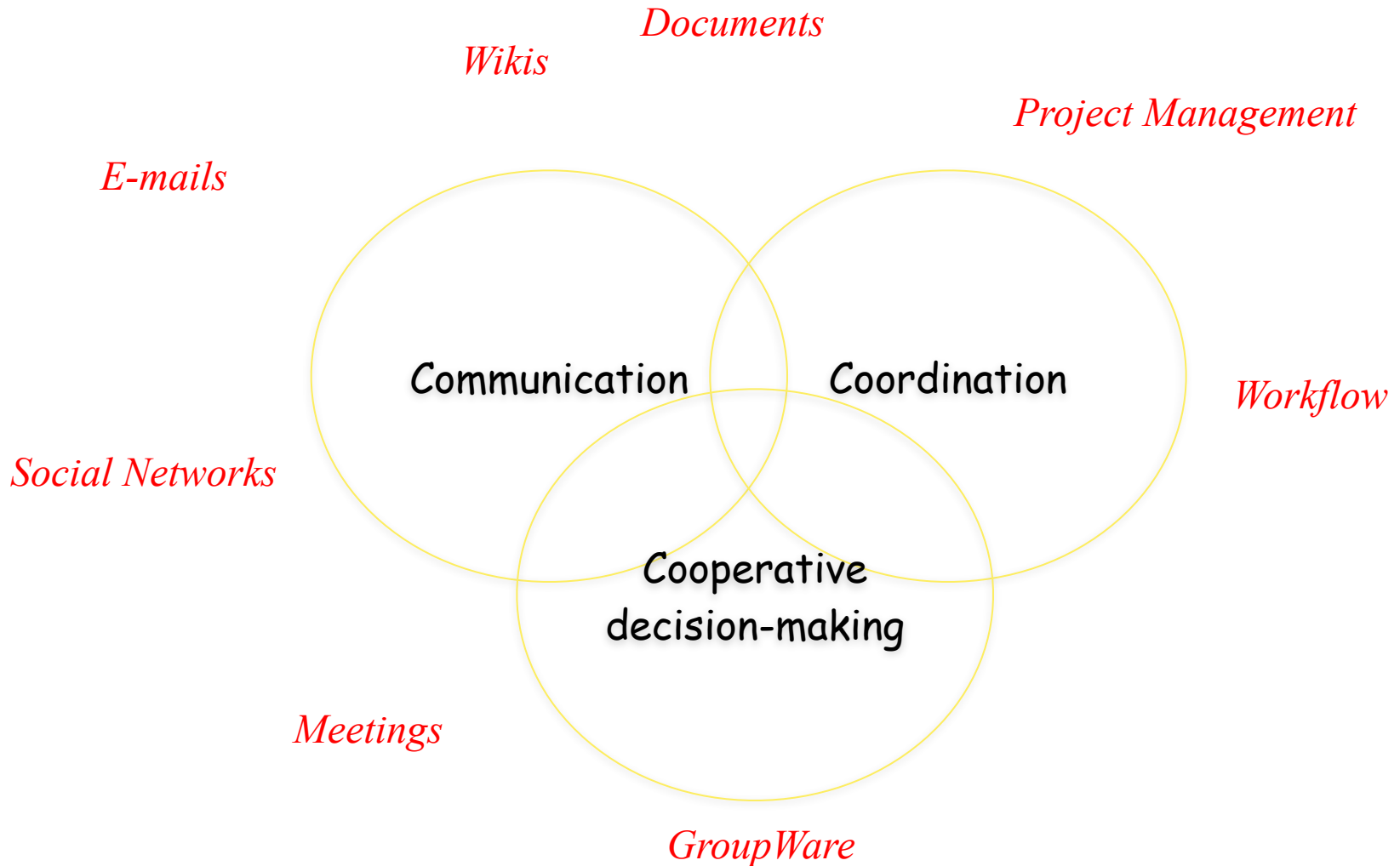
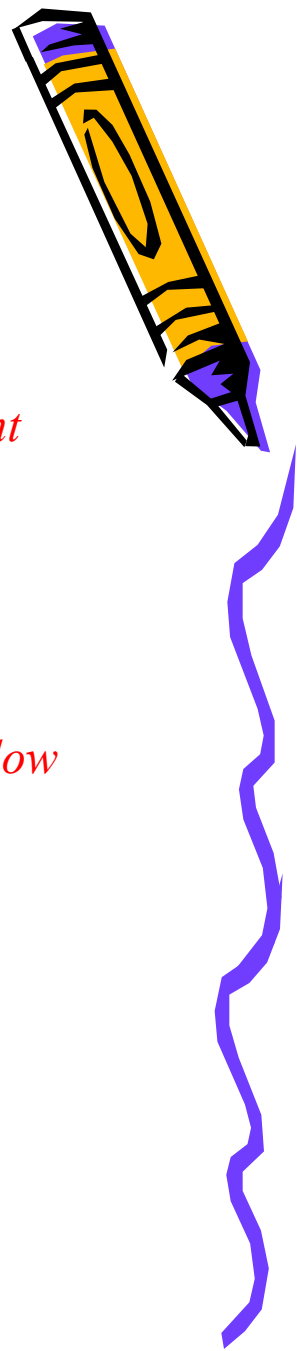
Keeping
Track

Characterising
concepts

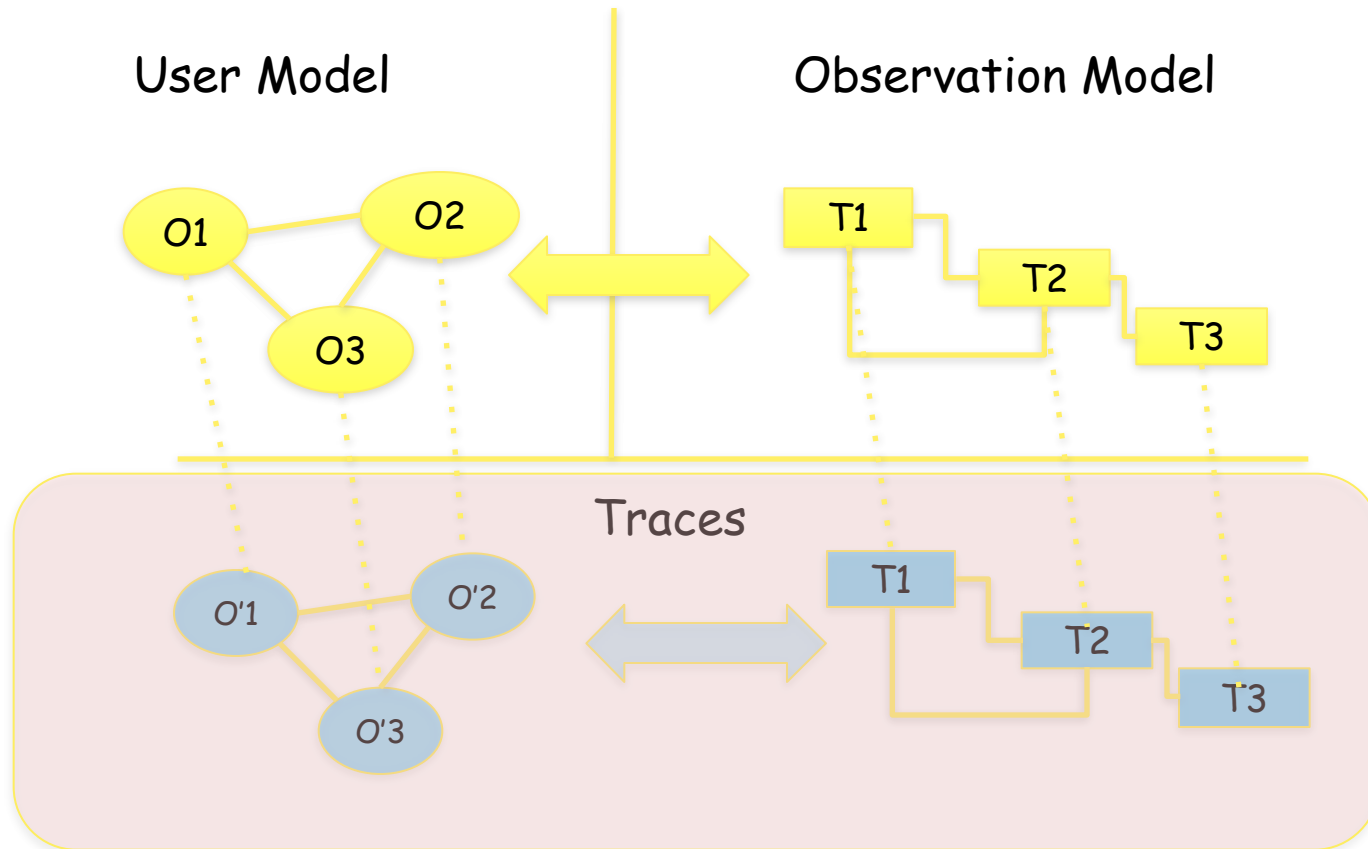
Aggregation and
typing strategies



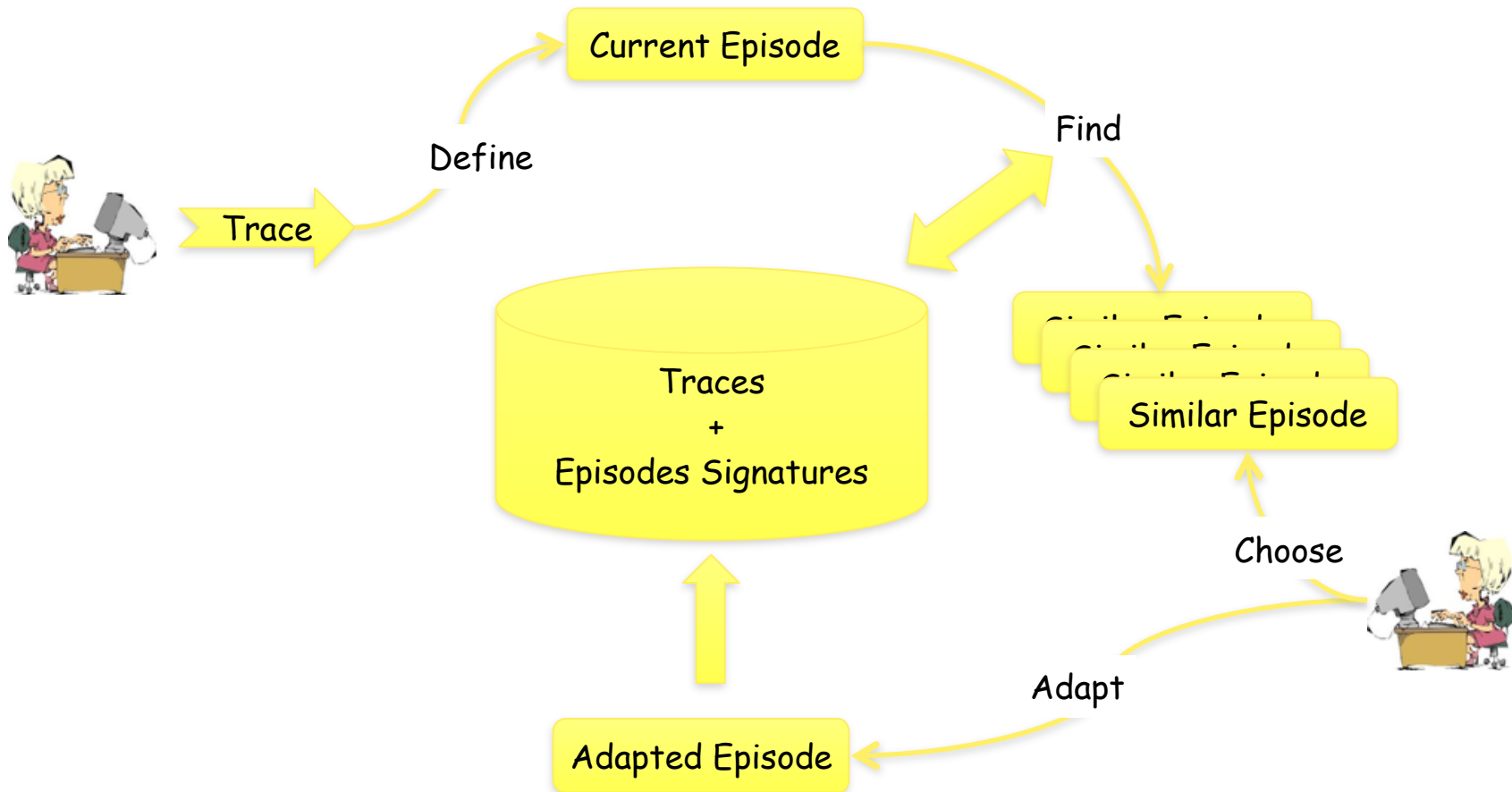
Traceability



Profiling



Profiling: TREFLE System (Mille)

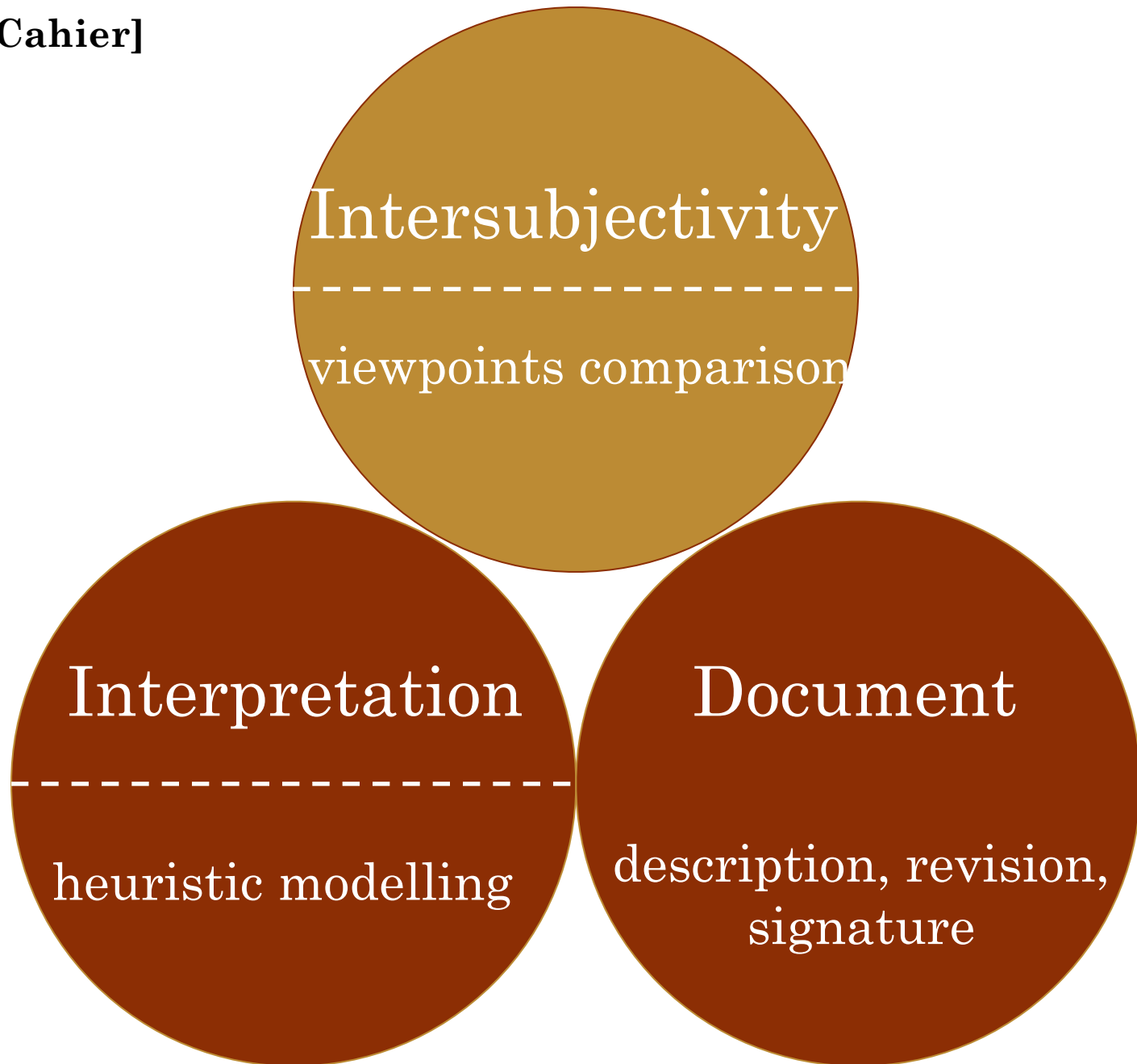


SOCIO-SEMANTICWEB PRINCIPLES

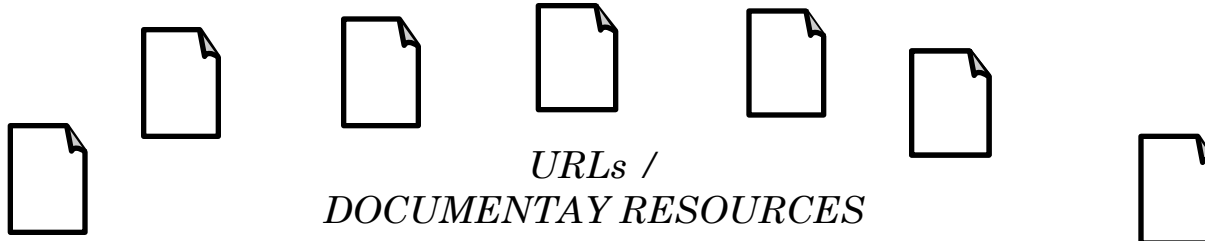
[ZACKLAD, CAHIER]

- *To co-build maps by users themselves*
- *Let the community imagine its own architecture of cooperation and its socio-semantic activity*

Use CSCW and social approaches to handle Socio-SemanticWeb

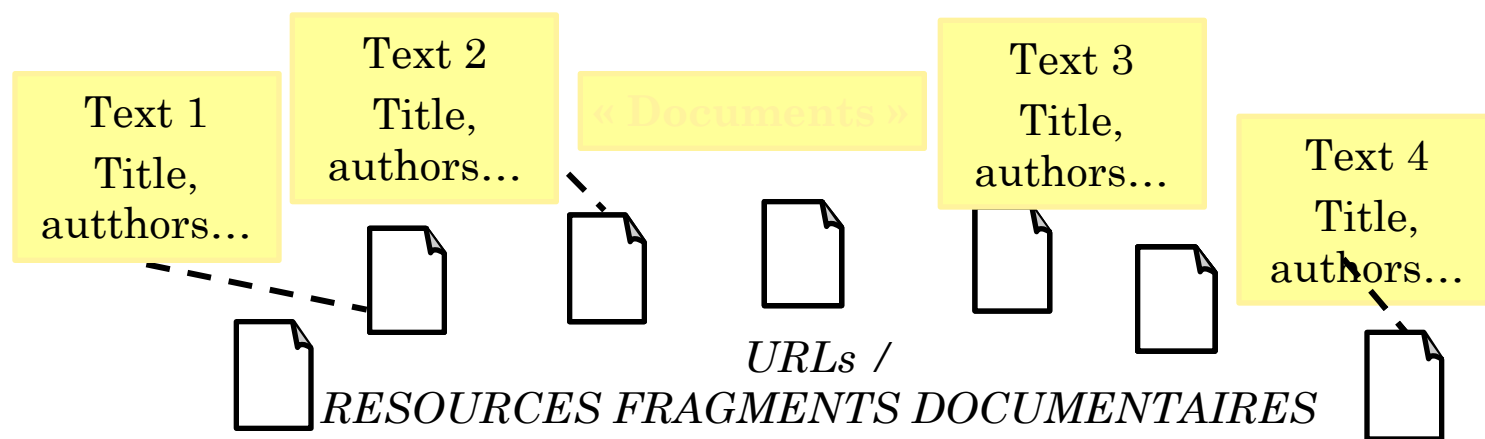


Adhikari, T. B., R. C. Basnyat, et al. 1999.
"Virulence of Xanthomonas oryzae pv.
oryzae on rice lines containing single
resistance genes and gene combinations."
Plant disease 83(1): 46-50.

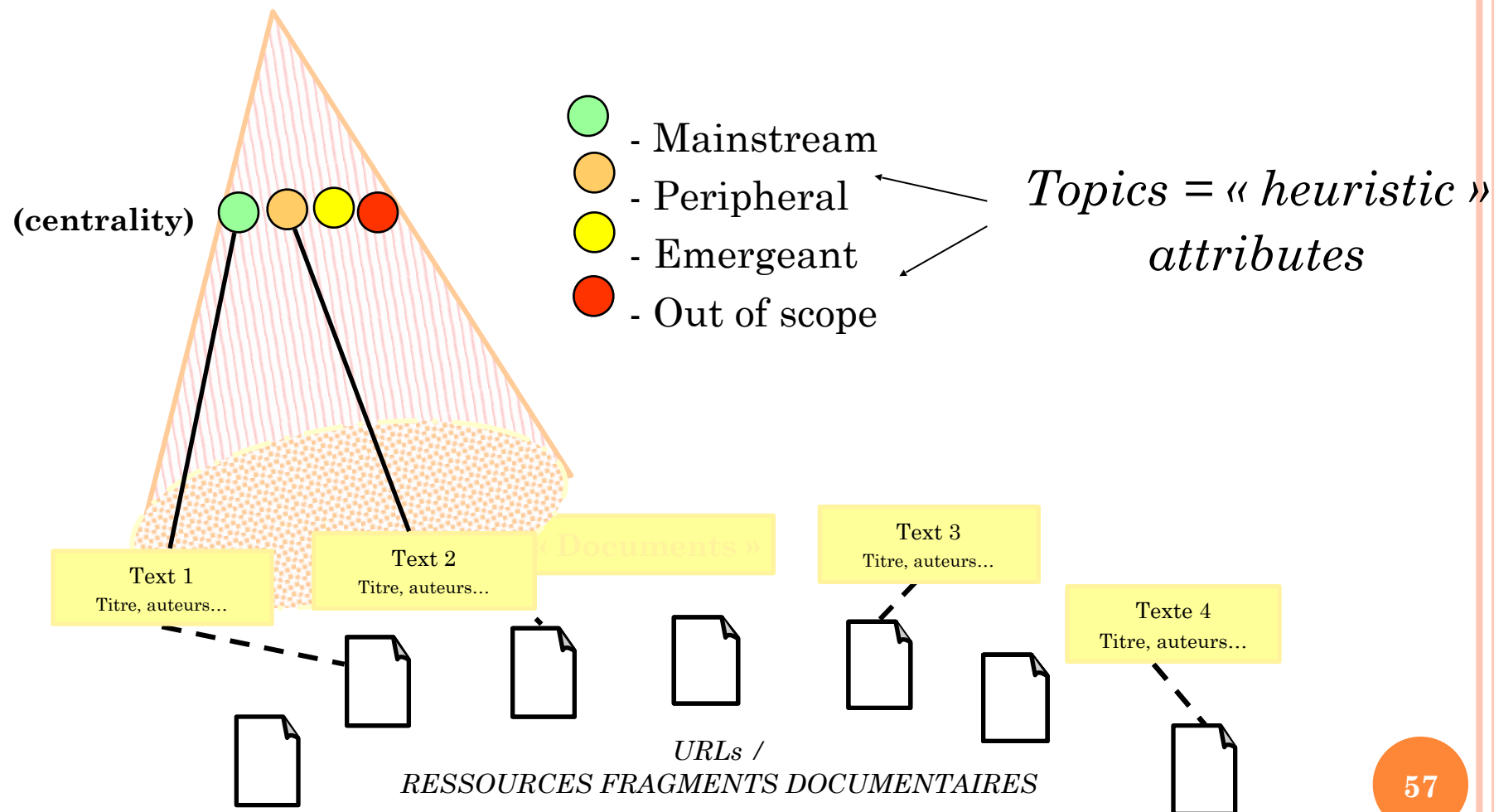


2) AGREEMENT IN THE GROUP ON DOCUMENTS CONSIDERED

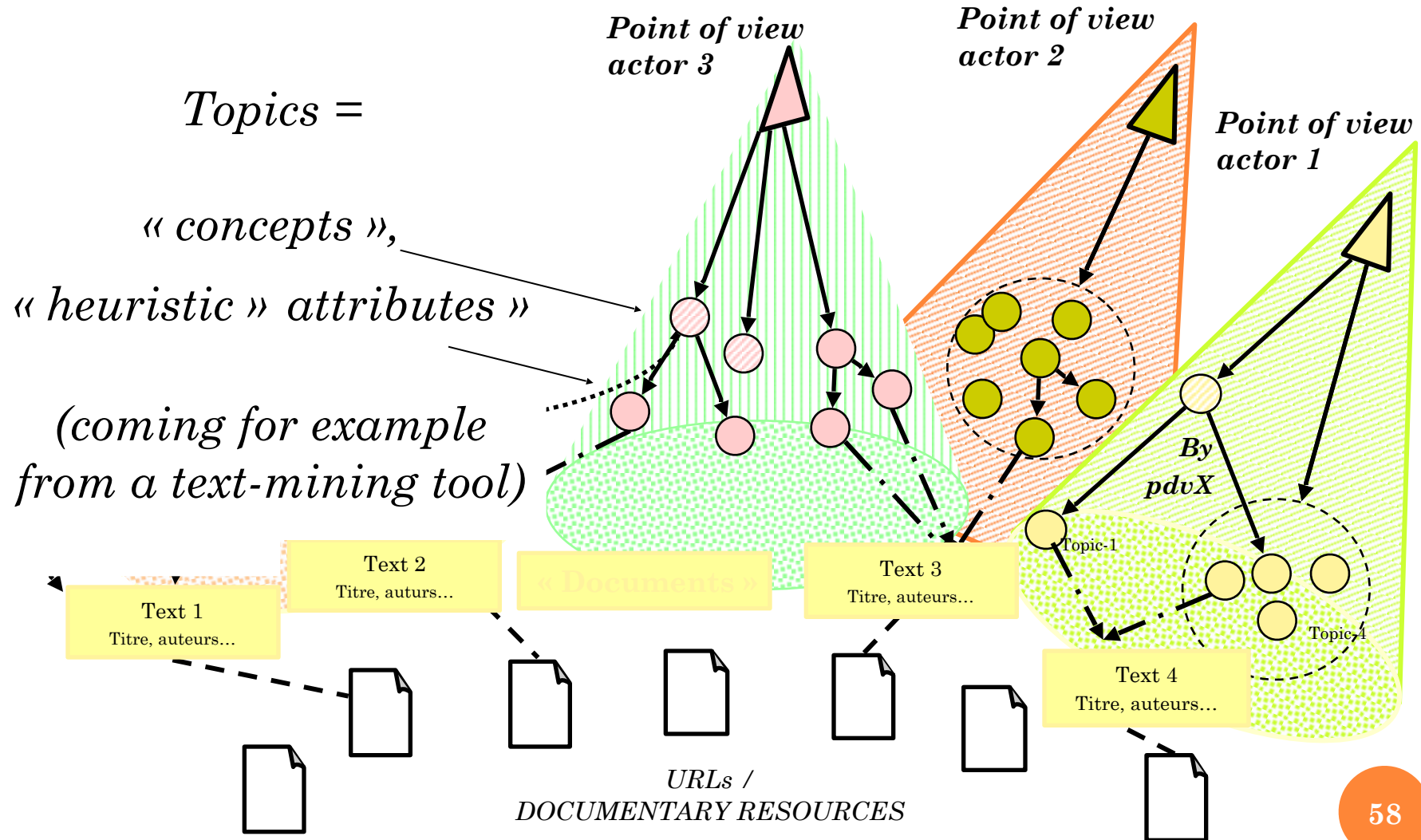
- NAMING OF EACH CONSIDERED DOCUMENT*
- STANDARD ATTRIBUTES (AUTHOR...)*



3) **BUT** POSSIBLE CONFLICTS WITHIN THE GROUP ON THE « CENTRALITY » OF THESE CONSIDERED DOCUMENTS

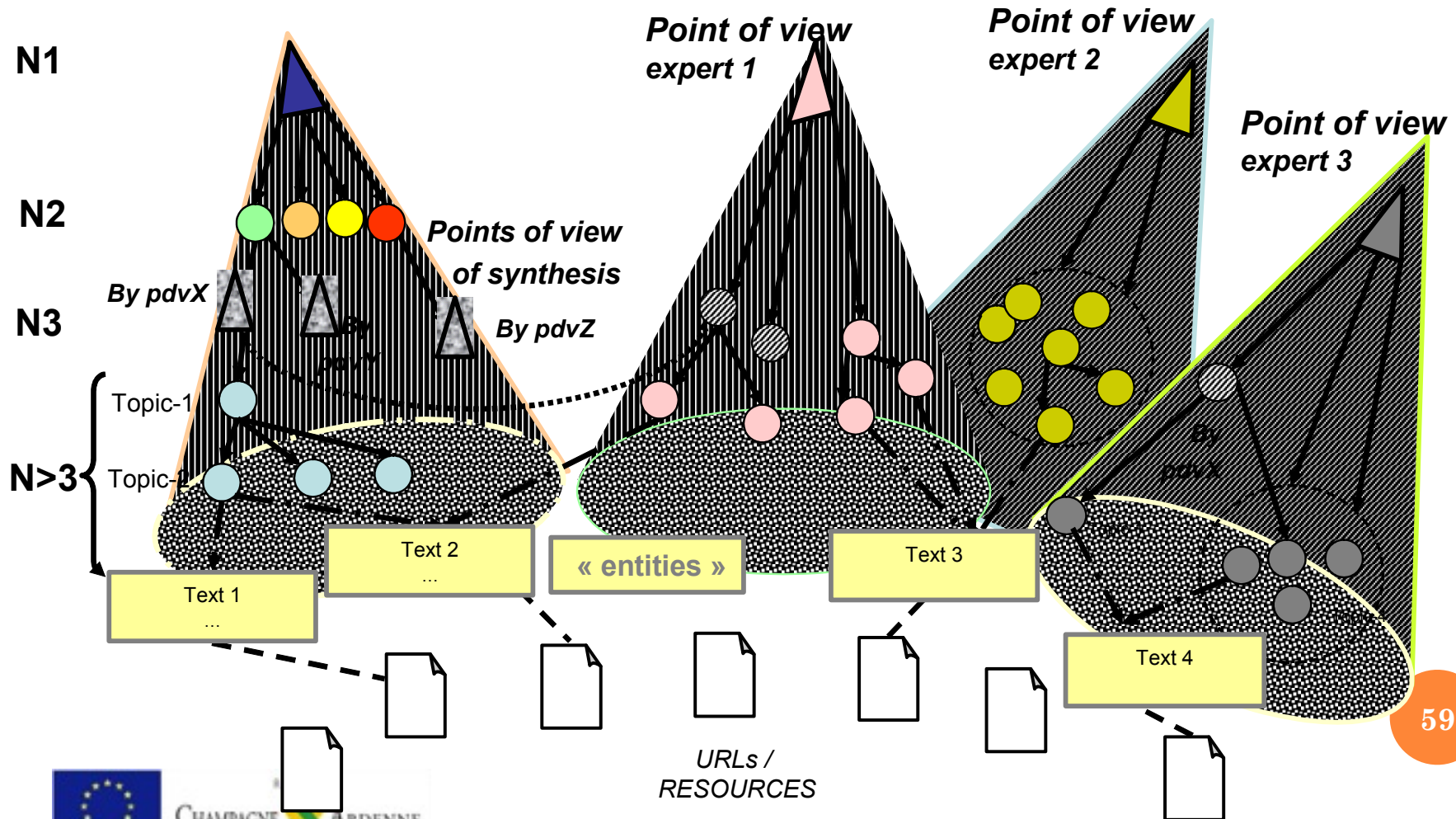


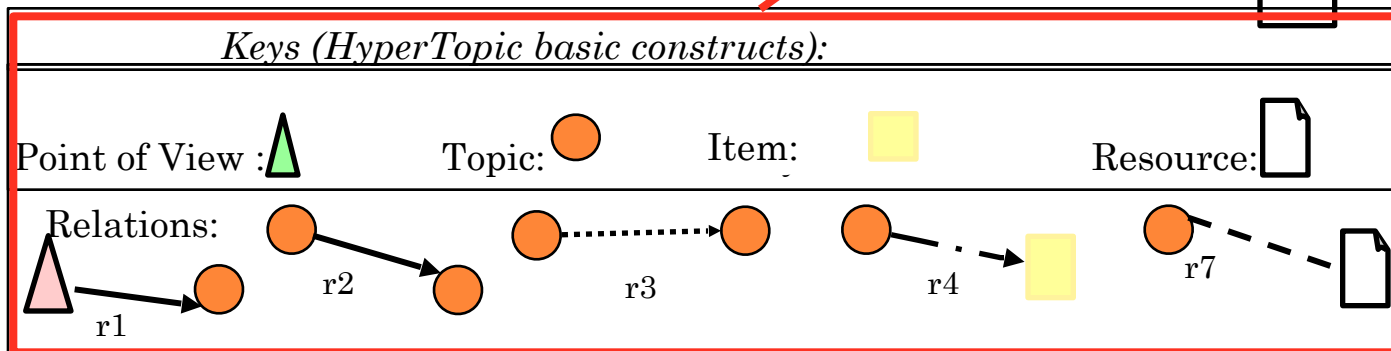
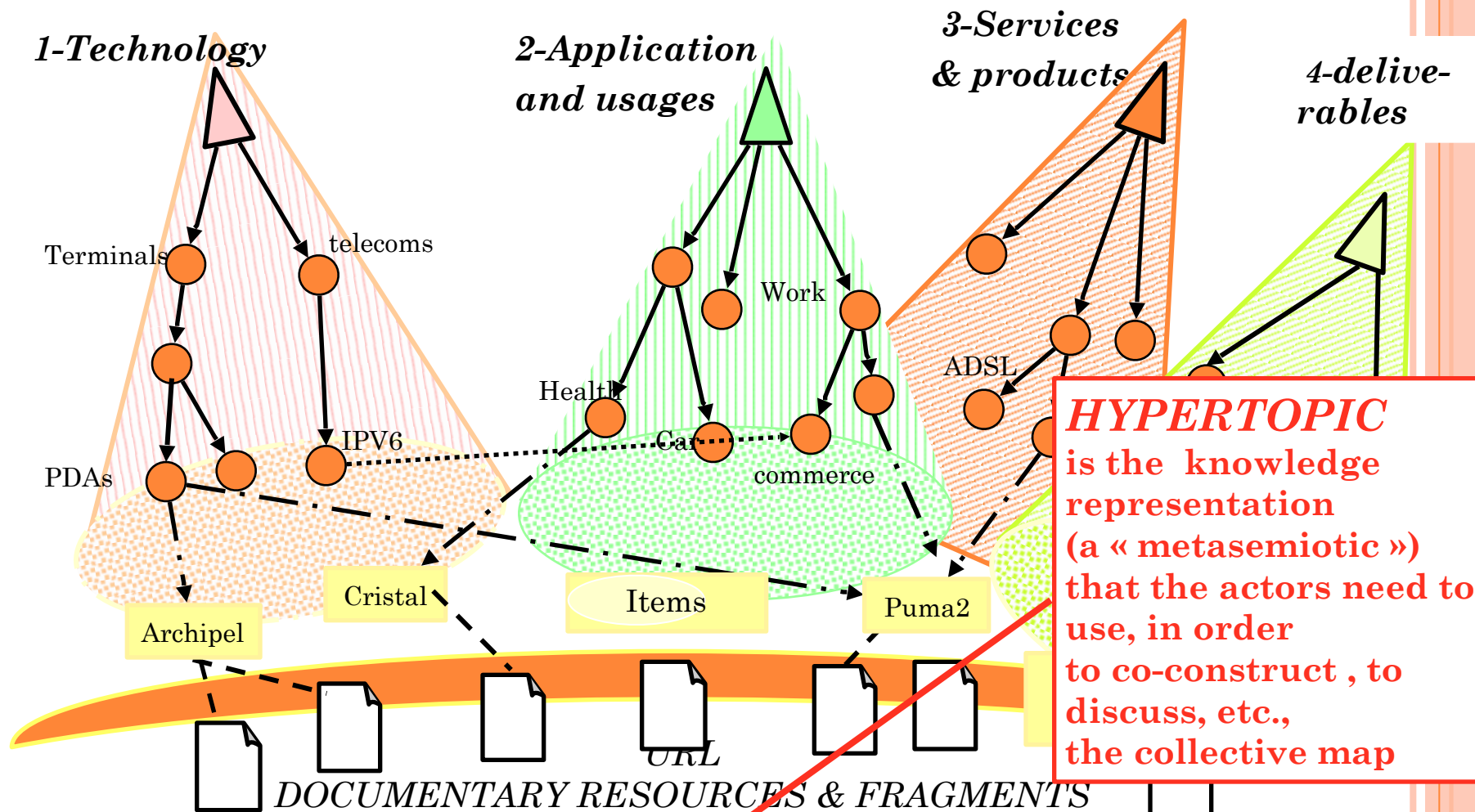
4) « DESIGN MAPS » **FROM EACH ACTOR, BUT POSSIBLE CONFLICTS WITHIN THE GROUP ABOUT THE « CONCEPTS » USED TO GROUP THE LOW-LEVEL TOPICS**



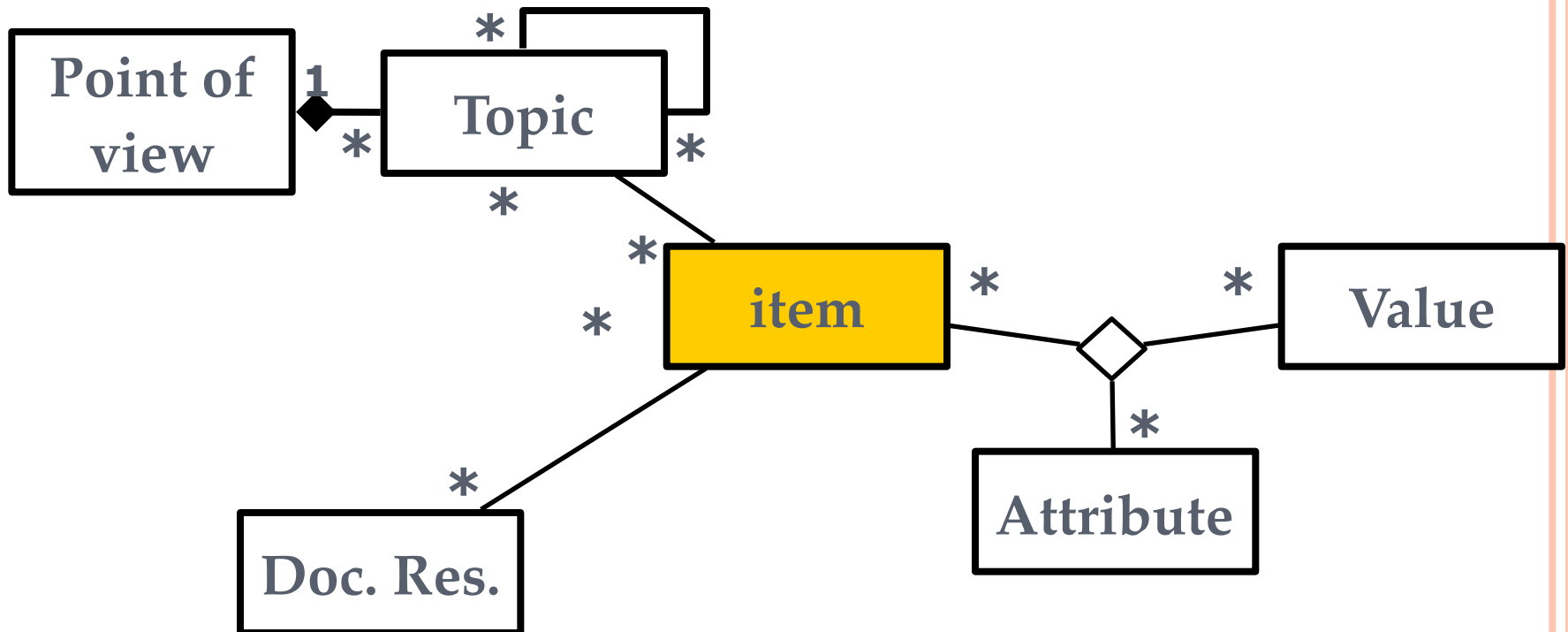
Synthesis Map $\leftrightarrow$

Design Points of view





Hypertopic model (UML representation)



- Hypertopic is focused exclusively on *a very few* basic constructs (inspired by the Topis Map)
- It Gives to many end-users the ability to edit the map (items, topics) without any particular training
- It makes easier to deploy the co-building within large communities

HYPERTOPIC

Point of View: concurrent
characterisations of the item

2

Item: identifier of the situation /
of the artefact object of the inquiry

1

HYPERTOPIC

Point of View: concurrent
characterisations of the item

2

3

Topics:
heuristic thematization
of the item

Item: identifier of the situation /
of the artefact object of the inquiry

1

HYPERTOPIC

Point of View: concurrent
characterisations of the item

2

3

Topics:
heuristic thematization
of the item

Correlation A

Item: identifier of the situation /
of the artefact object of the inquiry

1

Standard attributes:
referential specification
of the item

4

HYPERTOPIC

Point of View: concurrent characterisations of the item

3 Topics:
heuristic thematization
of the item

2

Correlation A

Item: identifier of the situation /
of the artefact object of the inquiry

1

Correlation C

Standard attributes:
referential specification
of the item

4

Resources:
Documentation of the item

5

Correlation B

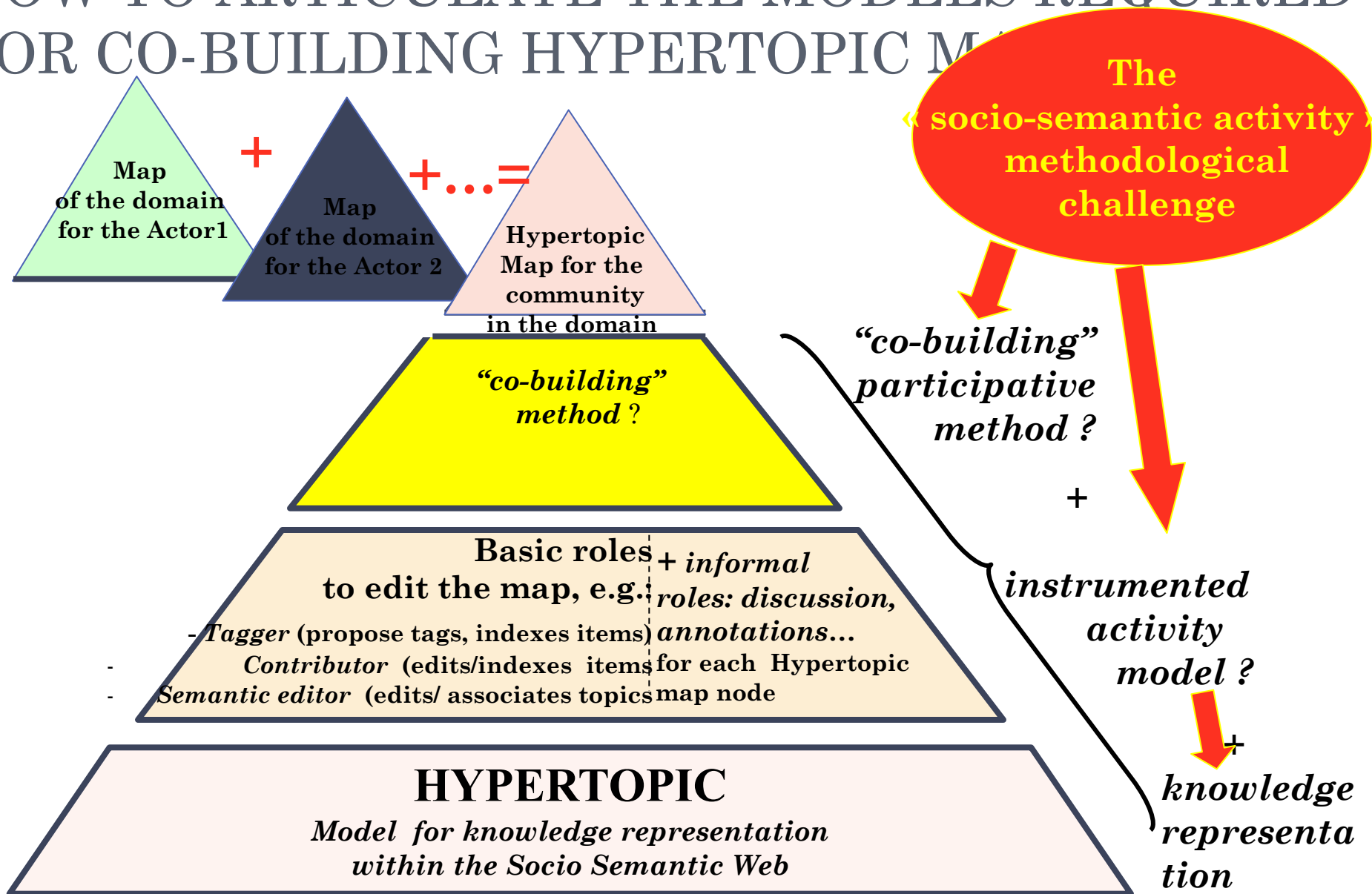
HOW TO COLLECTIVELY CONSTRUCT AND MAINTAIN AN HYPERTOPIC MAP

It is useful to distinguish:

- - a « bootstrapping » phase
 - to define the item, to define the first set of « points of view »
 - based (eventually) on folksonomies or on the confrontation of actors' personal « design maps »
 - leading (eventually) to a « synthesis map » usable by the group
- - a phase of maintenance / evolution of the map



HOW TO ARTICULATE THE MODELS REQUIRED FOR CO-BUILDING HYPERTOPIC MAPS



AGORÆ EXAMPLE: « E-CATALOG » OF PROJECTS AND INITIATIVES IN THE FIELD OF SUSTAINABLE DEVELOPMENT

http://tech-web-n2.utt.fr/dd/?mod=navigation&resource=http://tech-ada.utt.fr/dd/viewpoint/13/

Démarrage Dernières nouvelles (...) Seeme jpc Tech-CICO CogDoc Arpenteurs Movable ICD DKN CCI cartodd

CartoDD

Agoræ développement durable

Espace personnel

Login :

Mot de passe :

Historique

Navigation

Items

Rechercher

Effets du projet

- Effets environnementaux
- Effets symboliques
- Effets Sociaux
- Effets économiques
- Contre-effets

Projets à voir

Sibylline Ile aux Oiseaux Tigres en Inde
Mangrove Ouest Cansino Campus responsables
Cartosolid Clem Ally Eoliennes
EauSecours La brique verte Blouses roses La brique
verte Biomasse **La Brique Verte**
Lait-AlimenTerre Lozere-pilote

Choix de thèmes

Champagne-Ardenne

- Effets Sociaux
- Effets symboliques
- France
 - animaux marins
 - culture et éducation
 - déforestation
 - eau
 - emploi vert
 - eoliennes
 - oiseaux
 - oiseaux de mer
- recyclage
- regions pauvres
- réduction ou optimisation de consommation d'énergie
- sécurité alimentaire
- tigres
- équipements déployés sur le terrain

espace personnel

Login :

Mot de

passé :

se connecter

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- Effets Sociaux
- Effets économiques
- Contre-effets

Rechercher

Chercher

Projets à voir

Sibylline Ile aux Oiseaux Tigres en Inde
Mangrove Ouest Cansino Campus responsables
Cartosolid Clem Ally Eoliennes
EauSecours La brique verte Blouses roses La brique

La brique verte



Effets symboliques • Effets Sociaux •

Fiche descriptive

- Description : Réaoupération intelligente des jeux Lego inutilisés
- Lancement : 2007
- Localisation : Troyes

Ressource(s) documentaire(s)

- Revue de presse
- Site Web

Rechercher

Chercher

Nuage de thèmes

Effets Sociaux • Effets symboliques

Thèmes

campagne-Ardenne

ts Sociaux

Effets

politiques • France

x marins • culture et

• déforestation • eau

t • eoliennes • oiseaux

oiseaux de mer

yclage • regions

es • réduction ou

ion de consommation

• sécurité alimentaire

équipements déployés

ur le terrain •

CartoDD

Agoræ développement durable

Espace personnel

Login :

Mot de

passee :

se connecter

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- Effets environnementaux
- Effets symboliques
- Effets Sociaux
- Effets économiques
- Contre-effets

Projets à voir

Sibylline Ile aux Oiseaux Tigres en Inde
Mangrove Ouest Cansino Campus responsables
Cartosolid Clem Ally Eoliennes
EauSecours La brique verte Blouses roses La brique
verte Biomass La Brique Verte
Lait-AlimenTerre Lozere-pilote

Rechercher

Chercher

Choix de thèmes

Champagne-Ardenne

• Effets Sociaux

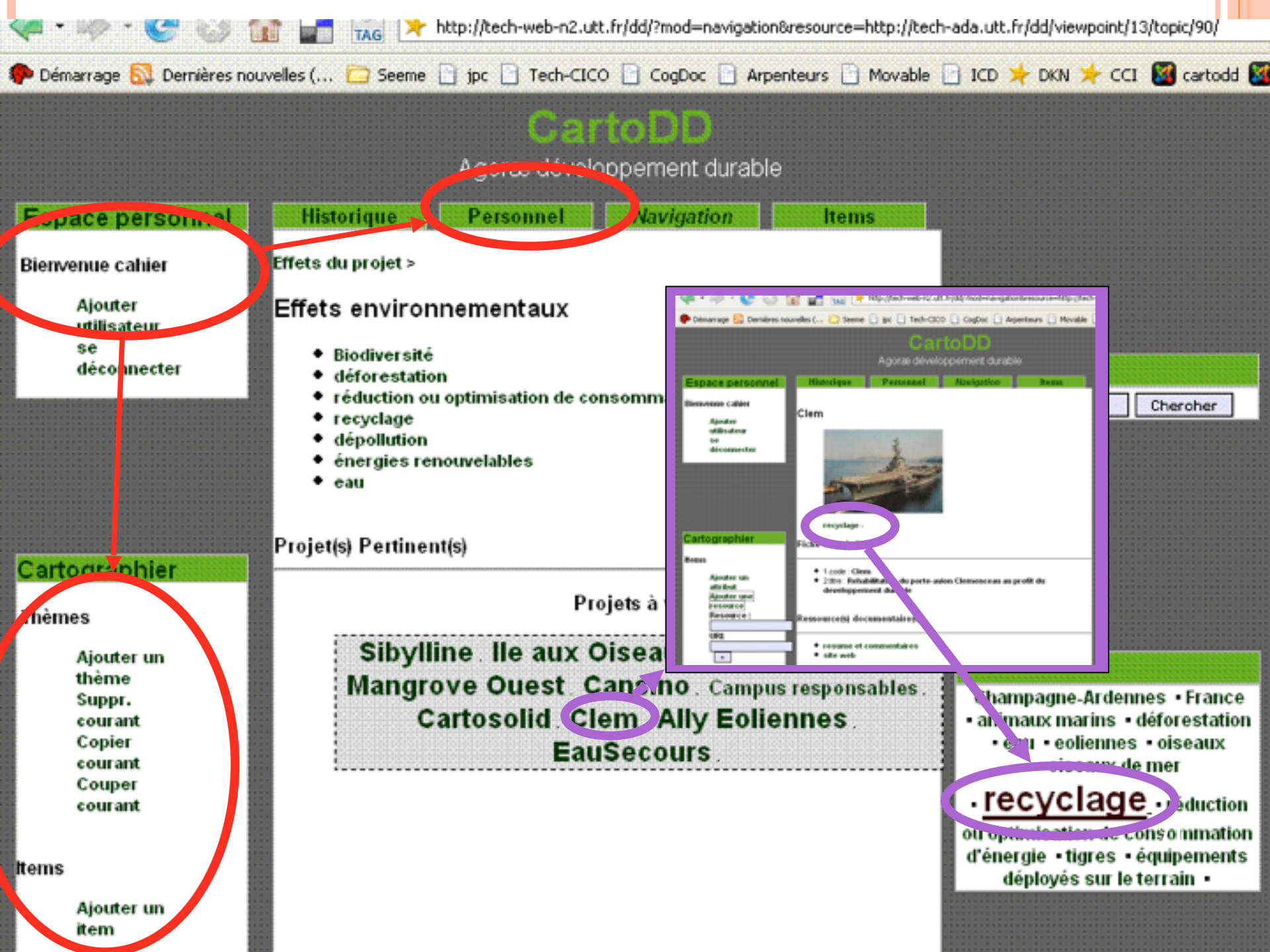
• Effets

symboliques • Fran

- animaux marins • culture et
- éducation • déforestation • ea
- emploi vert • éoliennes • oisea
- oiseaux de mer

• recyclage • region

- pauvres • réduction ou
- optimisation de consommation
- d'énergie • sécurité alimentaire
- tigres • équipements déployés
- sur le terrain •



CartoDD

Agoræ développement durable

Espace personnel

Bienvenue cahier

Ajouter
utilisateur
se
déconnecter

Historique

Personnel

Navigation

Items

Effets du projet >

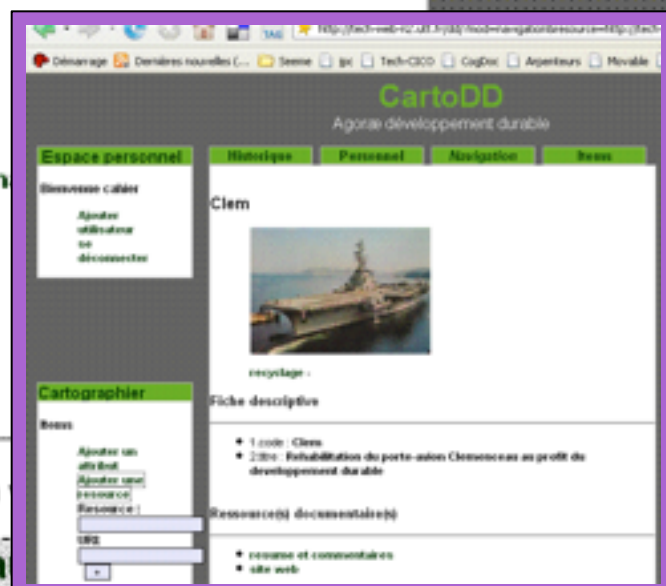
Effets environnementaux

- ♦ Biodiversité
- ♦ déforestation
- ♦ réduction ou optimisation de consommation
- ♦ recyclage
- ♦ dépollution
- ♦ énergies renouvelables
- ♦ eau

Projet(s) Pertinent(s)

Projets à

Sibylline . Ile aux Oiseaux
Mangrove Ouest Cansino . Campus responsables .
Cartosolid . Clem . Ally Eoliennes .
EauSecours .



Chercher

Cartographeur

Thèmes

Ajouter un
thème
Suppr.
courant
Copier
courant
Couper
courant

Items

Ajouter un
item

Champagne-Ardenne • France
• animaux marins • déforestation
• eau • éoliennes • oiseaux
• oiseaux de mer

• **recyclage** • réduction
ou optimisation de consommation
d'énergie • tigres • équipements
déployés sur le terrain •

Application

uses all Hypertopic concepts **points of view**,

Agoræ développement durable

Espace personnel

Bienvenue cahier

Ajouter utilisateur
se
déconnecter

Historique **Personnel** **Navigation** **Items**

Effets du projet >

Effets environnementaux

- ♦ Biodiversité
- ♦ déforestation
- ♦ réduction ou optimisation de consommation
- ♦ recyclage
- ♦ dépollution
- ♦ énergies renouvelables
- ♦ eau

Projet(s) Pertinent(s)

Projets à

Sibylline **Ile aux Oiseaux** **Mangrove Ouest** **Cansino** **Campus responsables** **Cartosolid** **Clem** **Ally Eoliennes** **EauSecours**

Cartographeur

Thèmes

Ajouter un thème
Suppr. courant
Copier courant
Couper courant

Items

Ajouter un item

CartoDD
Agoræ développement durable

Espace personnel **Historique** **Personnel** **Navigation** **Items**

Bienvenue cahier

Ajouter utilisateur
se
déconnecter

Cartographeur

Thèmes

Ajouter un thème
Suppr. courant
Copier courant
Couper courant

Items

Ajouter un item

Chercher

recyclage • réduction ou optimisation de consommation d'énergie • tigres • équipements déployés sur le terrain •

Application

*uses all Hypertopic concepts points of view, **topics***

The screenshot displays the 'Agorae développement durable' application interface. A red arrow points from the word 'topics' in the text above to the 'Effets environnementaux' section. Another red arrow points from the same word to the 'recyclage' topic in the 'Projets à' section.

Espace personnel

Bienvenue cahier

Ajouter utilisateur
se connecter

Historique **Personnel** **Navigation** **Items**

Effets du projet >

Effets environnementaux

- Biodiversité
- déforestation
- réduction ou optimisation de consommation
- recyclage
- dépollution
- énergies renouvelables
- eau

Projet(s) Pertinent(s)

Projets à

Sibylline **Ile aux Oiseaux** **Mangrove Ouest** **Cansino** **Campus responsables** **Cartosolid** **Clem** **Ally Eoliennes** **EauSecours**

Cartographier

Thèmes

Ajouter un thème
Suppr. courant
Copier courant
Couper courant

Items

Ajouter un item

CartoDD
Agorae développement durable

Espace personnel **Historique** **Personnel** **Navigation** **Items**

Bienvenue cahier

Ajouter utilisateur
se connecter

Cartographier

Items

Ajouter un attribut
Ajouter une ressource
Ressource :

URL

Clem

recyclage :

Fiche descriptive

- 1 code : Clem
- 2 titre : Réhabilitation de porte-aeron Clemence au profit du développement durable

Ressource(s) documentaires(s)

- ressource et commentaires
- site web

Champagne-Ardenne • France

- animaux marins • déforestation
- eau • éoliennes • oiseaux
- oiseaux de mer

• **recyclage** • réduction ou optimisation de consommation d'énergie • tigres • équipements déployés sur le terrain •

Application

uses all Hypertopic concepts points of view, topics , items

Agoræ développement durable

Espace personnel

Bienvenue cahier

Ajouter utilisateur
se
déconnecter

Historique **Personnel** **Navigation** **Items**

Effets du projet >

Effets environnementaux

- ♦ Biodiversité
- ♦ déforestation
- ♦ réduction ou optimisation de consommation
- ♦ recyclage
- ♦ dépollution
- ♦ énergies renouvelables
- ♦ eau

Projet(s) Pertinent(s)

Projets à

Sibylline **Ile aux Oiseaux** **Mangrove Ouest** **Cansino** **Campus responsables** **Cartosolid** **Clem** **Ally Eoliennes** **EauSecours**

Cartographeur

Thèmes

Ajouter un thème
Suppr. courant
Copier courant
Couper courant

Items

Ajouter un item

CartoDD
Agoræ développement durable

Espace personnel **Historique** **Personnel** **Navigation** **Items**

Bienvenue cahier

Ajouter utilisateur
se
déconnecter

Cartographeur

Thèmes

Ajouter un thème
Suppr. courant
Copier courant
Couper courant

Items

Ajouter un item

Clem

recyclage

Fiche descriptive

- ♦ 1 code : Clem
- ♦ 2 titre : Réhabilitation de porte-aeron Clemenceau au profit du développement durable

Ressource(s) documentaires(s)

- ♦ ressource et commentaires
- ♦ site web

Chercher

Champagne-Ardenne • France

- animaux marins • déforestation
- eau • éoliennes • oiseaux
- oiseaux de mer

recyclage • réduction ou optimisation de consommation d'énergie • tigres • équipements déployés sur le terrain •

Application

uses all Hypertopic concepts points of view, topics , items, **attributes**

The screenshot displays the CartoDD application interface, which is organized into several main sections:

- Espace personnel** (Personal Space): Includes a welcome message, a list of users, and a search bar.
- Historique** (History): Displays a list of projects, including "Sibylline", "Ile aux Oiseaux", "Mangrove Ouest", "Cansino", "Campus responsables", "Cartosolid", "Clem", "Ally Eoliennes", and "EauSecours".
- Personnel** (Personnel): A section for managing users.
- Navigation** (Navigation): A section for navigating through the application.
- Items** (Items): A section for managing items.
- Effets du projet** (Project Effects): A section for viewing the environmental impacts of a project, such as "Biodiversité", "déforestation", "réduction ou optimisation de consommation", "recyclage", "dépollution", "énergies renouvelables", and "eau".
- Projets à** (Projects to): A section for viewing projects, including "Sibylline", "Ile aux Oiseaux", "Mangrove Ouest", "Cansino", "Campus responsables", "Cartosolid", "Clem", "Ally Eoliennes", and "EauSecours".
- Cartographier** (Mapping): A section for creating maps, including a "Fiche descriptive" (Descriptive Sheet) and a "Fiche de suivi" (Follow-up Sheet).

A red arrow points from the text "attributes" to the "Chercher" (Search) button in the "Espace personnel" section.

Application

uses all Hypertopic concepts points of view, topics , items, attribut, **resources**

Agoræ développement durable

Espace personnel

Bienvenue cahier

Ajouter utilisateur
se
déconnecter

Historique

Effets du projet >

Effets environnementaux

- ♦ Biodiversité
- ♦ déforestation
- ♦ réduction ou optimisation de consommation
- ♦ recyclage
- ♦ dépollution
- ♦ énergies renouvelables
- ♦ eau

Projet(s) Pertinent(s)

Projets à

Sibylline . Ile aux Oiseaux . Mangrove Ouest Cansino . Campus responsables . Cartosolid . Clem . Ally Eoliennes . EauSecours .

Personnel

Navigation

Items

Cartographeur

Thèmes

Ajouter un thème
Suppr. courant
Copier courant
Couper courant

Items

Ajouter un item

CartoDD
Agoræ développement durable

Espace personnel

Bienvenue cahier

Ajouter utilisateur
se
déconnecter

Historique

Clem

Navigation

Items

Cartographeur

Thèmes

Ajouter un thème
Suppr. courant
Copier courant
Couper courant

Items

Ajouter un item

Projets à

Sibylline . Ile aux Oiseaux . Mangrove Ouest Cansino . Campus responsables . Cartosolid . Clem . Ally Eoliennes . EauSecours .

Effets du projet >

Effets environnementaux

- ♦ Biodiversité
- ♦ déforestation
- ♦ réduction ou optimisation de consommation
- ♦ recyclage
- ♦ dépollution
- ♦ énergies renouvelables
- ♦ eau

Projet(s) Pertinent(s)

Projets à

Sibylline . Ile aux Oiseaux . Mangrove Ouest Cansino . Campus responsables . Cartosolid . Clem . Ally Eoliennes . EauSecours .

Chercher

Champagne-Ardenne • France

- animaux marins • déforestation
- eau • éoliennes • oiseaux
- oiseaux de mer

recyclage • réduction ou optimisation de consommation d'énergie • tigres • équipements déployés sur le terrain •

Application

uses all Hypertopic concepts points of view, topics , items, attribut , resources , and possibility to build the map within the inquiry activity

The screenshot displays the CartoDD application interface, which is organized into several panels and sections:

- Top Navigation Bar:** Contains tabs for "Espace personnel", "Historique", "Personnel", "Navigation", and "Items".
- Left Panel (Espace personnel):** Includes a "Bienvenue cahier" section with links for "Ajouter utilisateur", "se", and "déconnecter". Below this is a "Thèmes" section with a list of actions: "Ajouter un thème", "Suppr. courant", "Copier courant", "Couper courant", and "Ajouter un item".
- Central Panel:**
 - Effets du projet > Effets environnementaux:** A list of environmental impacts including "Biodiversité", "déforestation", "réduction ou optimisation de consommation", "recyclage", "dépollution", "énergies renouvelables", and "eau".
 - Projet(s) Pertinent(s):** A section for relevant projects.
 - Projets à:** A list of projects including "Sibylline", "Ile aux Oiseaux", "Mangrove Ouest", "Cansino", "Campus responsables", "Cartosolid", "Clem", "Ally Eoliennes", and "EauSecours".
- Right Panel (Cartographier):** Contains a "Clem" project entry with a photo of a boat. Below it is a "Fiche descriptive" section with a list of resources and a "Recycle" button.
- Bottom Right Panel:** A list of resources including "Champagne-Ardenne", "France", "animaux marins", "déforestation", "eau", "éoliennes", "oiseaux", "oiseaux de mer", "recyclage", "réduction ou optimisation de consommation d'énergie", "tigres", "équipements déployés sur le terrain", and "site web".

A red arrow points from the text "and possibility to build the map within the inquiry activity" to the "Ajouter un thème" button in the "Thèmes" section of the left panel.

Application

uses all Hypertopic concepts points of view, topics , items, attribut , resources , and possibility to build the map within the inquiry activity

Espace personnel

Bienvenue cahier

Ajouter
utilisateur
se
déconnecter

Historique

Effets du projet >

Effets environnementaux

- ♦ Biodiversité
- ♦ déforestation
- ♦ réduction ou optimisation de consommation
- ♦ recyclage
- ♦ dépollution
- ♦ énergies renouvelables
- ♦ eau

Navigation

Items

Cartographeur

Thèmes

Ajouter un
thème
Suppr.
courant
Copier
courant
Couper
courant

Items

Ajouter un
item

Projet(s) Pertinent(s)

Projets à

Sibylline . Ile aux Oiseaux
Mangrove Ouest Cansino . Campus responsables .
Cartosolid . Clem . Ally Eoliennes .
EauSecours .



Champagne-Ardenne • France
• animaux marins • déforestation
• eau • éoliennes • oiseaux
• oiseaux de mer

• **recyclage** • réduction
ou optimisation de consommation
d'énergie • tigres • équipements
déployés sur le terrain •

COG-DOC: LAB DOCUMENTS

CogDoc : Documents et connaissances

http://cogdoc.hypertopic.org/?mod=universities&resource=http://tech-a

Documents et connaissance

Plateforme de partage de ressources pédagogiques sur les thèmes de recherche du RTP-Doc.

Espace personnel

Pseudonyme :
Mot de passe :
Se connecter

Enseignants **Universités**

Qu'est-ce qu'un document ?

Fiche descriptive

- auteur : **Aurélien Bénél**
- dernière modification : **2007**

Ressource(s) documentaire(s)

- **Transparents (grand format)**
- **Transparents (petit format)**

Nuage de mots

accès • antilope • archive • conservation • description • destinataire • **document** • document numérique • documentation • dtd • définition document • feuille xml • folksonomie • indexation • information • méthodes • **preuve** • référence • shannon • support d'information • système documentaire • sélection • usages • version • xml •

benel_IF09a_07_petit.pdf (page 1 de 4)
Précédent Suivant Réduire/agrandir

Qu'est-ce qu'un document ?

Remue-méninges

Shannon vs Ockham

91

Les Économies de la Grandeur



Théorie de la société civile



Les OSC collaborent avec la FAO de diverses façons : dans les domaines techniques (iv) Transparence au niveau national et consultation sur les échanges et l 'environnement Le Groupe de travail conjoint de l ' OCDE sur les échanges et l ' environnement Ces études portaient sur les pratiques et les mécanismes nationaux propres à Les OSC participent aussi régulièrement aux travaux sur les échanges et l 'env Dans le contexte des examens de la réforme de la réglementation en vue de l ' Quel rôle peut jouer la société civile dans la politique publique ? (i) Une bonne (v) Politique de l ' environnement Il existe une longue tradition de dialogue av L 'accès à l ' information présente une importance cruciale pour les OSC qui or Les OSC participent à tout un ensemble d ' activités dans le cadre du Comité de Des représentants de différentes associations ont participé activement à certain La participation des OSC environnementales aux activités de l ' EPOC est coord S 'il est vrai que le Groupe de travail du CAD sur la coopération pour le dévelop Pour certains, les risques de dangers pour la santé et d ' impacts négatifs sur l Une autre conférence sur les effets exercés par les organismes vivants modifié La conférence traitera des aspects scientifiques de l ' évaluation des risques po Par ailleurs, de nombreux experts d ' OSC sont invités aux réunions techniques Lors des deux premiers forums, des personnalités réputées ont pris la parole a Les entités non publiques jouent aussi un rôle important dans le suivi de l ' éta org/) en est un exemple, de même que les nombreuses ONG actives dans le de Notamment la Déclaration de Rio sur l ' environnement et le développement, la Depuis le Sommet « Planète Terre » de 1992, la société civile a laissé sa marqu Si naguère le contrôle et l ' application des lois étaient pour l ' essentiel du res Seul un petit nombre des problèmes les plus pressants aujourd 'hui -- faim, pa Depuis la tenue du Sommet mondial pour les enfants à New York en 1990, des

VIEWPOINT

Etude des représentations d'autels



Etude des vases



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- <http://web-imtm.iaw.ruhr-unibochum.de/iug/projekte/seeme/installer/index.html>
- <http://web-imtm.iaw.ruhr-uni-bochum.de/iug/projekte/seeme/>



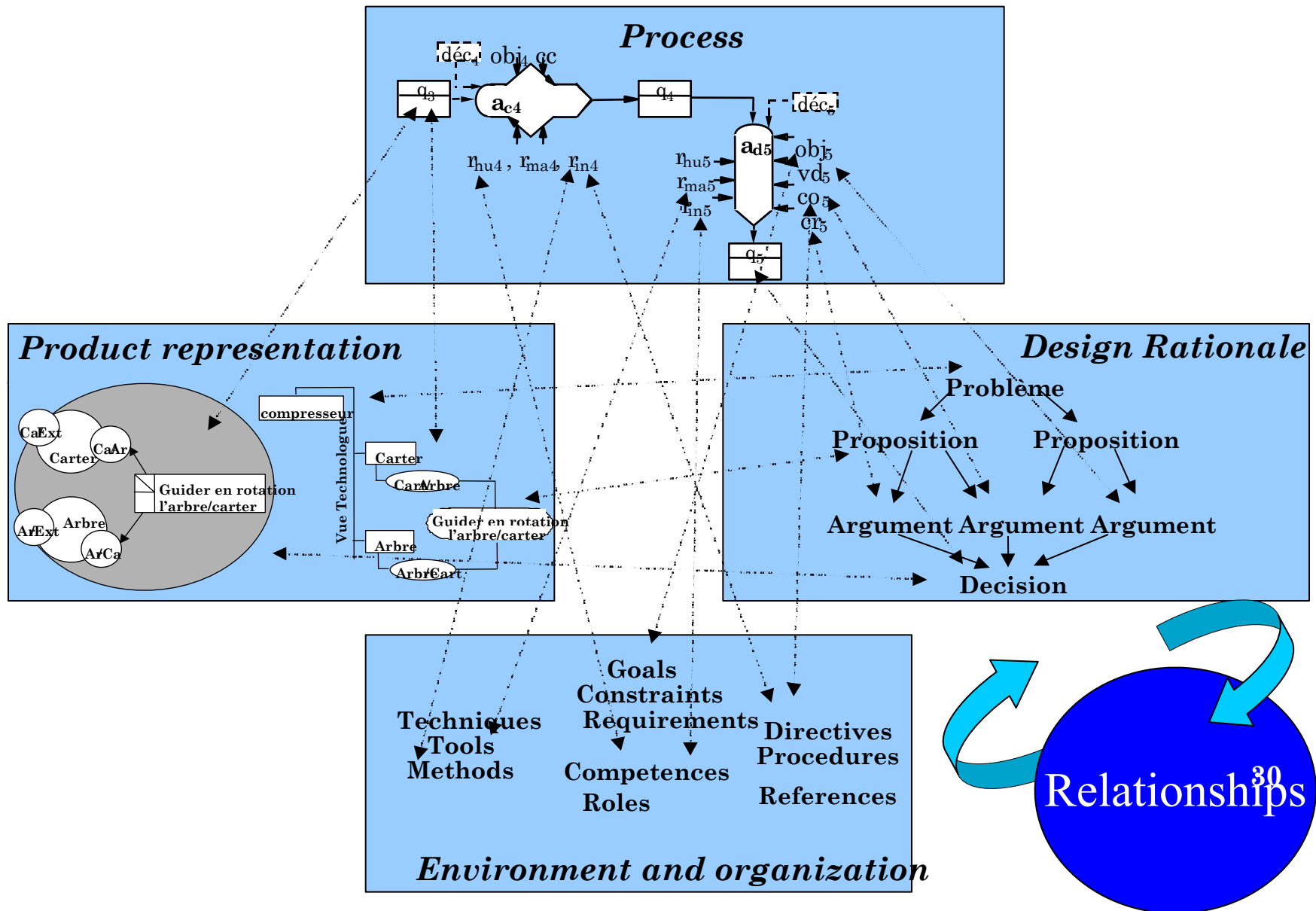
CORPORATE MEMORY

« A corporate memory is a persistent and explicit representation of knowledge and information of an organization » [Van Heijst, 96], [Dieng et al, 03]

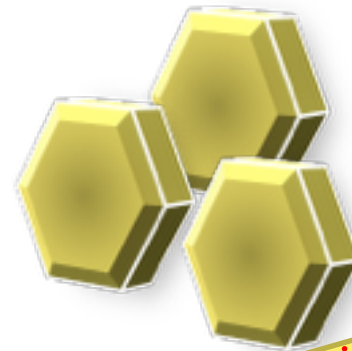
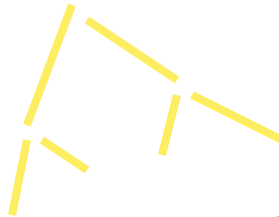
Several memory types: Profession memory,
project memory, management memory

PROJECT MEMORY

Explicitation of the experience learned during project realization [Matta]



Traceability and capitalization of knowledge

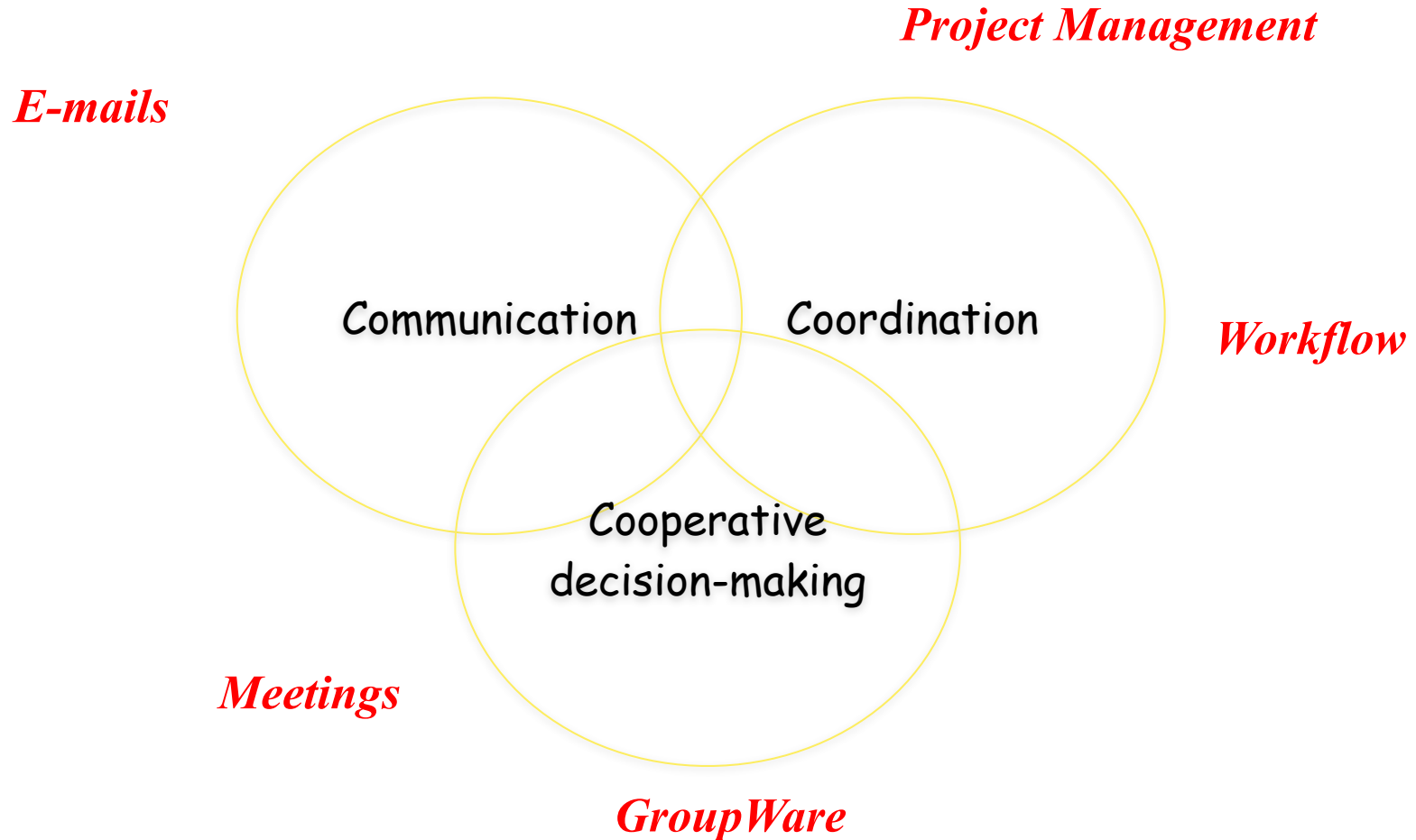
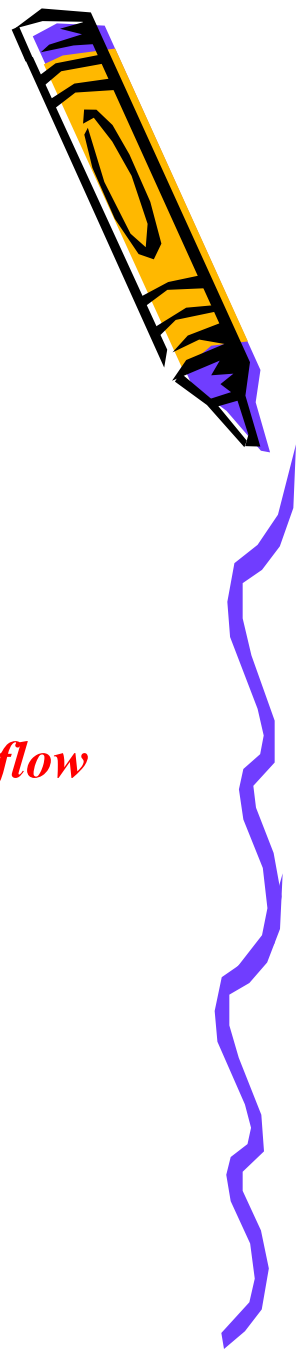


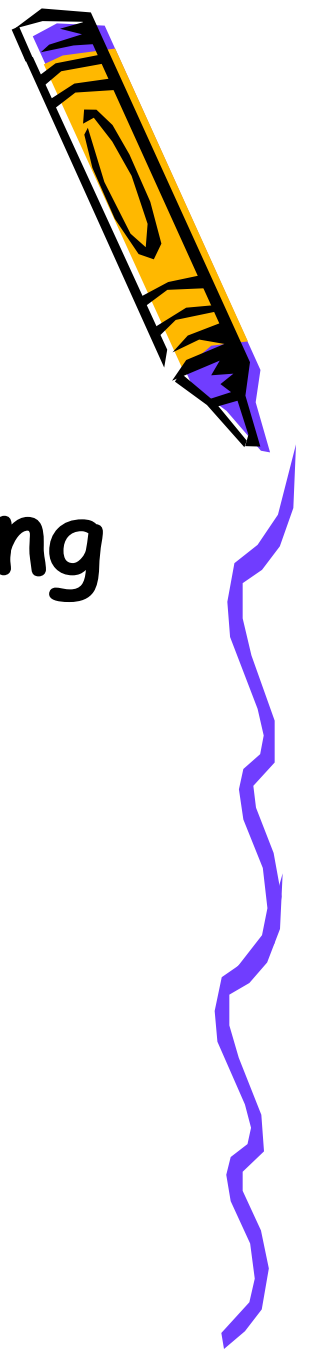
Aggregation and
typing strategies

Keeping
Track

Characterising
concepts

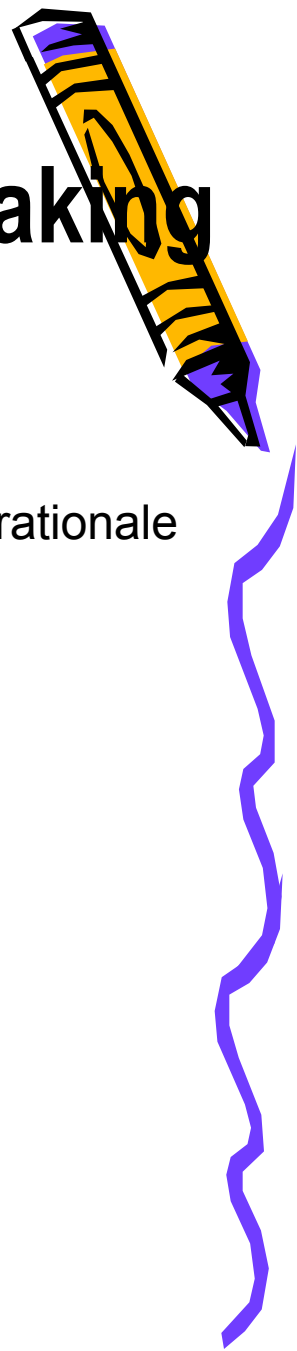
Traceability of Projects





Traceability of decision making

Support for cooperative decision making



➤ **CSCW-Design rationale:**

- ◆ IBIS [Coklin, 98], QOC [McLean, 91] , DRAMA [Brice] (Design rationale tree)
- ◆ DIPA (Problem solving model) [Lewkowicz, 99]
- ◆ DRCS (Graphs : Concepts, Relations) [Klein, 93]

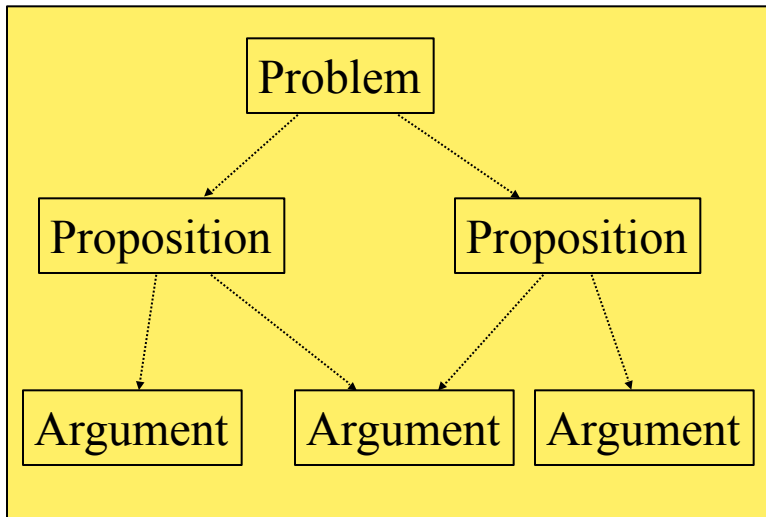
➤ **Project Management:**

- ◆ DRCS (Graphs : Concepts, Relations) [Klein, 93]

Design Rationale methods

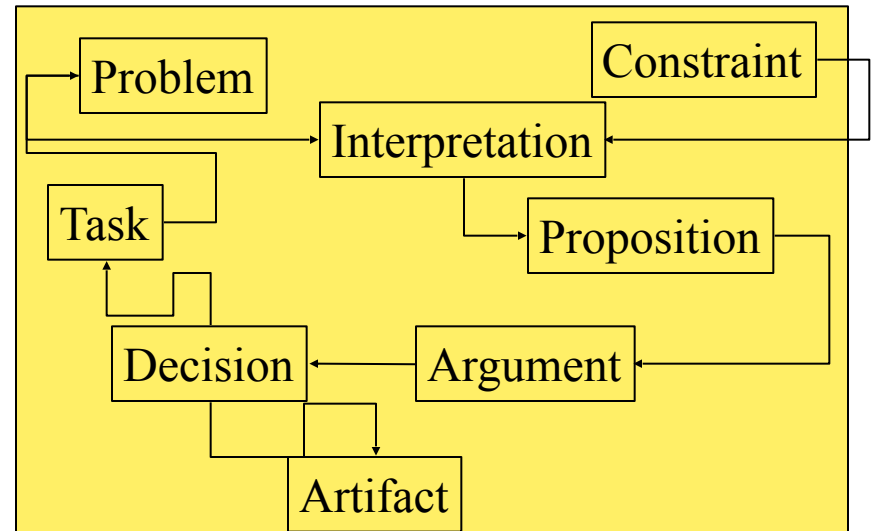


Representation guided by
the decision-making



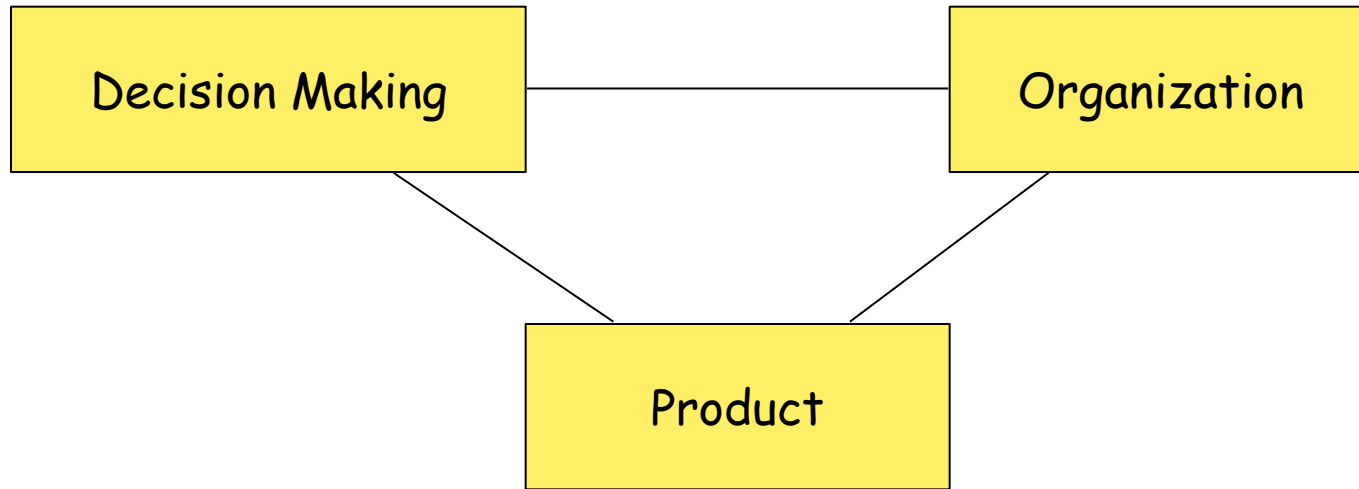
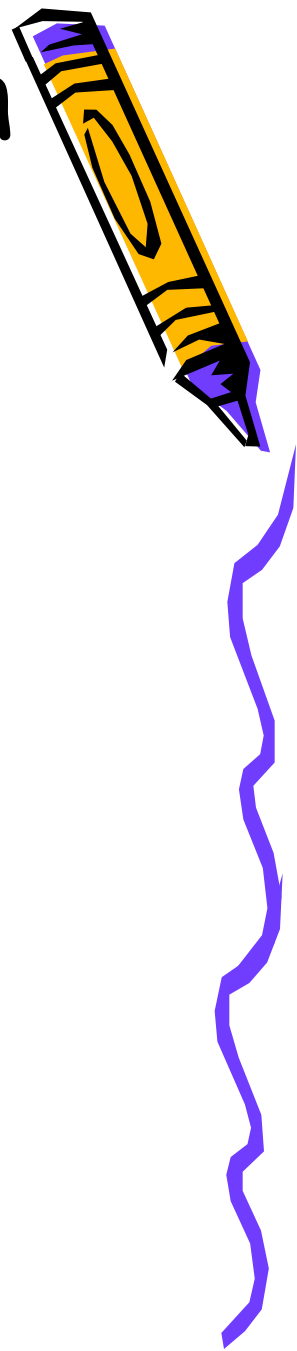
IBIS, QOC, DRAMA

Representation of the dynamics
of problems solving



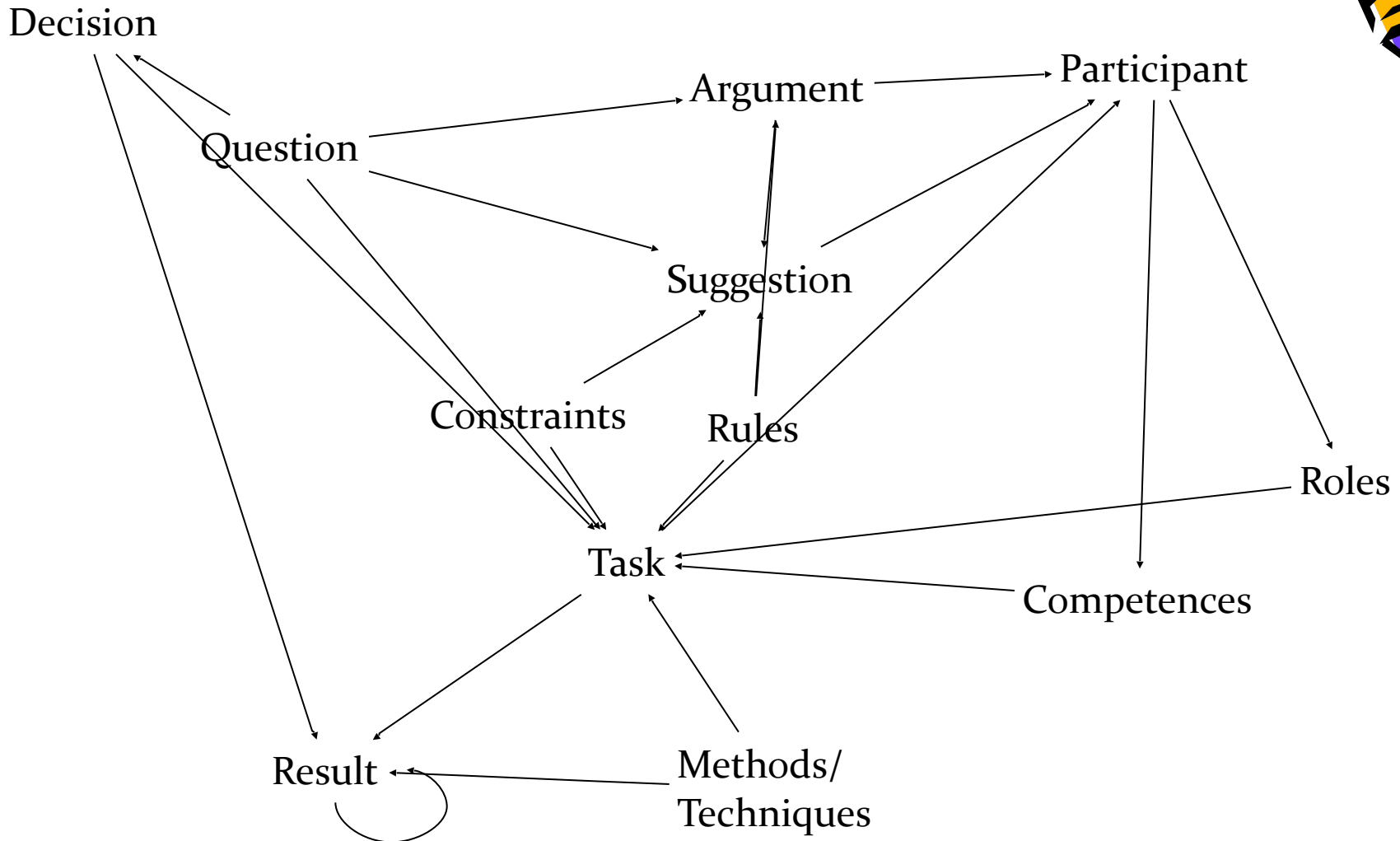
DIPA, DRCS

Traceability and capitalization method

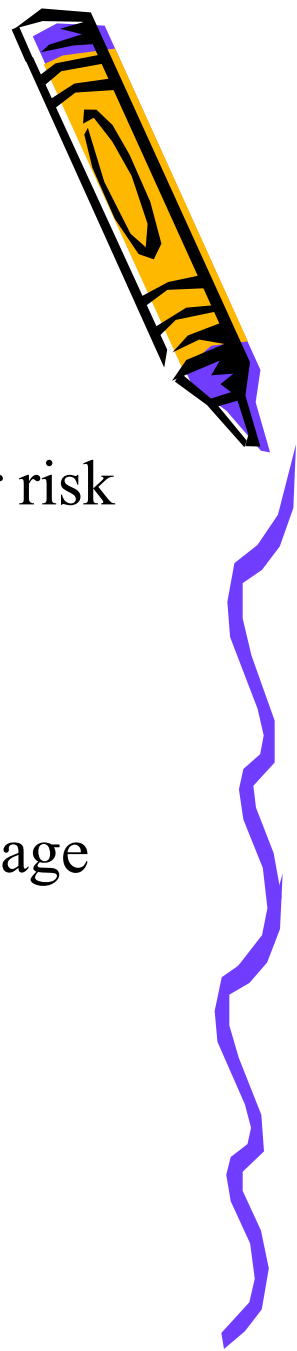


DYPKM [Bekhti, Djaiz, Matta]

Representing structure of PM



Meeting Record Form



- Question 1: Autonomy of company
 - **Particip2:** Which type of competences needed for risk evaluation?
 - **Particip1:** We must allow company to ask sub-contractors to do analysis
- Question 2: Commitment
 - **Particip6:** Company need to recognize the advantage of risk evaluation
 - **Particip1:** Risk evaluation requirments must be in adequation with company objectives.

MMRecord-Record Meeting



Push Meeting Title



Choose Question

Choose Attendee

Record/Break



Aucune SIM 13:55 64 %

Back MM Record + Save

Question	Attendee
Q1	P1
Q2	
dfgg	

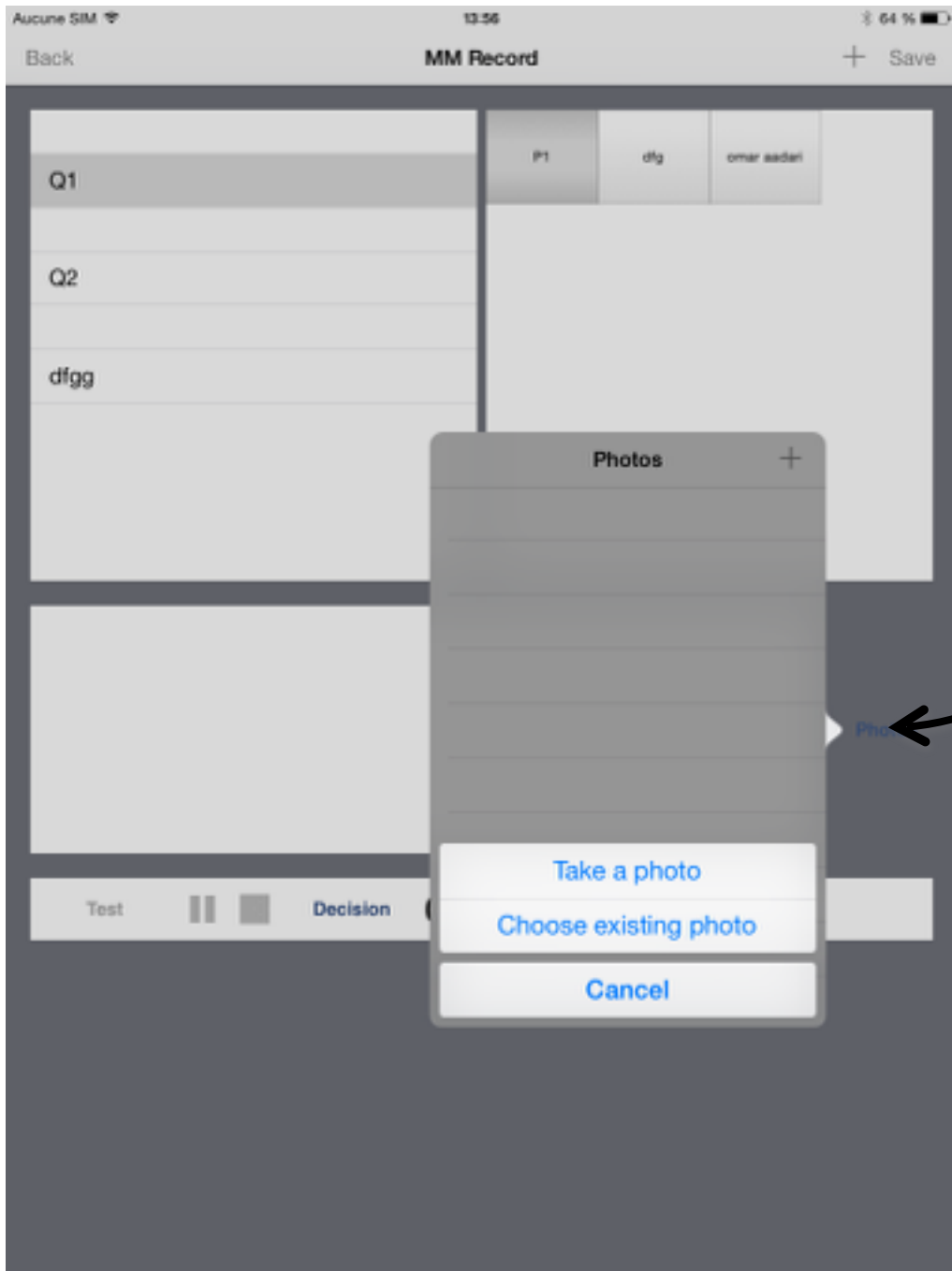
Photos

Test Decision 00:00 Q1 - P1

A Z E R T Y U I O P
Q S D F G H J K L M
↑ W X C V B N ' ? , .
. ? 1 2 3 [] , . ? 1 2 3

+ Add
Question/Attendee





Take Photo



Meeting report form

Question: Autonomy of the Company

Suggestions

- **Human Ressources**: Need special competences
- **Control**: Company have to control its risk analysis

Arguments

- **Flexibility**: methodology have to be in adequation with company

Decision: **Flexibility , Control**

- **Modification of the autonomy principle text and**
- **Add a commitments principle**

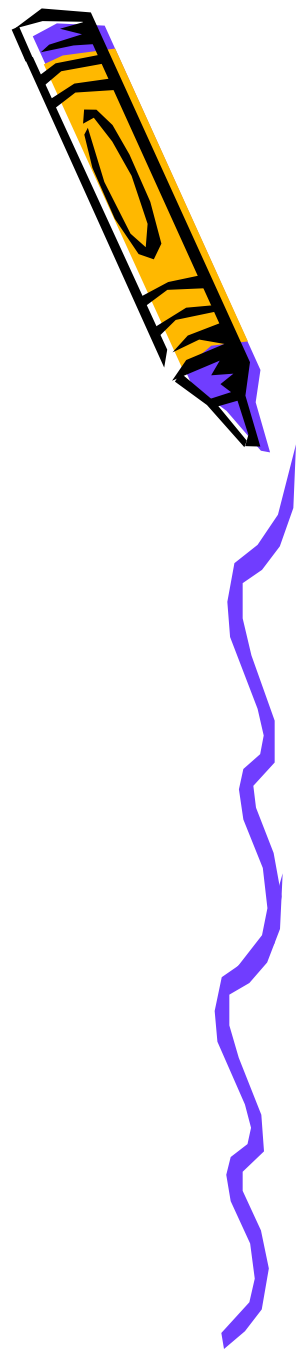
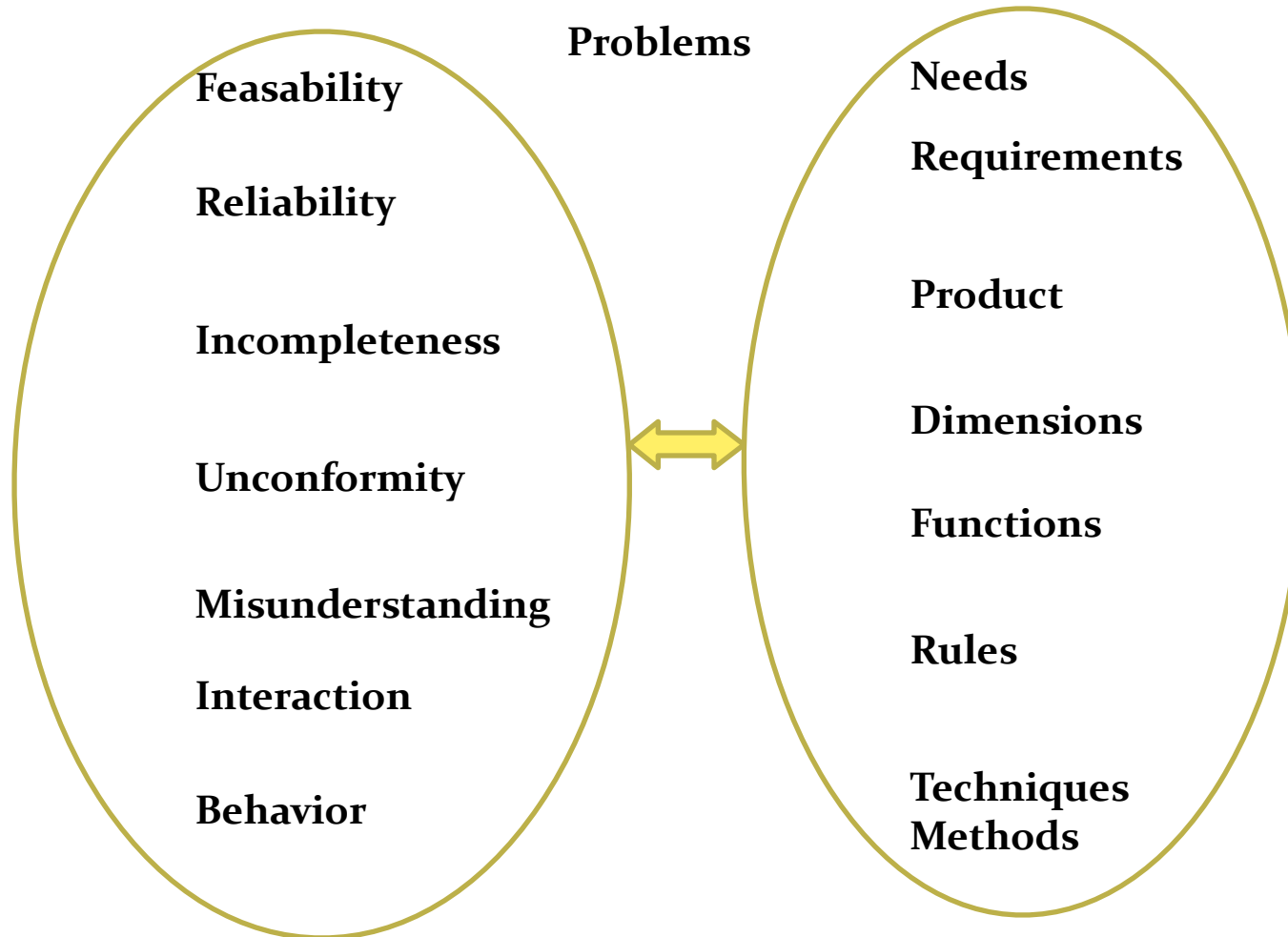


MMReport-Annotate Speech

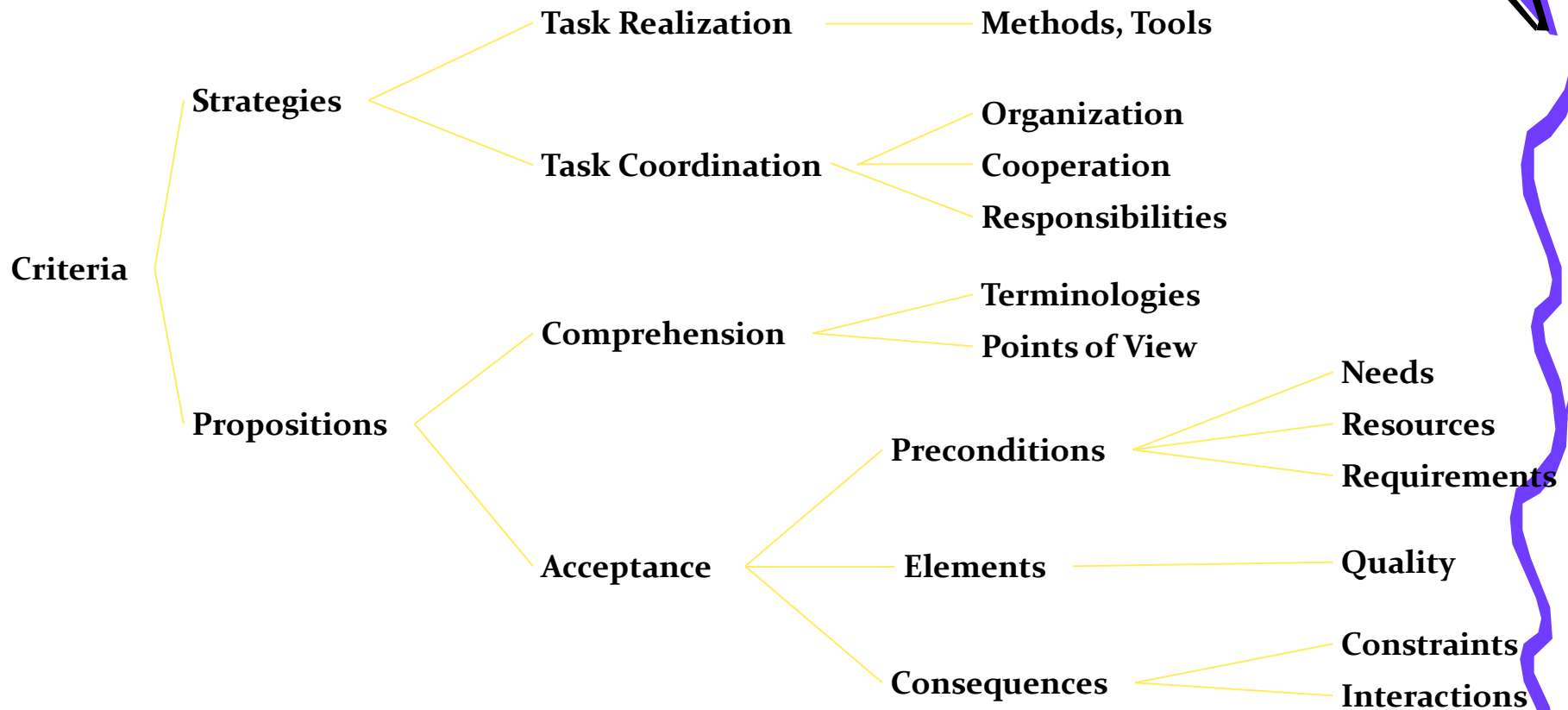
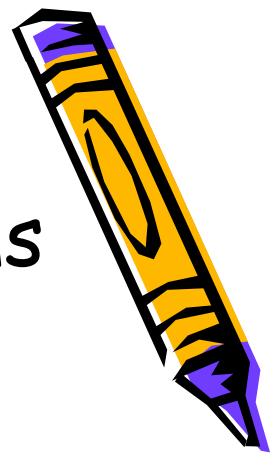
Question/Attendee Speech

The screenshot displays the MMReport-Annotate Speech application interface. At the top, a status bar shows 'Aucune SIM', signal strength, time '18:59', and battery level '81%'. Below this, a header bar contains a 'Meetings list' button, the title 'best papers - 13:56 / 68:34 - wiebo', and 'Settings' and 'Save' buttons. The main area features a video player with a play/pause button and a red vertical timeline. Two speech bubbles are visible: 'best papers nada' at 13:50 and 'best papers wiebo' at 13:56. Above the second bubble are labels 'Formul...' and 'Applic...'. A third bubble labeled 'Argument' is at 14:00. A timeline at the bottom ranges from 13:45 to 14:05. Below the video player is a grid of category buttons: Behavior, Application pb, Formulation, Communicati..., Dimension, Coherence, Misundersta..., Competence..., Function, Concordance, Points de vue, Coordination, Geometry, Elasticity, Materials, Interface, Requirements, and Planification. To the right of this grid is a vertical list of categories: Argumentation, Decision, Information, and Suggestion. A large yellow pencil icon is positioned on the right side of the screen, with a purple wavy line extending from its tip.

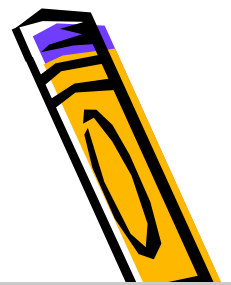
Criteria guide / design problems



Criteria Guides/design process problems



MMReport: HTML Report



Réunion Aidcrisis Project Review 1

UTT, dimanche avril 28, 2013

Présents :

Eric, Jean Pierre, Alain, nada

Excusés :

Invités :

Rapporteur :

Nada

• Interface functions

- nada : several types of functions: data actions - **Function** - **Decision**
- Alain : we need another functions related to alert - **Function** - **Proposition**
- Eric : good idea - **Communication** - **Argument**
- Jean Pierre : located to the accident site - **Formulation** - **Argument**

• Interface look

- Jean Pierre : - **Interface**
- nada : interface look: GIS ? - **Behavior** - **Question**
- Alain : Emergency actors use maps a lot: They have a amp on their wall and they write a lot of thiks on it - **Requirments** - **Argument**
- Eric : the question is how to put data and functions on the Map? - **Behavior** - **Question**
- Jean Pierre : I have an idea they can put functions around the map and some functions can be putted directly on the accident site - **Behavior**
- Alain : OK - **Behavior** - **Decision**

• Interface connections

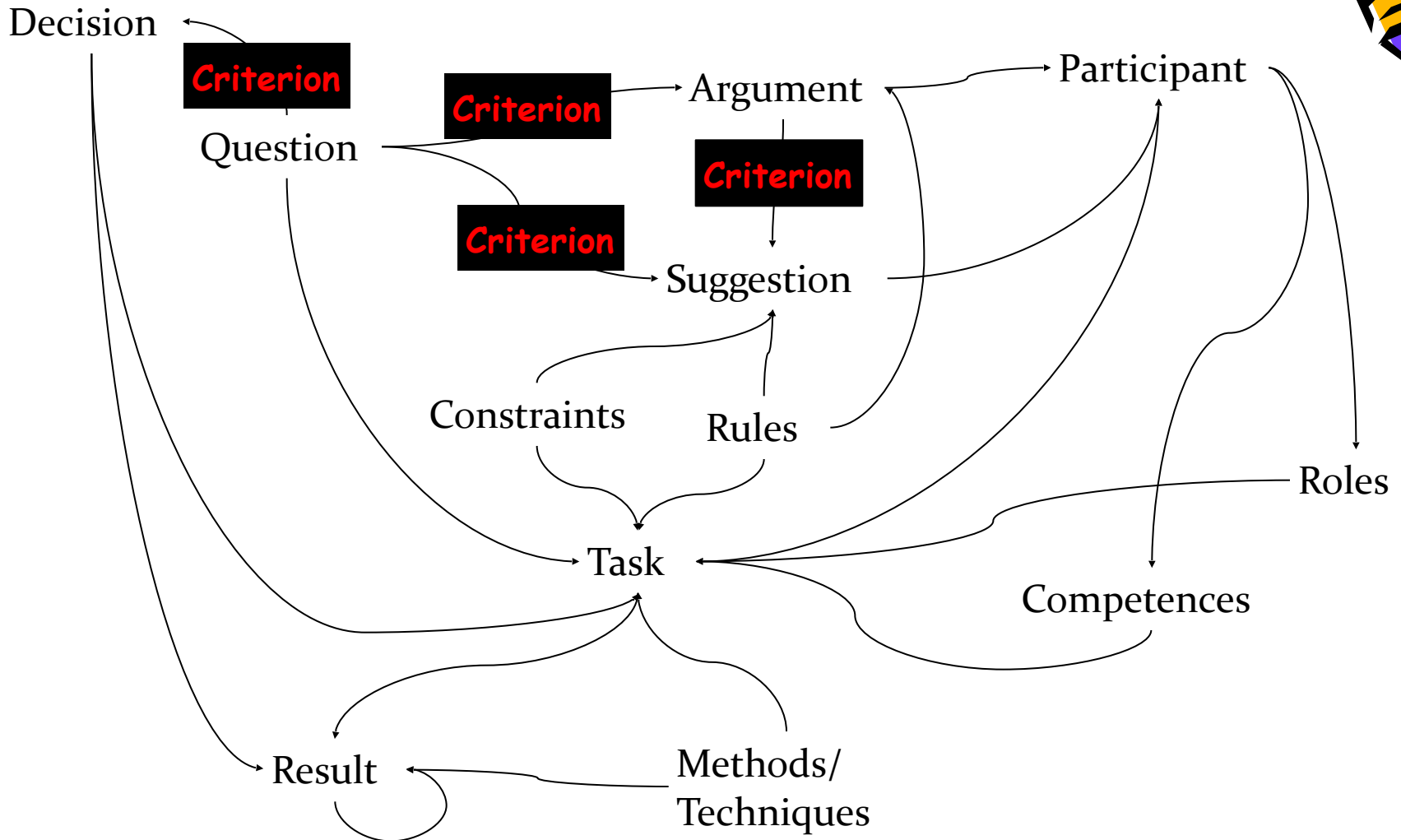
MMReport - Result (XML file)



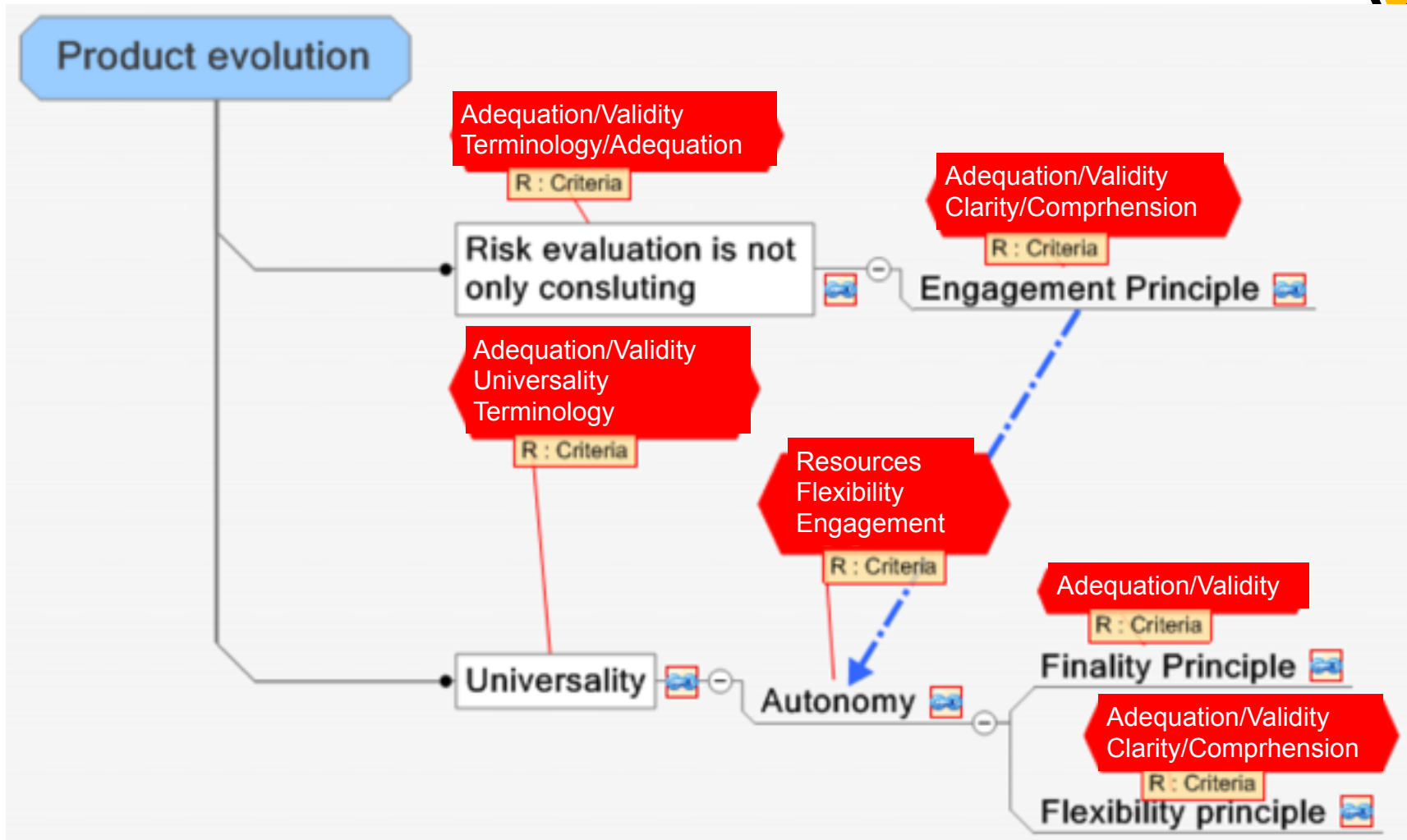
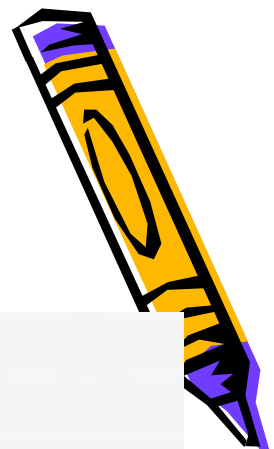
title	date	place	attendee	attendees_excused	guests	rapporteur	question
Wisg			Nada				
Wisg			Patrick				
Wisg			François				
Wisg			Emilie				
Wisg			Wiebo				
Wisg							invited speaker
Wisg							Poster Session
Wisg							best papers
Wisg							paper review process
Wisg							iother questions

start	attendee3	question4	comments	type	decision	name
0	Patrick	best papers	best papers can be proposed to a special issue	suggestion		Communication
80,472971	Nada	best papers	a special issue on safety can be proposed	suggestion		Communication
83,574195	Francois	best papers	Good paper present good work on Safety	Argument		Formulation
91,610091	Nada	best papers	A good idea', so we contact journals to propose special issue	decision		Communication
105,505578	Patrick	paper review process	Who can evaluate Paper ?			competences
328,678118	Emilie	paper review process	Evaluation of short paper	suggestion		Planning
515,449433	Wiebo	paper review process	Short Paper evaluation is a good decision due to the time.	Decision		Planning
527,705669	Nada	paper review process	Long Paper can be asked for a book on Safety	suggestion		Communication
597,115964	François	paper review process	Evaluation will be done by CS	Decision		Coordination

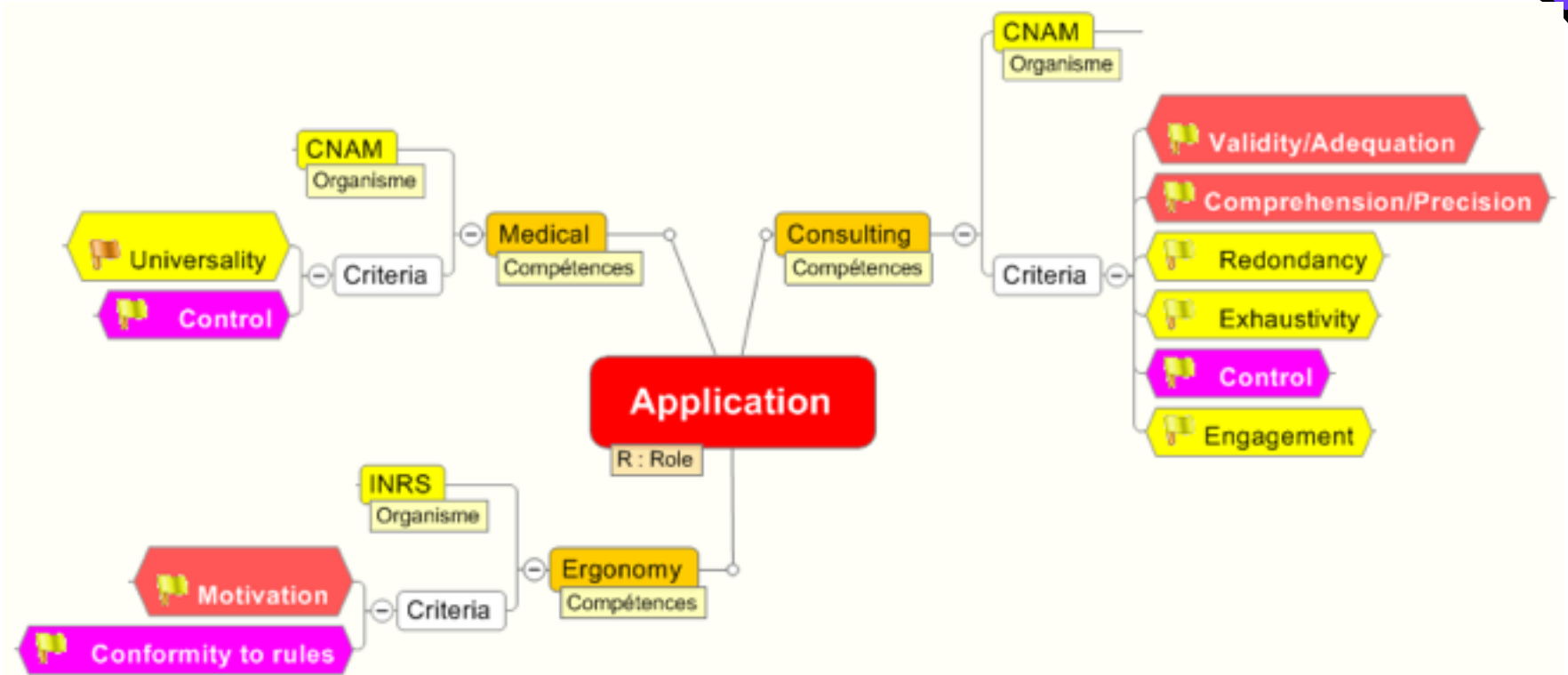
Roles



Example of Results

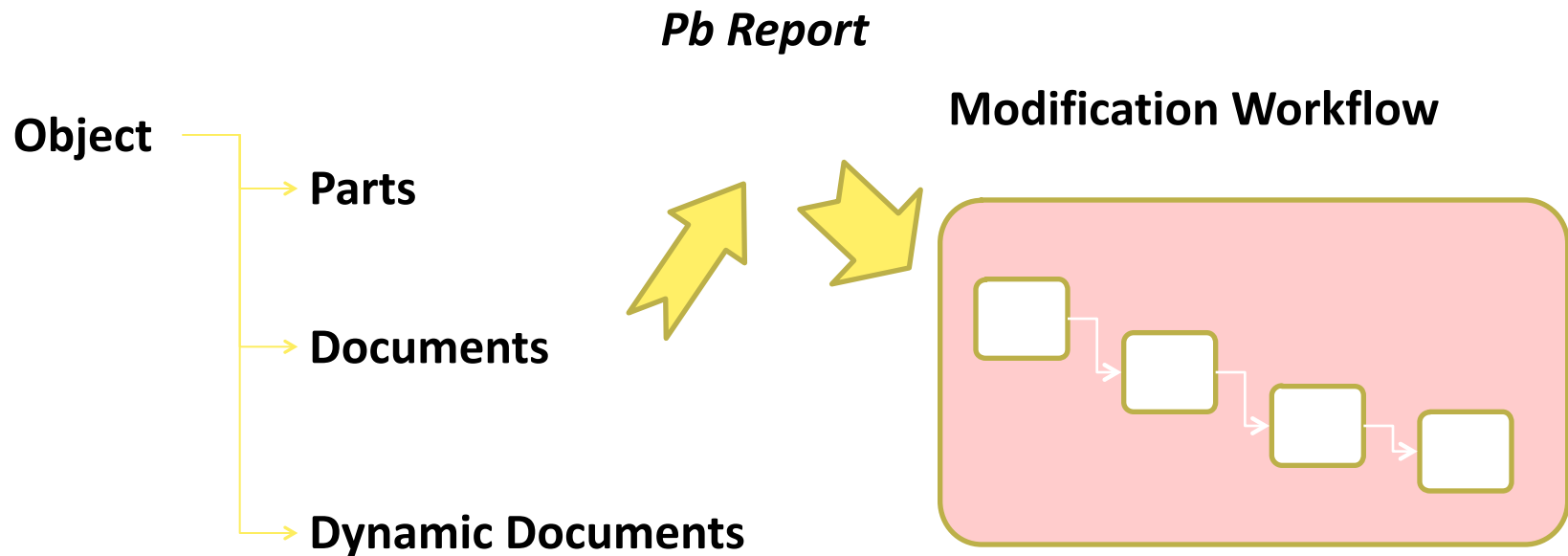
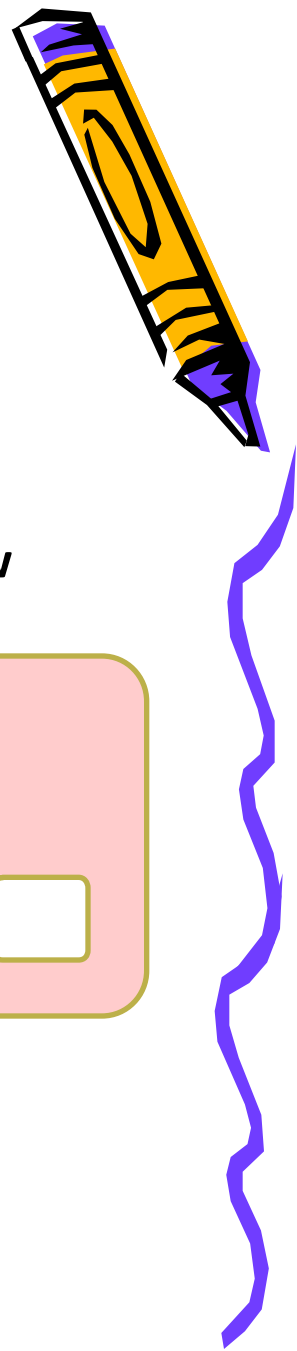


Example of Results

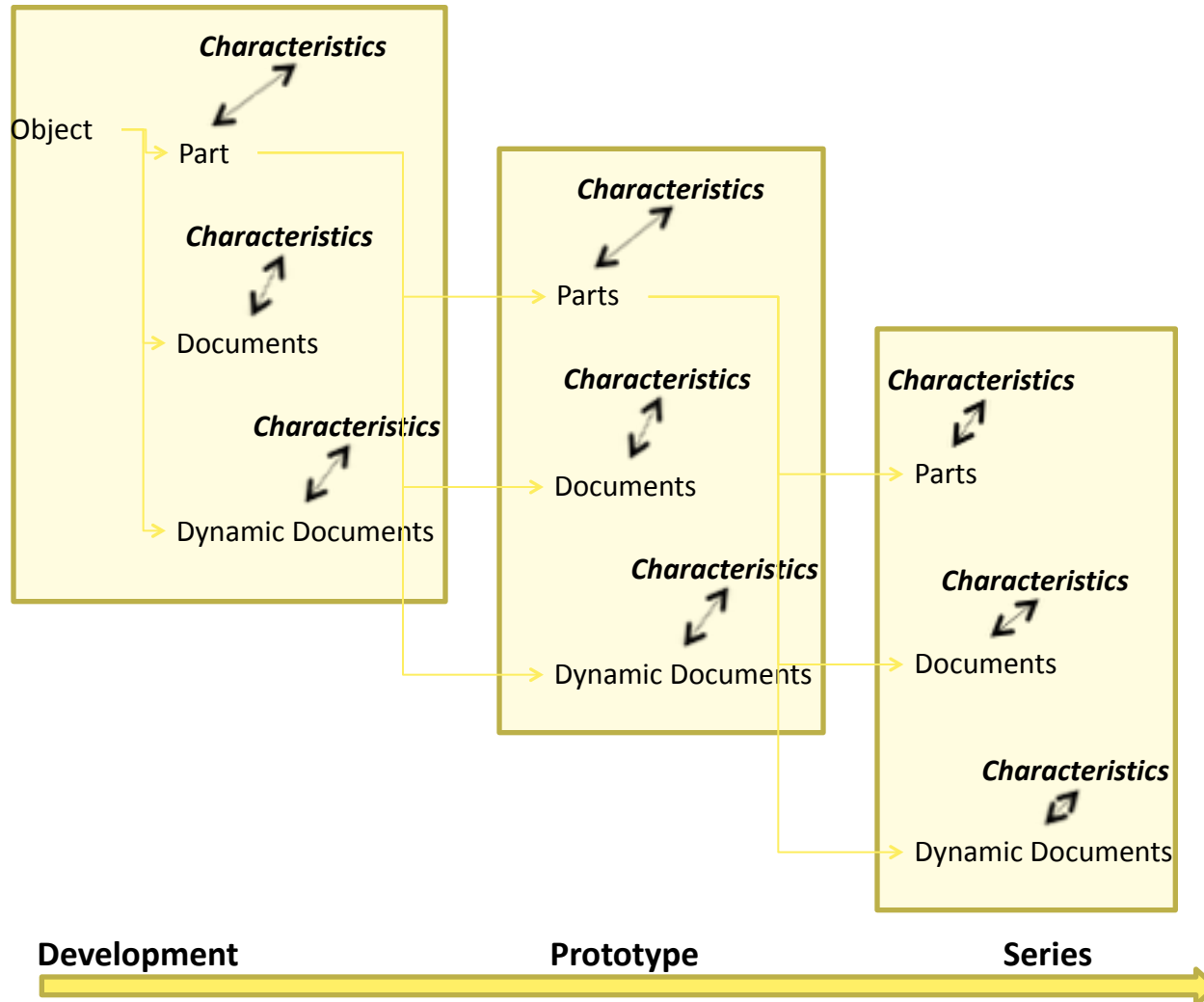


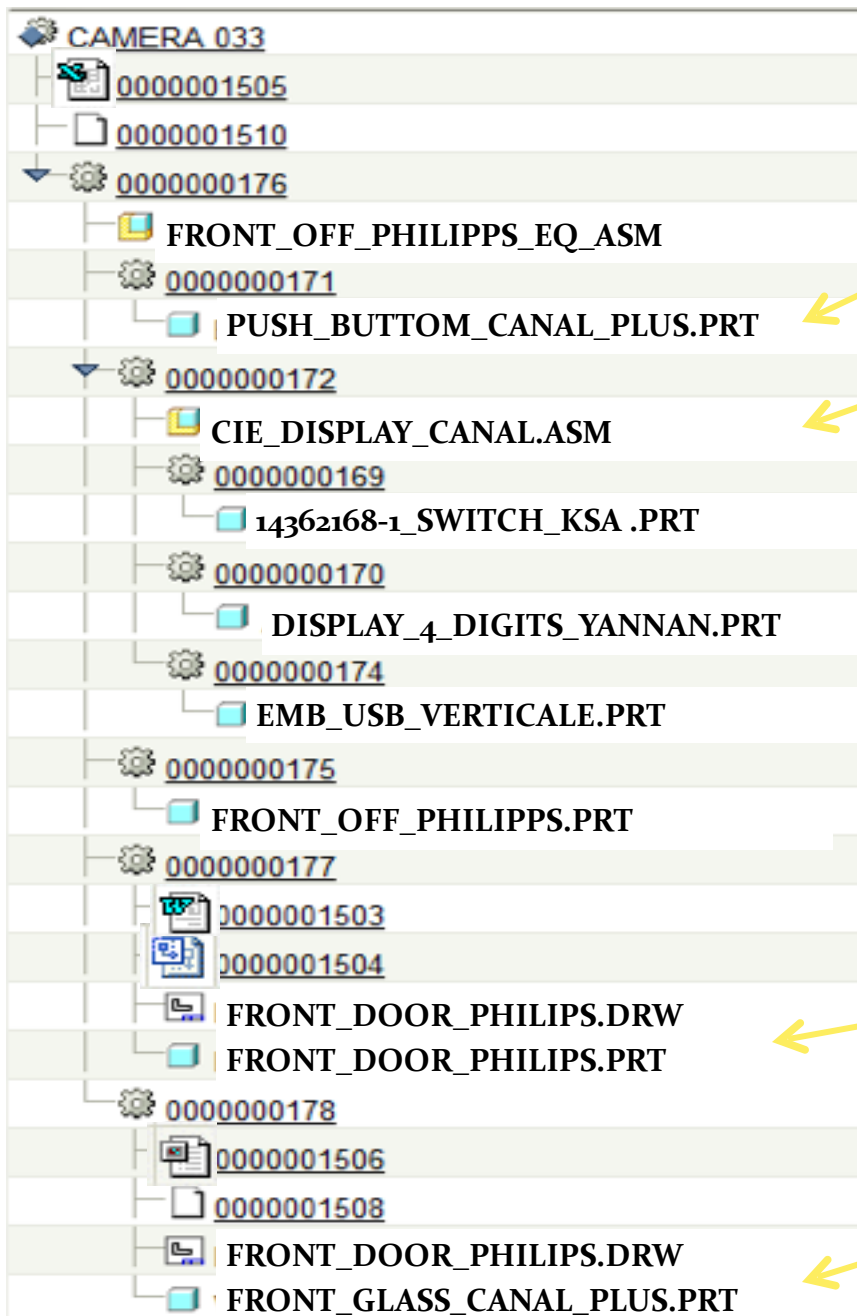
Integration on PLM

Representing Product in Windchill



A yellow pencil with a purple eraser and a purple band is shown at an angle, drawing a wavy purple line. The pencil has a black outline and a purple band with a yellow outline. The line it is drawing is a thick, wavy purple stroke.





Interaction

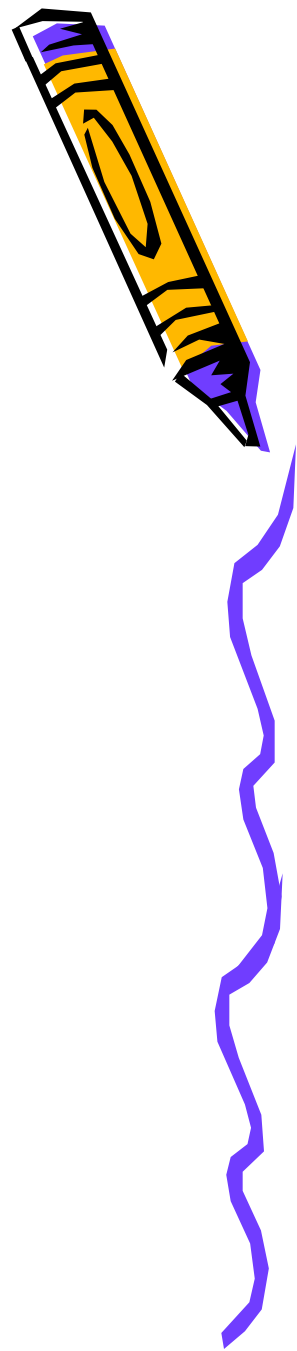
Behavior

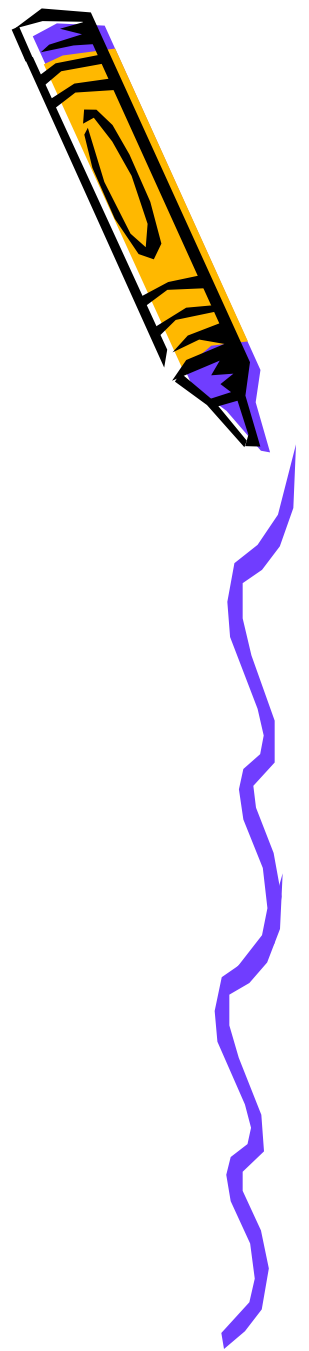
Dimensions

Dimensions

Quality

Interaction





Traceability of communications

François Rausher

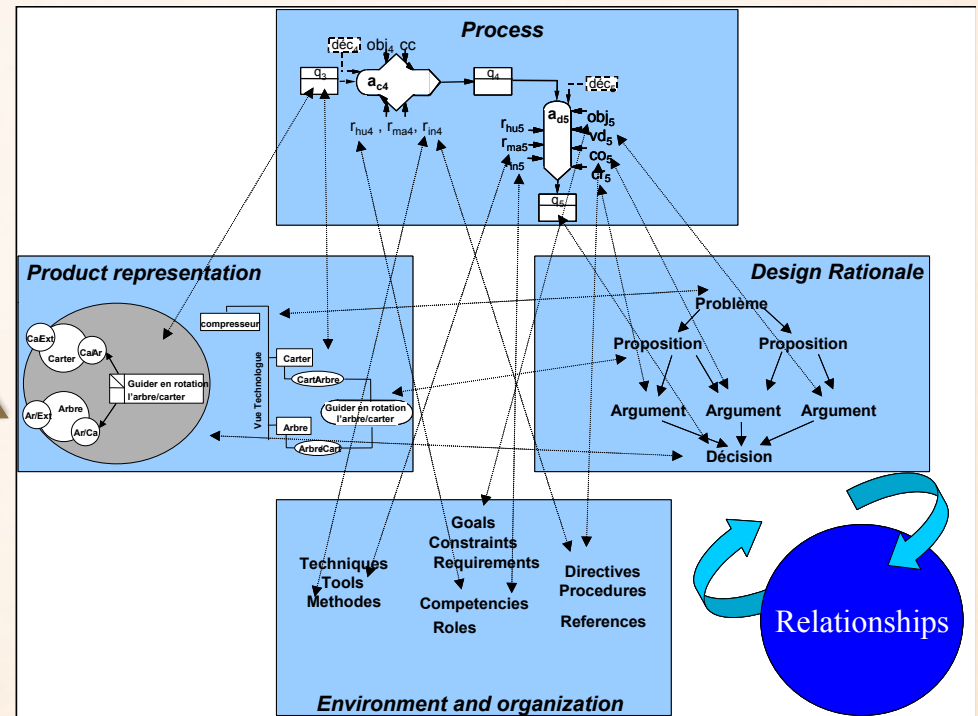
TRACEABILITY OF COMMUNICATION

RAUSCHER, MATTA, ATIFI



Professional
e-mails

*Analysis
&
Structuring*

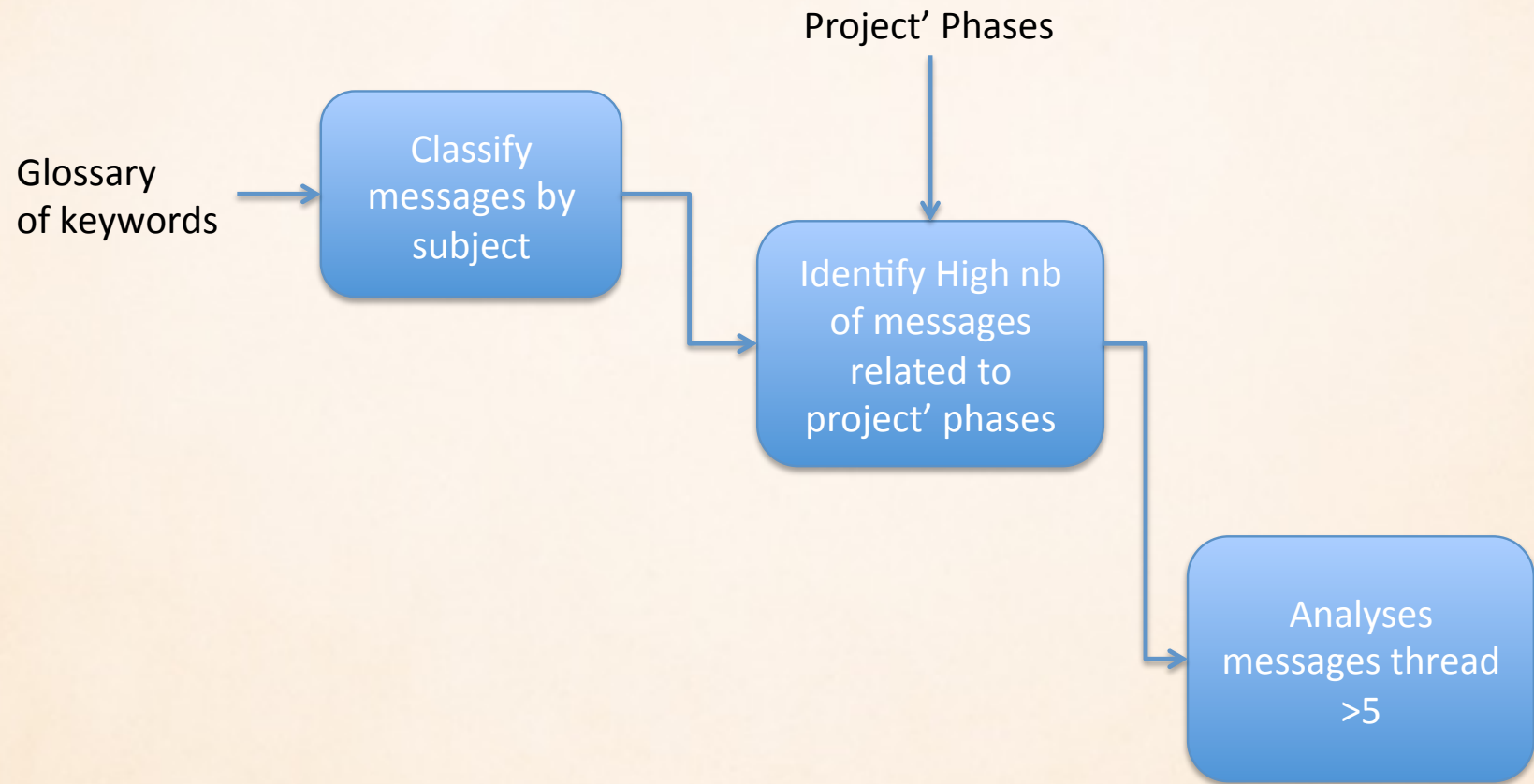


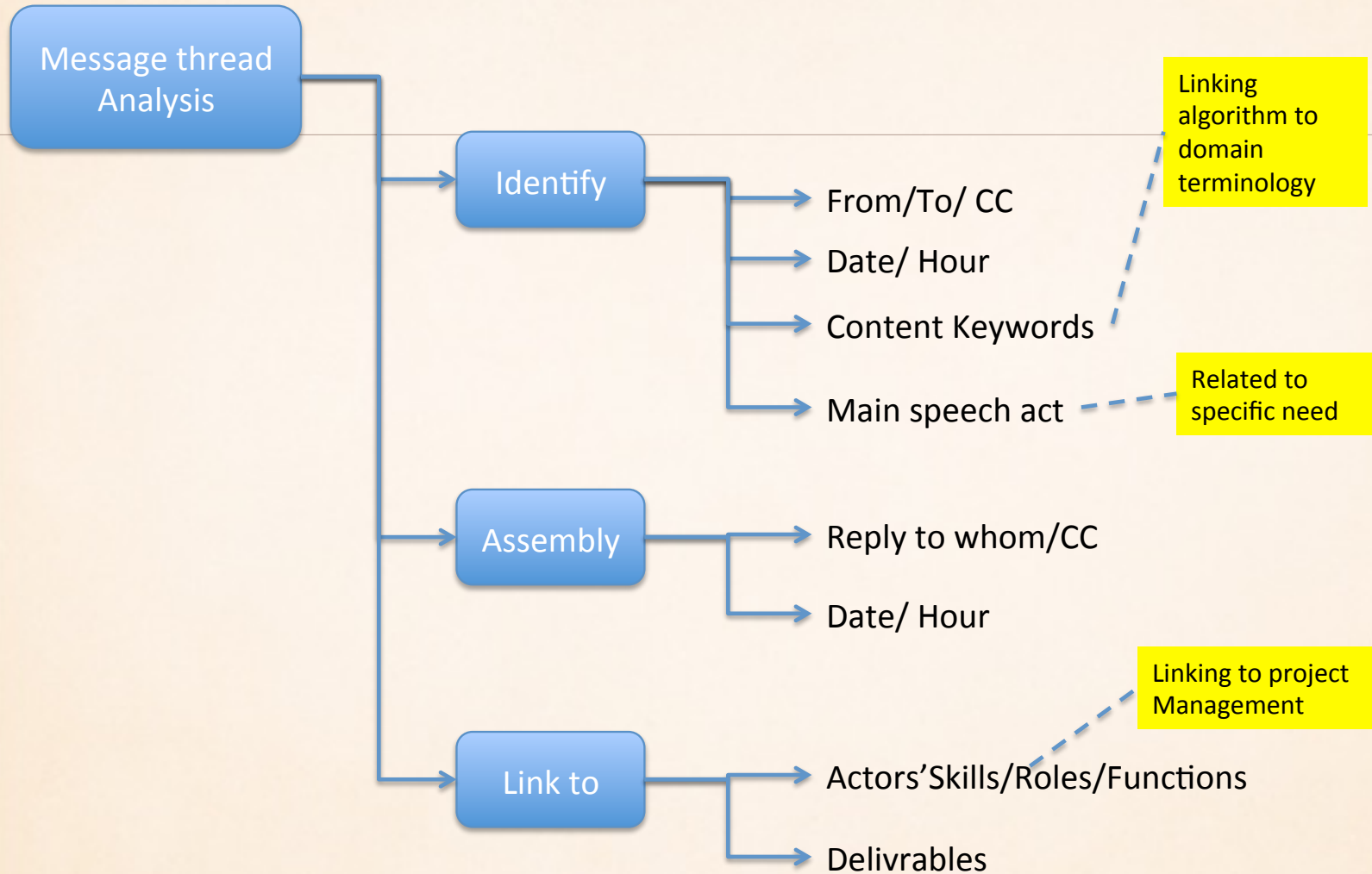
Project Memory
K. produced during a project

ANALYSIS

- ❖ Tagging and identifying topics: (Yelati, S.; Sangal, R., 2011)
- ❖ Natural language processing to identify tasks and commitments (Kalia K.A, 2013)
- ❖ Pragmatics by studying dialogue to identify speech intention (Core et al, 1997), (Carvalho et al, 2006), (Lampert et al, 2006), De Felice et al, 2013)

***Our approach: mixing pragmatics analysis, to context reconstitution
=> project knowledge***





PRAGMATICS ANALYSIS

- ❖ REPRESENTATIVES: which commit the speaker to the truth of the expressed proposition
- ❖ DIRECTIVES: which are attempts by the speaker to get the addressee to do something
- ❖ COMMISIVES: which commit the speaker to some future course of action
- ❖ EXPRESSIVES: which express a psychological state
- ❖ DECLARATIONS: which affect immediate changes in the institutional state of affairs and which tend to rely on elaborate extra-linguistic institutions

COORDINATION MESSAGES

Components of coordination	Associated coordination processes
Goals	Identifying goals
Activities	Mapping goals to activities. (e.g., goal decomposition)
Actors	Selecting actors, assigning activities to actors
Interdependencies	“Managing” interdependencies

[Malone and Crowston]

COORDINATION ACTS GRID

- ❖ An informative act is an act which appoints, presents or explains a state, a role or a launch of the project.
- ❖ A descriptive act explicitly describes the achievement, changes and developments of the activity or task.
- ❖ An evaluative act contains positive or negative judgments on the implementation of the project or participants.
- ❖ A request act occurs when a participant asks another participant to accomplish a special task (action) or to give information (response). This request can be direct (order, you must, etc. or indirect (advice, proposal, suggestion, etc.).

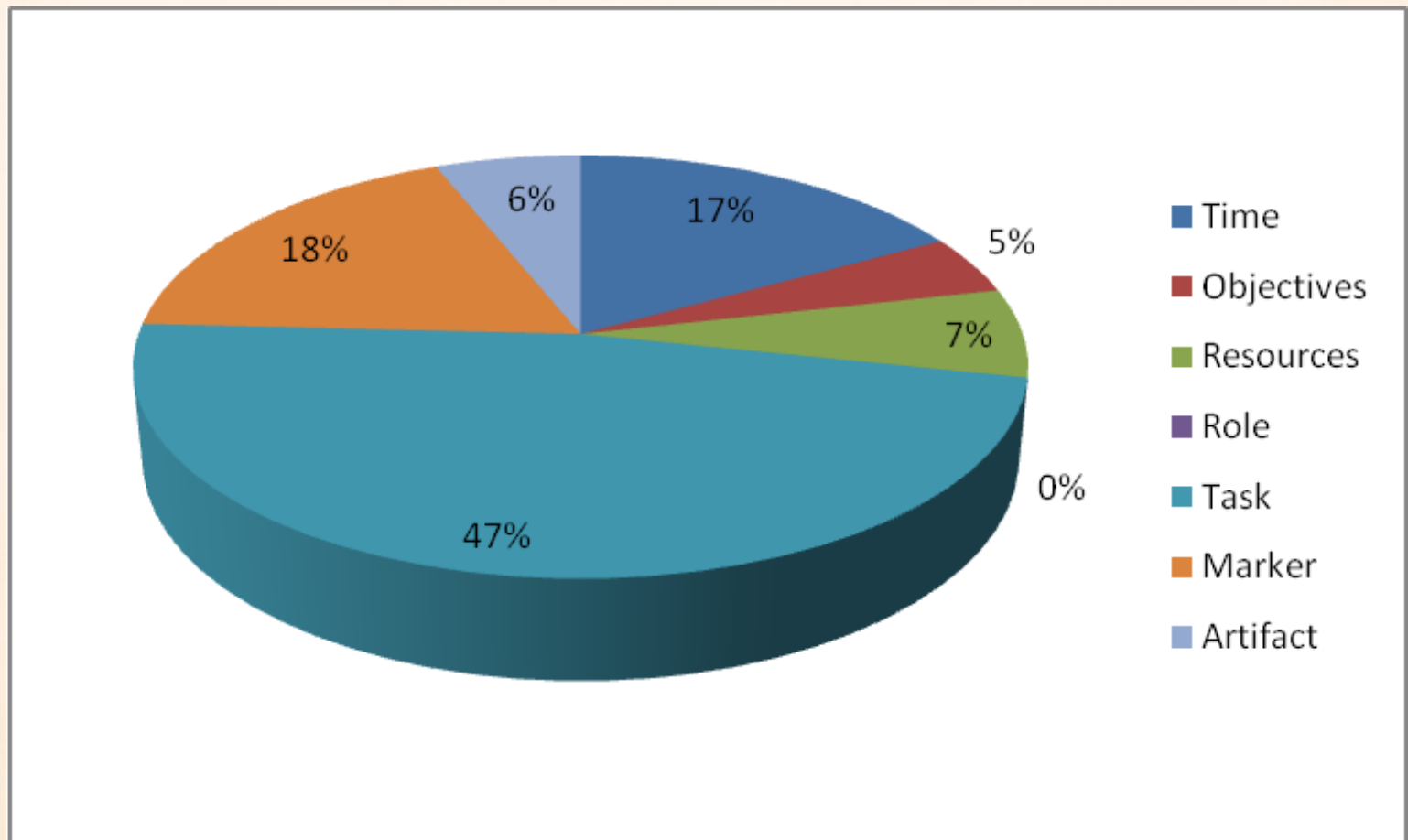
EXAMPLE: ANALYSIS OF DESIGN PROJECTS

- ❖ Forum used by students in 2 engineering schools and 2 cities (UTBM and Ecole centrale Lyon)
- ❖ 4 projects: bobsleigh, a sports car, a cooker and a mobile telephone

	Project messages				
	P1	P2	P3	P4	Total
Number of messages	18	75	103	61	257
Coordination messages	14	62	96	50	222
Problem solving messages	1	8	2	5	16
Others	3	5	5	6	19

FIRST RESULTS

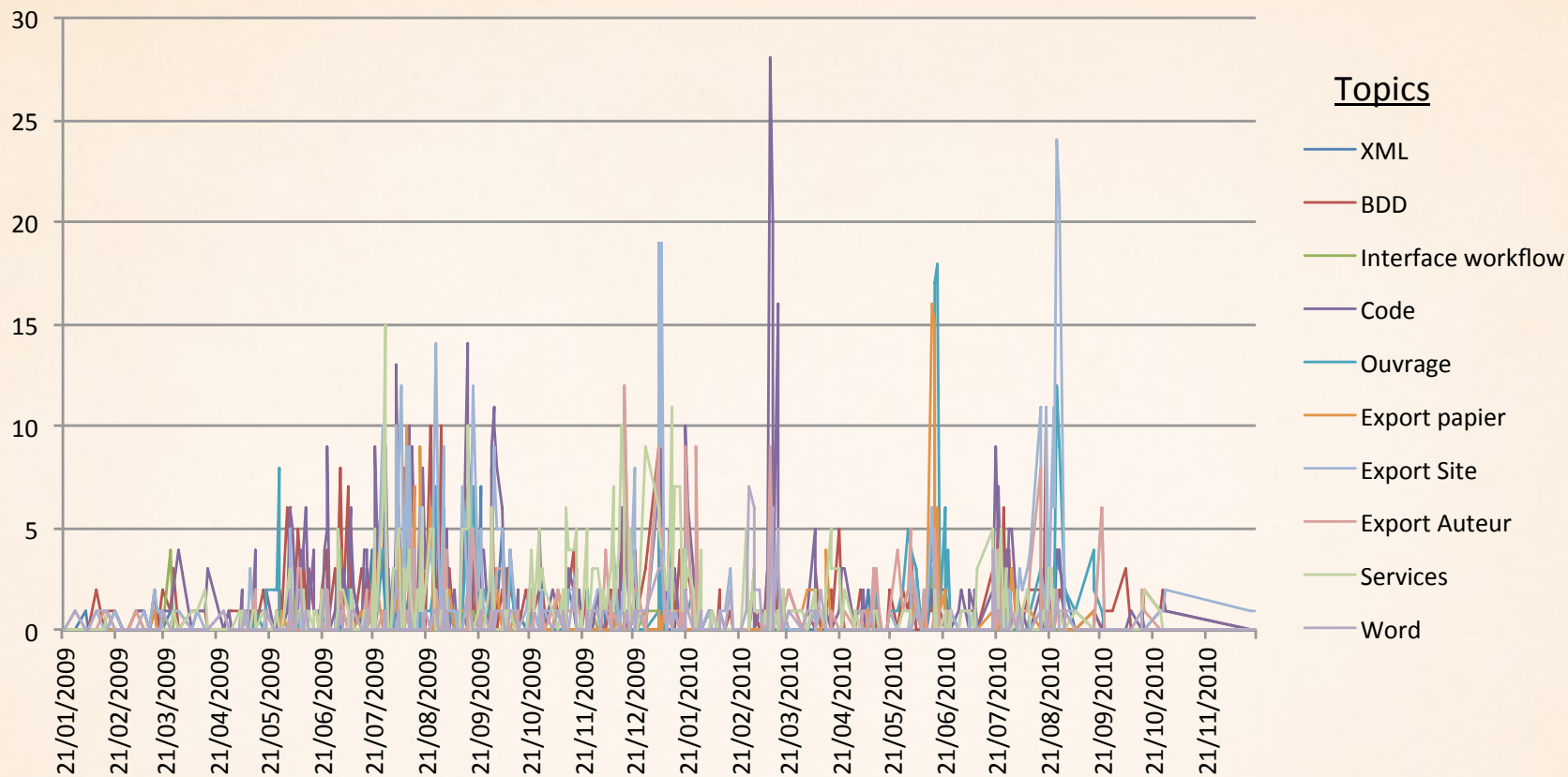
443 MESSAGES



Sentences	Time	Resources	Role	Task	Artifact	Action
All of us are going to work on the Requirement Notebook of Souhayel ...			x	x		Request
I just changed the file Bpwin. The PDF is a little longer to get, I'd do that soon.				X	x	Describe
I changed the 3D CAD to CAD 4D ..				x	x	Describe
The file summarizing the manipulation of the ACSP is online.		x				Inform
Note: The tasks in the ACSP are not really in order (creation order rather than order of execution).		x		x	x	Inform

ANALYSIS OF PB.SOLVING MESSAGES

- ❖ Request Acts -> Problem
- ❖ Linking to project organization



DB Importation

Document DB Specif & Dev

Workflow link Specif & Dev

HCI specif

Export to Magazine and Website

Web service Dev

Test

Test

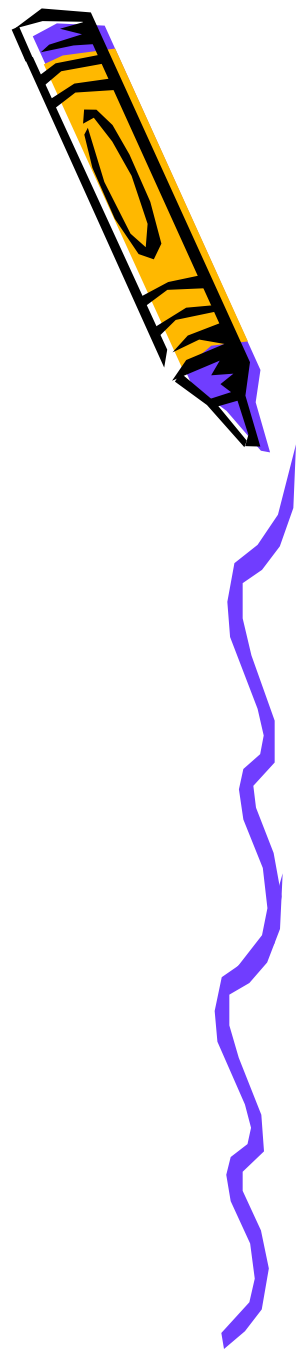
Phases

		From			DATE	Related Topic	Skill
		RT			05/06/2009 12:40		Soft
			to: SRA			Code, XML	Law
			cc: JBJ				IS
			FX				Soft, IS
		SRA			05/06/2009 19:06		Law
			to: RT			Code, XML	Soft
			cc: JBJ				IS
			FX				Soft, IS
		JBJ			05/06/2009 19:10		IS
			to: SRA				Law
			cc: FX				Soft, IS
			RT				Soft
		RT			08/06/2009 09:31		Soft
			to: JBJ			Code	IS
			cc: SRA				Law
			FX				Soft, IS
		RT			09/06/2009 11:02		Soft
			to: SRA			XML, Co	Law
			cc: JBJ				IS
			FX				Soft, IS
		SRA			09/06/2009 13:23		Law
			to: RT			Code	Soft
			cc: JBJ				IS
			FX				Soft, IS

PRAGMATICS ANALYSIS GRID

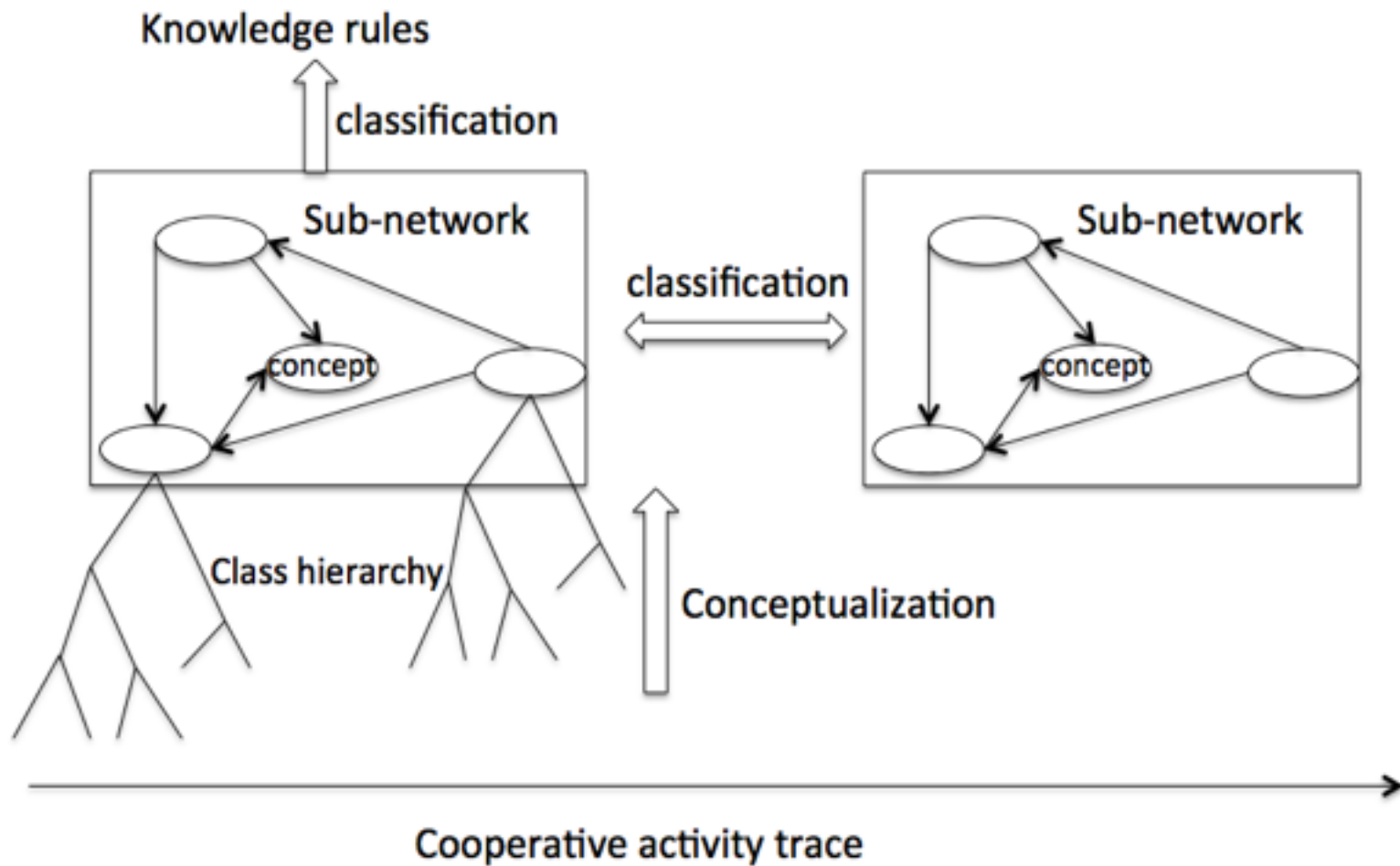
Request Form	Linguistic form	Examples
Direct request	Imperative	Do x
	Performative	I am asking you to do x.
	Want or Need	I need/want you to do x
	Obligation statements	You have to do x
Indirect request	Query questions about ability of the hearer to	Can you do x?
		Could you do x?
	Query questions about	Would you like to do x?
	Willingness of the	
	Statements about the willingness (desire) of the speaker	I would like if you can I would appreciate if

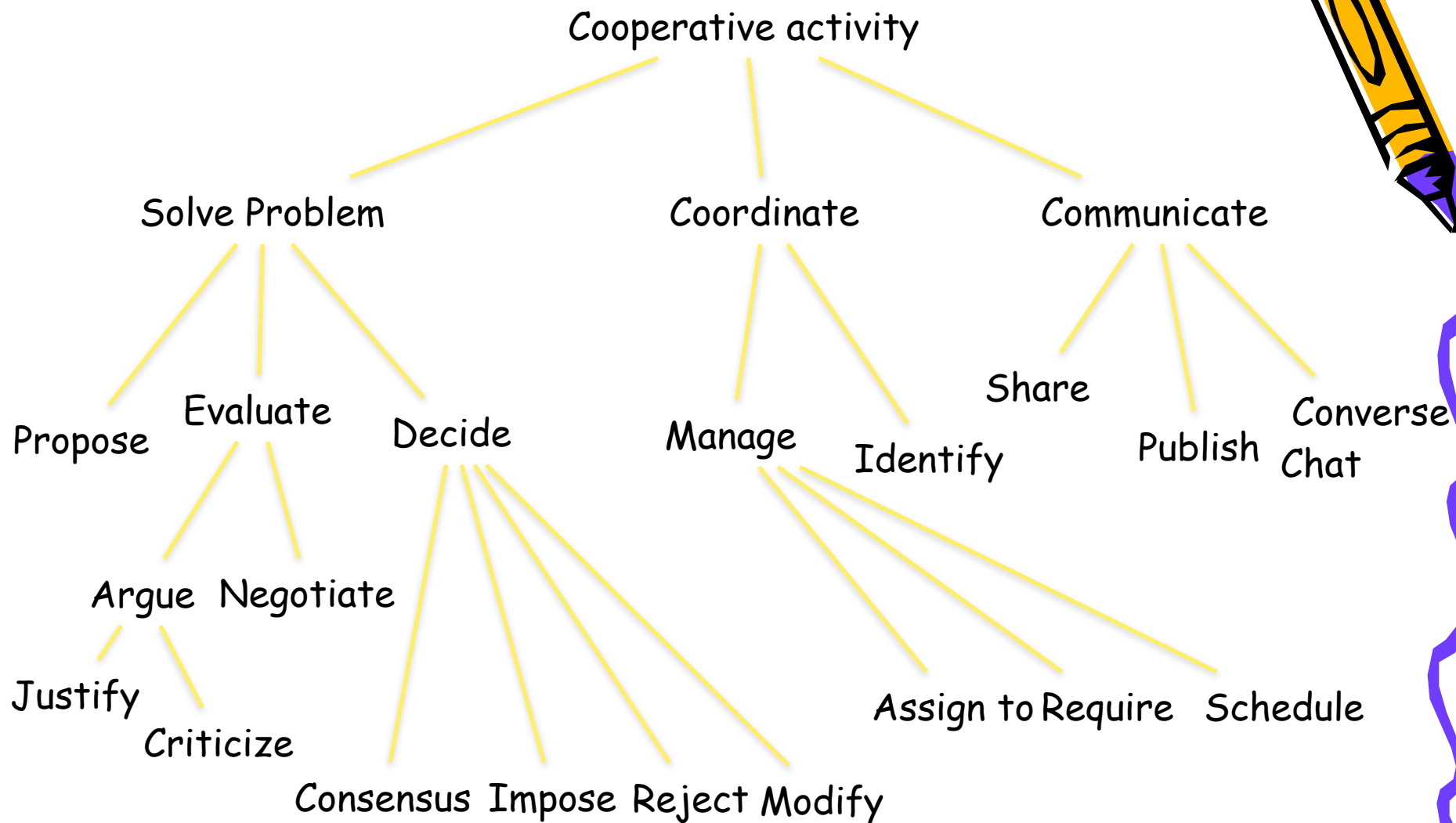
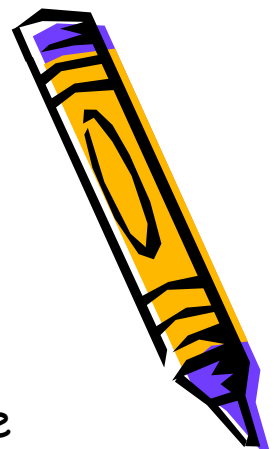
From			Date	Sentence elements	Related Topic	Function
SRA			2009-06-05 12:40:46.	I put in "Bold", what I need :		Request
	to:	FX		1- *Inssurances*		
	cc:	JBJ		2- Text without tags Texte in XML files	Code	
		CV		3- Tag Pb : Text outside tag in XML	XML, Code	
		RT		4- Tag Pb is opened and not closed, as same as, tag is badly imbricated		
FX			2009-06-05 19:06:34.			Answer
	to:	SRA		1- *Inssurances*		
	cc:	JBJ		I propose to convert: Xpress format in XML	XML	
		CV		Beware, the text will contain a lot of error blanc, "enter" and image	Code	
		RT		I can transform it on enriched XML	XML	



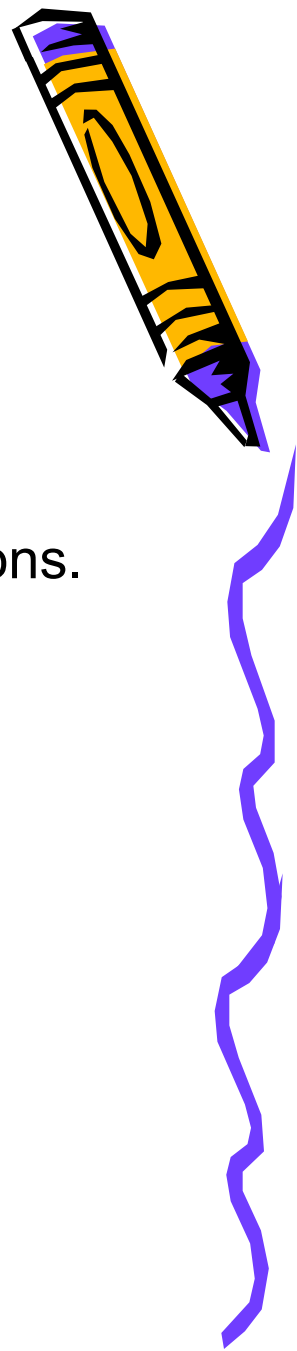
Aggregation/Classification

Xinghang Dai





PM Knowledge Classification



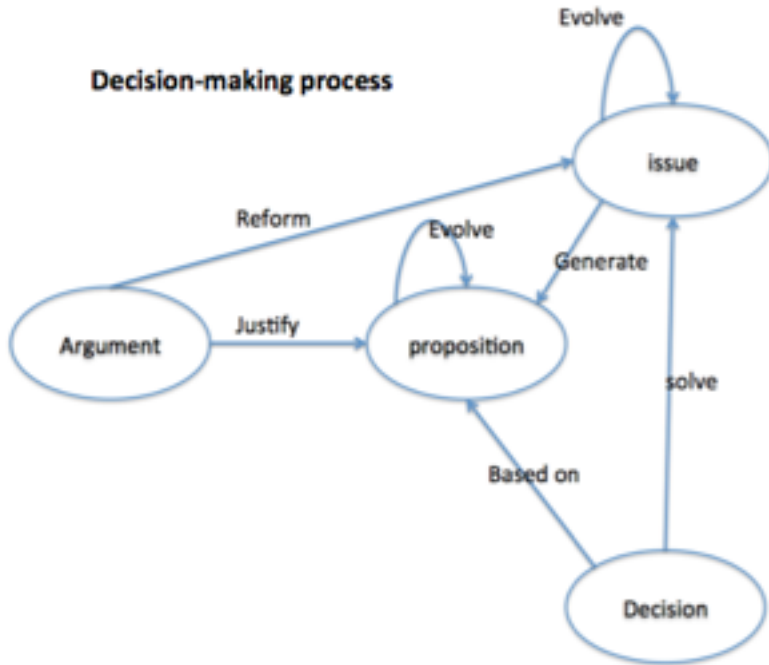
Classification based on PM knowledge structure.

Classification of networks, emphasise on concept interactions.

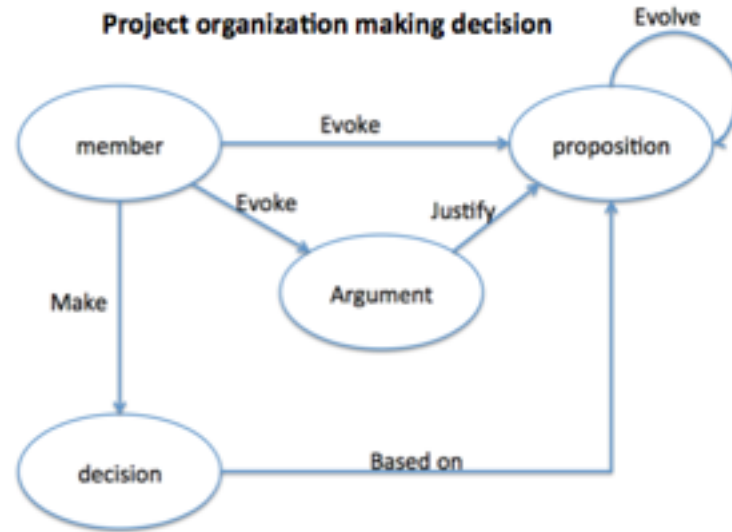
Classification of repetitive sub-network with a weight factor (probability), unique sub-network considered as explosive attempt .



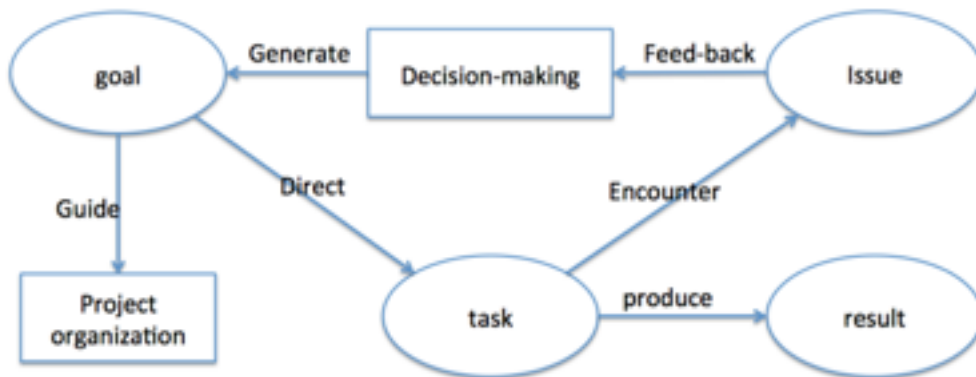
Decision-making process



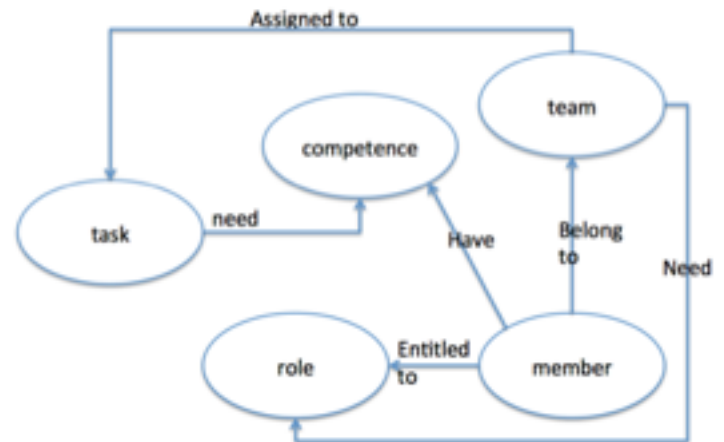
Project organization making decision



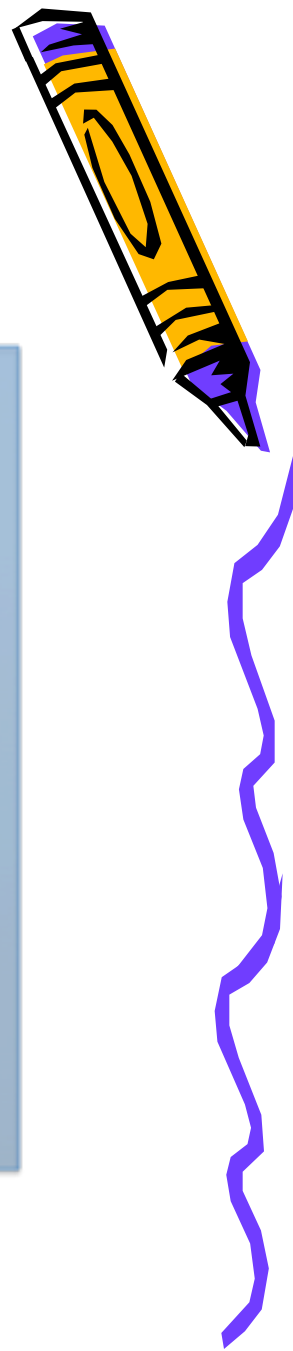
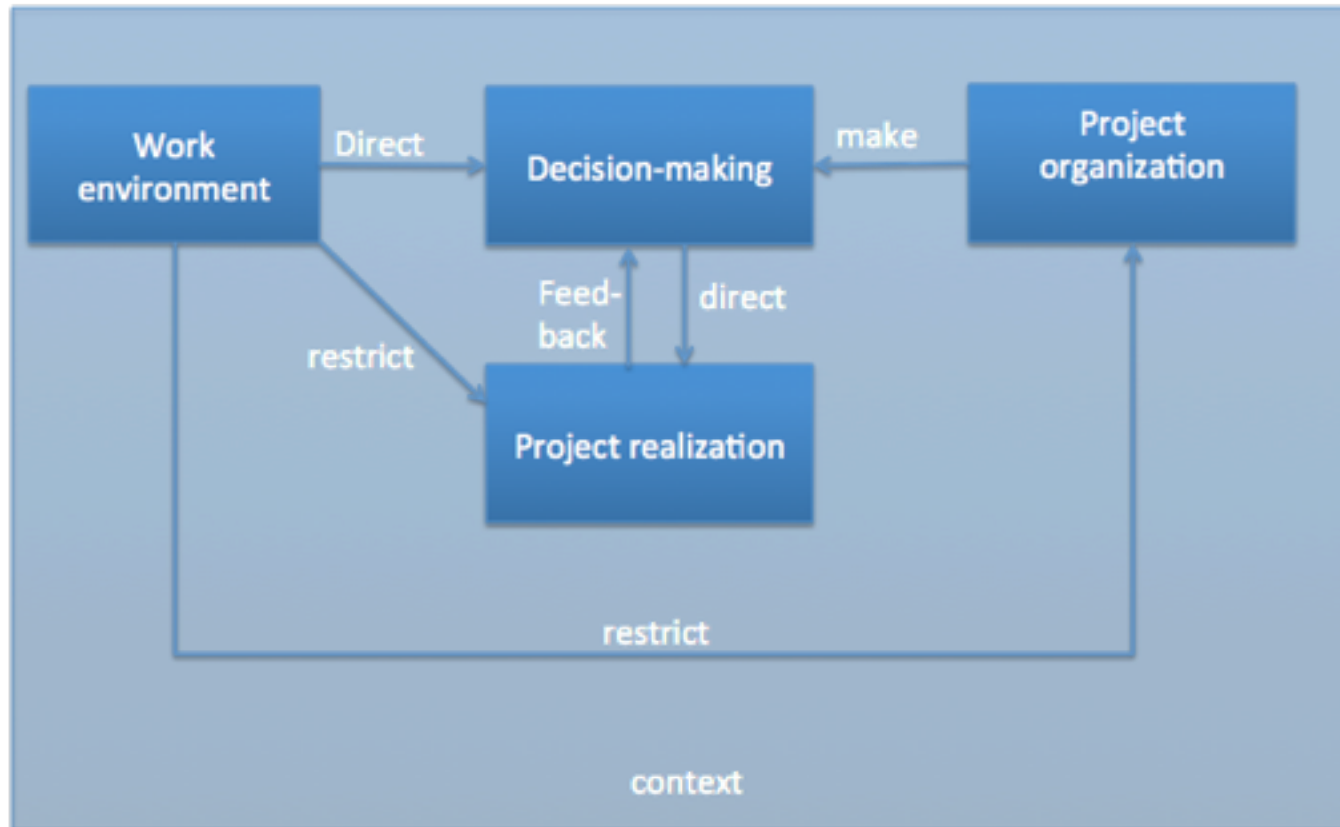
Project realization and decision-making



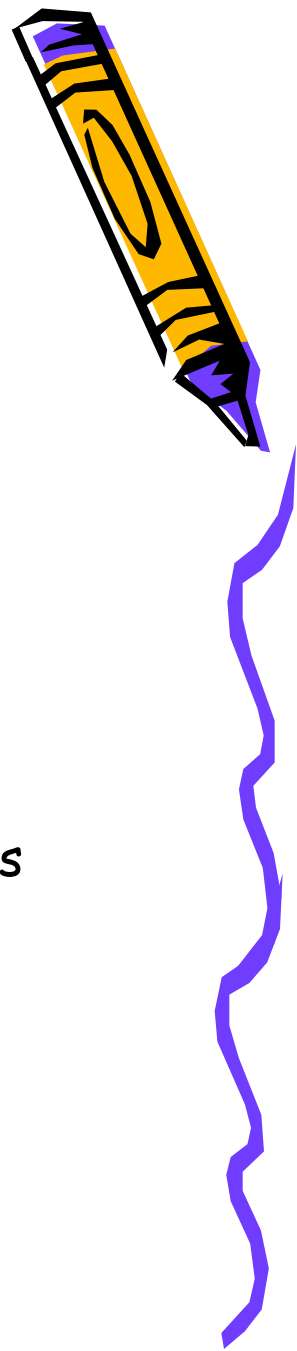
Project organization realizing project



Based on DRCS (Klein)



Classification Angle Propositions



- Problem-solving rules, classification of sub-network decision-making:
- Cooperation rules, classification of project realisation and decision making :
- Management rules: organisational influence on different parts of design project.

Exemple

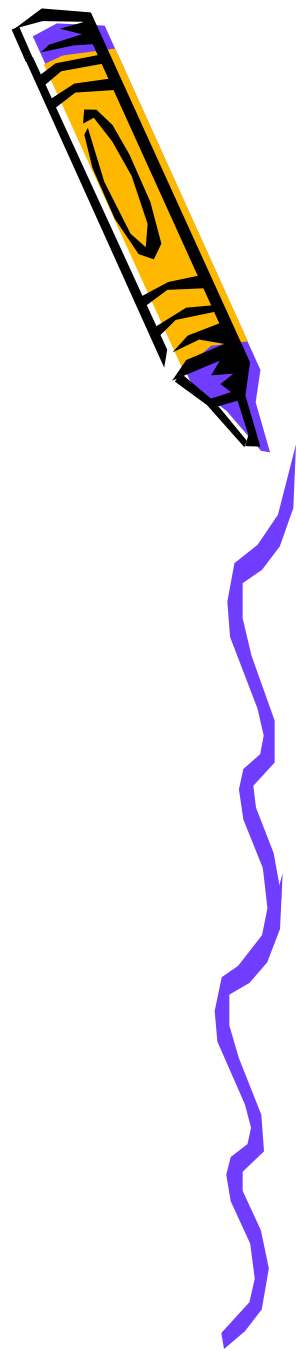
Two projects that are undertaken by two groups of students in the year 2012 and 2013, students came from major computer science and mechanical design. They are supposed to develop a tablet application for product maintenance.

MMrecord and MMreport are used to keep track of meetings, and all design documents produced during the project (diagrams, emails e.g.) are saved for analysis.

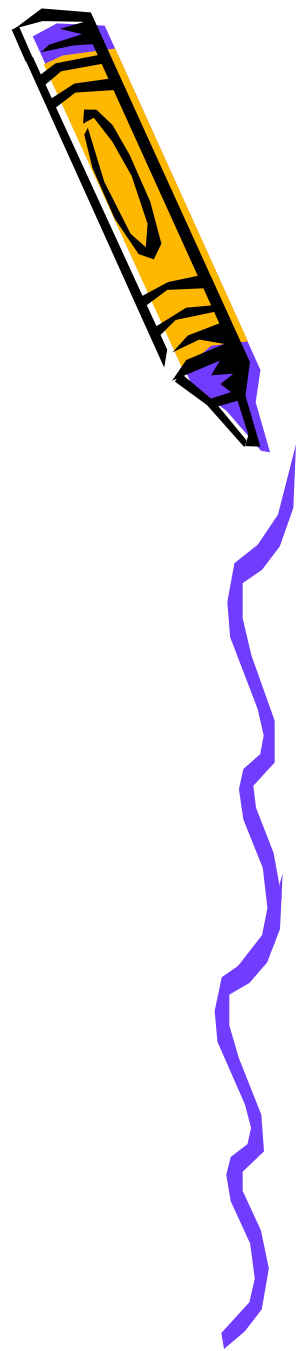




Tablet application for product maintenance				
Year	2012		2013	
Issue	Function definition		Function definition	
Negotiation	Proposition	Argument	Proposition	Argument
	Tablet application for product maintenance			
Issue	Function definition			
Essential solutions	Tablet connection with PLM and ERP, object search with tablet applications			
Conditional solutions	Solution		Condition	
	Automatic object reconnaissance		Enough budget	
	PLM and ERP connection		Feasible technology	
			PLM	



Tablet application for product maintenance		
Year	2012	2013
Phase	Project realization	Project realization
Project organization	Three sub-groups for each application module (ERP, PLM, Object reconnaissance)	Three sub-groups for each application module (ERP, PLM, object search engine)
Project planning	• 4 working meetings inside each sub-group to validate project specification • A final meeting to simply collect each sub-group's work	• 12 work meetings of whole project team • Sub-group meetings are organized freely
Result	• Each module has its own database, the application has 3 databases in total • Automatic image recognition increase the cost drastically	• Client-server architecture that requires only one database • Centralized data management



Tablet application for product maintenance				
Year	2012		2013	
Phase	Project realization		Project realization	
Project organization	Three sub-groups for each application module (ERP,PLM, Object reconnaissance)	Competence distribution: ERP(computer science) PLM (mechanical design) Object reconnaissance (computer science)	Three sub-groups for each application module (ERP, PLM, object search engine)	ERP(computer science) PLM (computer science, mechanical design) Object search engine (computer science, mechanical design)
Project planning	• 4 working meetings inside each sub-group to validate project specification • A final meeting to simply collect each sub-group's work		• 12 work meetings of whole project team • Sub-group meetings are organized freely	
Result	• Each module has its own database, the application has 3 databases in total • Automatic image recognition increase the cost drastically		• Client-server architecture that requires only one database • Centralized data management	

Software Design

Problem-solving Knowledge

The goal of this project is to design a tablet application, which aids a mechanical technician in product maintenance.

This application needs to provide pertinent knowledge concerning a certain problem of product, and enable the technician to order necessary parts to repair or replace the product; more importantly, the technician should be able to update information concerning product maintenance (e.g. report a design default, order a new product etc.)

Project 2012

Project 2012 on tablet application for product maintenance, issue: function definition			
Proposition	Argument		Decision
Automatic object recognition by image to detect product	(Defend)	Improve efficiency	Automatic object recognition by image
		Easy access	
	(Criticize)	Increase budget	Four databases
		Complex development	
Single database for all modules	(Criticize)	Need data synchronization	Information exchange between the application and ERP, PLM
		Create data redundancy	
	(Defend)	Easy administration	
Four databases, one for each module	Null		
Information exchange between ERP and PLM	(Defend)	Reduce data redundancy	
	(Criticize)	Technological obstacle	
Information exchange between the application and ERP, PLM	Null		

Software Design

Problem-solving Knowledge

The goal of this project is to design a tablet application, which aids a mechanical technician in product maintenance.

This application needs to provide pertinent knowledge concerning a certain problem of product, and enable the technician to order necessary parts to repair or replace the product; more importantly, the technician should be able to update information concerning product maintenance (e.g. report a design default, order a new product etc.)

Project 2013

Project 2013 on tablet application for product maintenance, issue: function definition			
Proposition	Argument		Decision
Manuel search for concerning knowledge for problem	(Defend)	Easy implementation	Manuel search for knowledge of concerning product
	(Criticize)	Requires users to have certain mechanical knowledge	Single database
Single database for all modules	(Defend)	Centralized administration improve searching	Information exchange between the application and ERP, PLM
		Secure information confidentiality	
		Evade frequent communication among the modules	
Information exchange between the application and ERP, PLM	Null		

Software Design

Problem-solving Knowledge

Classification Result

Project of tablet application design for product maintenance Issue: function definition			
		Argument	
Essential solutions	Information exchange between the application and ERP, PLM ($W_1=1$)	Null	
Conditional solutions	Automatic object recognition by image ($W_2=0$)	(Defend)	Improve efficiency ($W_{21}=0$)
			Easy access ($W_{22}=0$)
		(Critique)	Increase budget ($W_{23}=0$)
			Complex development ($W_{24}=0$)
	Manual search for concerning knowledge for problem ($W_3=0$)	(Defend)	Easy implementation ($W_{31}=0$)
		(Critique)	Requires users to have certain mechanical knowledge ($W_{32}=0$)
	Single database for all modules ($W_4=1$)	(Defend)	Centralized administration improve searching ($W_{41}=1$)
			Secure information confidentiality ($W_{42}=1$)
			Evade frequent communication among the modules ($W_{43}=1$)
		(Critique)	Need data synchronization ($W_{44}=1$)
			Create data redundancy ($W_{44}=1$)
	Four databases, one for each module ($W_5=0$)	Null	
Explorative solutions	Information exchange between ERP and PLM ($W_6=0$)	(Defend)	Reduce data redundancy ($W_{61}=0$)
		(Critique)	Technological obstacle ($W_{62}=0$)

Software Design

Management Knowledge

Project 2012

Project 2012 on tablet application for product maintenance, issue: function definition			
Proposition	Argument		Decision
Automatic object recognition by image to detect product [Ar ₁₂ , Computer_science, APP_division]	(Defend)	Improve efficiency [Ar ₁₃ , Computer_science, APP_division]	Automatic object recognition by image [Ar ₁₂ , Computer_science, APP_division]
		Easy access [Ar ₁₃ , Computer_science, APP_division]	
	(Critique)	Increase budget [Ar ₁₃ , Mechanical_design, ERP_division]	Four databases [Ar ₁₂ , Computer_science, APP_division]
		Complex development [Ar ₁₃ , Mechanical_design, ERP_division]	Information exchange between the application and ERP, PLM [Ar ₁₃ , Mechanical_design, ERP_division]
Single database for all modules [Ar ₁₂ , Computer_science, APP_division]	(Critique)	Need data synchronization [Ar ₁₃ , Computer_science, APP_division]	
		Create data redundancy [Ar ₁₃ , Computer_science, APP_division]	
	(Defend)	Easy administration [Ar ₁₃ , Computer_science, APP_division]	
Four databases, one for each module [Ar ₁₂ , Computer_science, APP_division]	Null		
Information exchange between ERP and PLM [Ar ₁₃ , Mechanical_design, ERP_division]	(Defend)	Reduce data redundancy [Ar ₁₃ , Mechanical_design, ERP_division]	
	(Critique)	Technological obstacle [Ar ₁₃ , Computer_science, APP_division]	
Information exchange between the application and ERP, PLM [Ar ₁₂ , Mechanical_design, PLM_division] [Ar ₁₂ , Mechanical_design, ERP_division] [Ar ₁₃ , Mechanical_design, ERP_division]	Null		

Software Design

Management Knowledge

Project 2013

Project 2013 on tablet application for product maintenance, issue: function definition		
Proposition	Argument	Decision
Manual search for concerning knowledge for problem [Ar ₂₃ ,Computer_science,APP_division]	(Defend) Easy implementation [Ar ₂₃ ,Computer_science,ERP_division]	Manual search for knowledge of concerning product [Ar ₂₃ ,Computer_science,APP_division]
	(Critique) Requires users to have certain mechanical knowledge [Ar ₂₆ ,Mechanical_design,APP_division]	Single database [Ar ₂₃ ,Computer_science,APP_division]
Single database for all modules [Ar ₂₃ ,Computer_science,APP_division]	(Defend) Centralized administration improve searching [Ar ₂₃ ,Computer_science,APP_division]	Information exchange between the application and ERP, PLM [Ar ₂₃ ,Computer_science,ERP_division]
	Secure information confidentiality [Ar ₂₅ ,Mechanical_design,PLM_division]	
	Evade frequent communication among the modules [Ar ₂₃ ,Computer_science,PLM_division]	
Information exchange between the application and ERP, PLM [Ar ₂₃ ,Computer_science,PLM_division] [Ar ₂₃ ,Computer_science,ERP_division]	Null	

Software Design

Management Knowledge

Classification Result

Actors with competence computer science make all the IT implementation propositions; all the usability-oriented arguments are from actors with competence mechanical design; decisions about a specific function are made by actors within the organizational division on the same function.

The variety of competences in a group can push ideas from different point of views to confront each other, which may lead to a balanced solution.

PLM System Design

Problem-solving Knowledge

This example involves two student projects in year 2014. Two groups of students majoring in mechanical design were asked to design a PLM system for a company named IRobot. The software Windchill is supposed to be used as the PLM system, but it were the students to decide how to implement this system in light of the company's situation.

Group 1

Project of PLM system design of group 1, issue: search for general solutions for PLM			
Proposition	Argument		Decision
Change the organization of company	(Defend)	All possible solutions need to be proposed	1. Implementation of Windchill
		Company's organization have to be the same as PLM system	
	(Criticize)	The PLM system allows to assign different roles in the system	
		PLM solution need to focus on technical aspect but not organization	
Implementation of Windchill	Null		

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Group 2

Project of PLM system design of group 2 , issue: search for general solutions for PLM			
Proposition	Argument		Decision
Change the organization of the company from client oriented to product oriented	(Defend)	Product oriented organization is more compatible with PLM	1. Change the organization of the company from client oriented to product oriented 2. Implementation of Windchill
		The work mode of the company need to change in order to reduce	
	(Criticize)	Company needs long time to adjust to new organization change	
Implementation of Windchill	Null		

PLM System Design

Problem-solving Knowledge

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Classification Result

Project of PLM system design , issue: search for general solutions for PLM			
		Argument	
Essential solutions	Implementation of Windchill ($W_1=1$)	Null	
Conditional solutions	Change company's organization into product-oriented organization. ($W_2=1$)	(Defend)	All possible solution needs to be proposed ($W_{21}=0$)
			Work mode need to change completely in the face of fluctuant client demand ($W_{22}=0$)
			Company's organization should be adjusted to PLM system ($W_{23}=1$)
		(Criticize)	The company needs long time to adjust to organization changes ($W_{24}=0$)
			PLM system allows to assign roles in the system ($W_{25}=0$)
			PLM solution need to focus on technical solutions ($W_{26}=0$)

PLM System Design

Management Knowledge

Group 1

Project of PLM system design of group 1, issue: search for general solutions for PLM			
Proposition	Argument		Decision
Change the organization of company [Ar ₁₅ , Mechanical_system, Exterior_UTT]	(Defend)	All possible solutions need to be proposed [Ar ₁₅ , Mechanical_system, Exterior_UTT]	Implementation of Windchill [Ar ₁₅ , Mechanical_system, Interior_UTT]
		Company's organization have to be the same as PLM system [Ar ₁₅ , Mechanical_system, Interior_UTT]	
	(Criticize)	The PLM system allows to assign different roles in the system [Ar ₁₅ , Mechanical_system, Interior_UTT]	
		PLM solution need to focus on technical aspect but not organization [Ar ₁₅ , Mechanical_system, Interior_UTT]	
Implementation of Windchill [Ar ₁₅ , Mechanical_system, Interior_UTT] [Ar ₁₅ , Mechanical_system, Interior_UTT]	Null		

PLM System Design

Management Knowledge

Group 2

Project of PLM system design of group 2, issue: search for general solutions for PLM			
Proposition	Argument		Decision
Change the organization of the company from client oriented to product oriented [Ar _{2,5} , Mechanical_system, Interior_UTT]	(Defend)	Product oriented organization is more compatible with PLM [Ar _{2,5} , Mechanical_system, Interior_UTT]	1. Change the organization of the company from client oriented to product oriented [Ar _{2,6} , Mechanical_system, Interior_UTT] 2. Implementation of Windchill [Ar _{2,6} , Mechanical_system, Interior_UTT]
		The work mode of the company need to change in order to reduce [Ar _{2,5} , Mechanical_system, Interior_UTT] [Ar _{2,5} , Mechanical_system, Interior_UTT]	
	(Criticize)	Company needs long time to adjust to new organization change [Ar _{2,6} , Mechanical_system, Interior_UTT]	
Implementation of Windchill [Ar _{2,5} , Mechanical_system, Interior_UTT] [Ar _{2,6} , Mechanical_system, Interior_UTT] [Ar _{2,6} , Mechanical_system, Exterior_UTT]	Null		

PLM System Design

Management Knowledge

Classification Result

The actor's organizational state may influence the decision-making: actors who are physically exterior of organization tends to be less important than actors who are physically present in a decision making process.

Eco-Design

Problem-solving Knowledge

Group 1

This example evolves two master students projects. The project ask student to develop an eco-design mythology for a specific product. The first group work with a French light company Festlight, they are supposed to come up with certain design concepts in order to reduce the energy consumption of the product. The second group is asked to work on the lamp FACOM 779-CI, and the project team is supposed to offer design concepts to reduce the product's environmental consequence during.

Project on eco-design for lights of group 1, issue: eco-innovation			
Proposition	Argument		Decision
Replace aluminium by recycled steel	(Defend)	Less pollution in production	1. The structure can be in recycled aluminium 2. The structure can be rigid PVC material 3. The LED can be replaced by a less power-consuming LED
	(Criticize)	Increase the weight of product	
Replace the primary aluminium by secondary aluminium	(Defend)	The property of material remains the same	
		Reduce environmental effects	
Replace aluminium by PVC	(Defend)	The weight of product is reduced	
Replace aluminium by thermoplastic material	(Defend)	The weight is reduced	
	(Criticize)	Complicated technology	
Delete unnecessary power supply	Null		
Replace present LED with less power-consuming LED	(Defend)	Reduce power consumption	
	(Criticize)	The light will be darker	
Reduce the number of LED	Null		
Use a LED cable driven by solar power	(Criticize)	The solar panel is too big for installation	

Eco-Design

Problem-solving Knowledge

This example evolves two master students projects. The project ask student to develop an eco-design mythology for a specific product. The first group work with a French light company Festlight, they are supposed to come up with certain design concepts in order to reduce the energy consumption of the product. The second group is asked to work on the lamp FACOM 779-CI, and the project team is supposed to offer design concepts to reduce the product's environmental consequence during.

Group 2

Project on eco-design for lights of group 2, issue: eco-innovation			
Proposition	Argument		Decision
Integrate a Peltier module with a Ceeback effect	Innovation	1.75	1. Auto-lighted working gloves
	Feasibility	3.5	
	Environmental effect	3.25	
	Cost	2.5	
Auto-lighted working gloves	Innovation	2.66	
	Feasibility	3	
	Environmental effect	2.66	
	Cost	2.83	
Integrate a O-LED	Innovation	2.88	
	Feasibility	3	
	Environmental effect	3.22	
	Cost	2.55	

Eco-Design

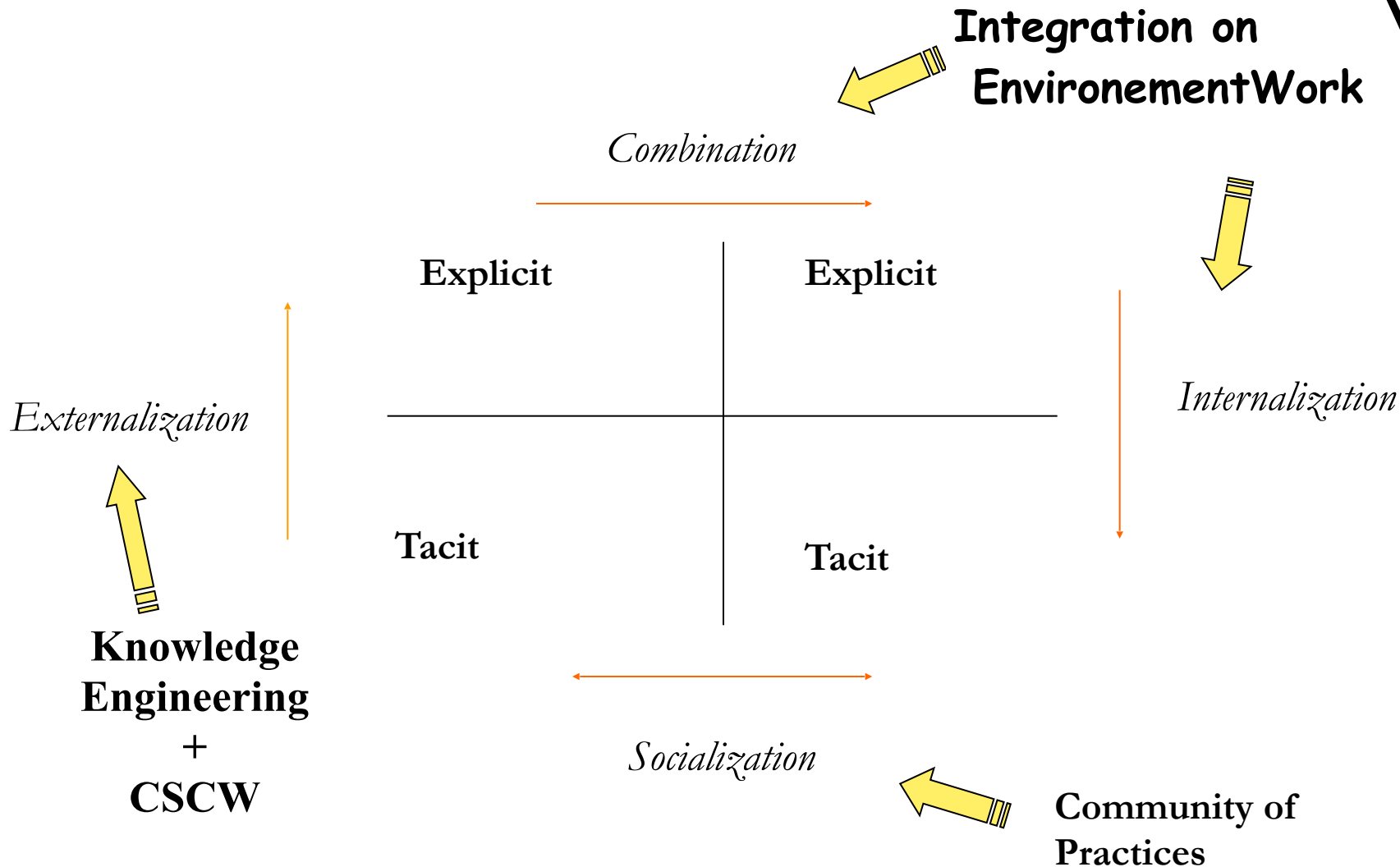
Problem-solving Knowledge

Classification Result

The second group's decision-making process remains incomprehensible and impossible to be learned without a semantic representation of arguments. The second case is considered noisy model instance and cannot be classified

Project of eco-design for lights, Issue: eco-innovation			
		Argument	
Essential solutions	The structure can be in recycled aluminium ($W_1=0$)	(Defend)	The property of material remains the same ($W_{11}=0$)
			Reduce environmental effects ($W_{12}=0$)
	The structure can be rigid PVC material ($W_2=0$)	(Defend)	The weight of product is reduced ($W_{21}=0$)
	The LED can be replaced by a less power-consuming LED ($W_3=0$)	(Defend)	Reduce power consumption ($W_{31}=0$)
		(Criticize)	The light will be darker ($W_{32}=0$)
Conditional solutions	Replace aluminium by recycled steel ($W_4=0$)	(Defend)	Less pollution in production ($W_{41}=0$)
		(Criticize)	Increase the weight of product ($W_{42}=0$)
	Replace aluminium by thermoplastic material ($W_5=0$)	(Defend)	The weight is reduced ($W_{51}=0$)
		(Criticize)	Complicated technology ($W_{52}=0$)
	Delete unnecessary power supply ($W_6=0$)	Null	
	Reduce the number of LED ($W_7=0$)	Null	
	Use a LED cable driven by solar power ($W_8=0$)	(Criticize)	The solar panel is too big for installation ($W_{81}=0$)

Conclusion: Cooperative Knowledge



Conclusion

- Answer to : how to capitalize knowledge from cooperative daily work
 - Design projects
- Traceability and Aggregation techniques
- First integration on PLM and Agile



Future work

- More tests: Communication, and decision making
- More integration in work environment
 - Learning: Develop actors search and guiding tools
 - Combining memory tools and project management
- Typing concepts in ontology



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