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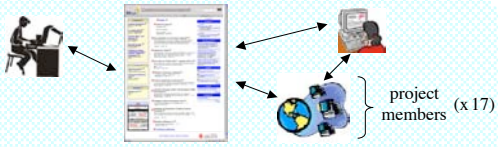
Enhancing the innovation process in the automotive industry with a Web-based collaborative platform

INNOVATION PROCESS

(6-month duration)



Face-to-face working group meetings (x 6) + Asynchronous collaboration (151 sendings)

- **Group meetings:** Presentation, discussion and design issues to gain project knowledge

= 2 main activities (95% / time)

Project coordination 29% / time

Artifact design 66% / time

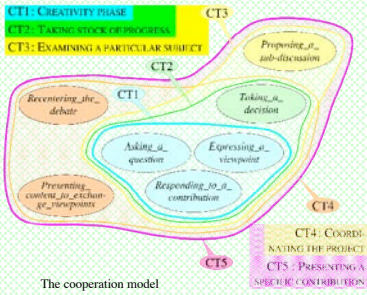
- essentially free discussion without visual aids
- visual aids mainly used for presentations and to provoke discussion
- little formalized decision-making

- **Web-platform:** ==> to assist project development and build a centralized knowledge base
==> to diffuse information
==> very little cooperative interaction

	Initial message occurrences with		
	no reply	reply	Total
Coordination schedule	33 *(85%)*	6 *(15%)*	39
Document publication	17 *(71%)*	7 *(29%)*	24
Artifact design	53 *(90%)*	6 *(10%)*	59
	103 *(84%)*	19 *(16%)*	122 *(100%)*

DESIGN: The cooperative functionalities of the new Web-based platform (4 stages)

1/ Cognitive model made up of 5 **COLLECTIVE TASKS** and 7 ***Basic Cooperative Functions***



The cooperation model

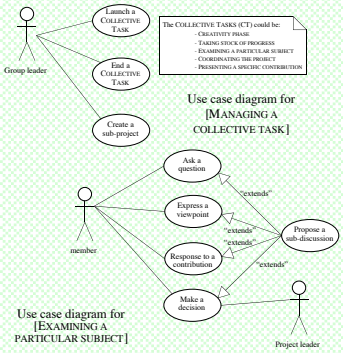
based on

2/ Activity analysis

Basic Cooperative Functions (x 7)	Actors (x 10)										Total
	A	B	C	D	E	F	G	H	I	J	
Asking_a_question	1	4	2	3	4	0	0	0			17
Responding_to_a_contribution	0	1	2	7	3	2	1	0			16
Expressing_a_viewpoint	3	1	5	8	12	2	0	0			31
Taking_a_decision	0	1	0	1	3	0	0	0			5
Proposing_a_sub-discussion	0	0	1	0	1	0	0	0			2
Recentering_the_debate	0	0	0	0	0	0	0	0			0
Presenting_content_to_exchange_viewpoints	0	0	0	0	0	0	0	0			0
Total	7	7	10	19	23	4	1	0			71

The number of *BCFs* used in the CT EXAMINING A PARTICULAR SUBJECT (duration: 33 minutes)

3/ Use case diagrams (x 6)



Use case diagram for [MANAGING A COLLECTIVE TASK]

Use case diagram for [EXAMINING A PARTICULAR SUBJECT]

4/ Use case description (x 10)

Use case title	*Launch_a_collective_task*
Scope	Collaborative functions of the MAGHE portal
Level	User
Short description	Declining a COLLECTIVE TASK to be dealt with by the group, and selecting the contributions
Actors	Main actor: the leader of the work group dedicated to the COLLECTIVE TASK Persons concerned: all project members
Trigger	Identifying a particular COLLECTIVE TASK that allows the project to progress
Main Scenario	1. Select the command to create a COLLECTIVE TASK in the project space of the platform 2. Describe the COLLECTIVE TASK in a form 2.1. Select the type of COLLECTIVE TASK in a pull down menu (6 possible values) 2.2. Indicate the subject of the COLLECTIVE TASK (title) 2.2.1. Describe briefly the objectives 2.2.2. Enter the planned deadline 2.3. List the expected contributors 2.3.1. Choose the names or groups in a directory 3. Distribute this form 2.2.3. Enter the associated deliverables 2.3.2. Create a new group 4. Paste the present contributions in another COLLECTIVE TASK
Scenario Extensions	
Particular Specification	The list of contributors chosen for this COLLECTIVE TASK must be easily identifiable so that they may be notified of all contributions
Preconditions	An existing space dedicated to the project An identified leader, the role of the actor or actors An existing directory Absence of a COLLECTIVE TASK having the same title
Postconditions	Visibility of the COLLECTIVE TASK in the project space Creation of a space dedicated to the COLLECTIVE TASK

Use case "LAUNCH A COLLECTIVE TASK"

COLLECTIVE TASKS are carried out using a finite number of ***Basic Cooperative Functions***

Scenario based assessment **VALIDATION** Results

Realistic scenario in an industrial workplace:

- **24 pre-established stages for 5 users**
- **2-day time scale**
- **5 assigned roles**
  - project assistant
  - project manager
  - specialist roles (x3)
- **Task assigned stages:**
  - Launch a COLLECTIVE TASK
  - Notify project members
  - Express a viewpoint
  - Publish document
  - Complete a COLLECTIVE TASK
  - …

Benefits and limitations of this cooperation protocol:

➔ Its straightforward dialogue structure and limited choice of *Basic Cooperative Functions* ensure a short training period;

➔ Its interaction logic is modelled on the intentions of the users' exchanges;

➔ It allows a true integration of asynchronous and synchronous functions;

➔ Visibility of exchanges is useful for group awareness, but cooperation can only be used satisfactorily for dialogues between two (or, at most, three) persons.

Conclusion

UML as a dialogue tool between psychologists and computer developers

More details see:

Février Quesada, T., Darses, F., & Lewkowicz, M. (2003). Une démarche centrée utilisateur pour la conception d'un portail coopératif d'aide à l'innovation. *Revue des Sciences et Technologies de l'Information, Série : Ingénierie des Systèmes d'Information* (RSTI – ISI), *Volume 8*(2), 11-31.

http://www.cnam.fr/ergonomie/

Perspectives

Current analysis:

CT (**COLLECTIVE TASKS**) ==> Collective goals
BCF (*Basic Cooperative Functions*) ==> Individual contributions

Further research:

Individual vs collective contributions in terms of:
==> content
==> problem-solving
==> benefits to an innovation project