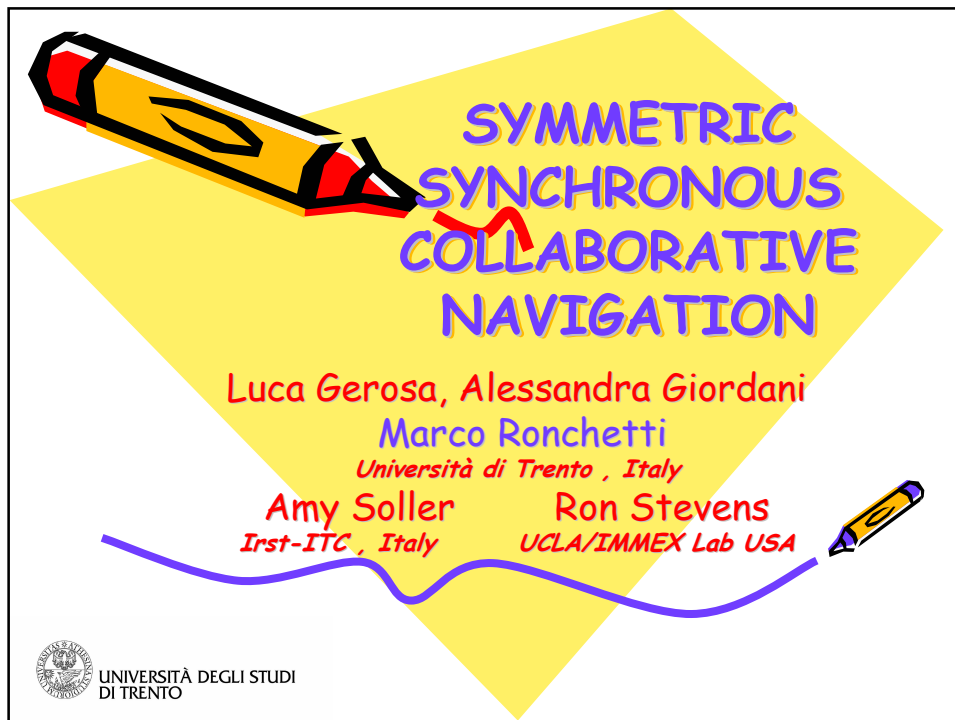




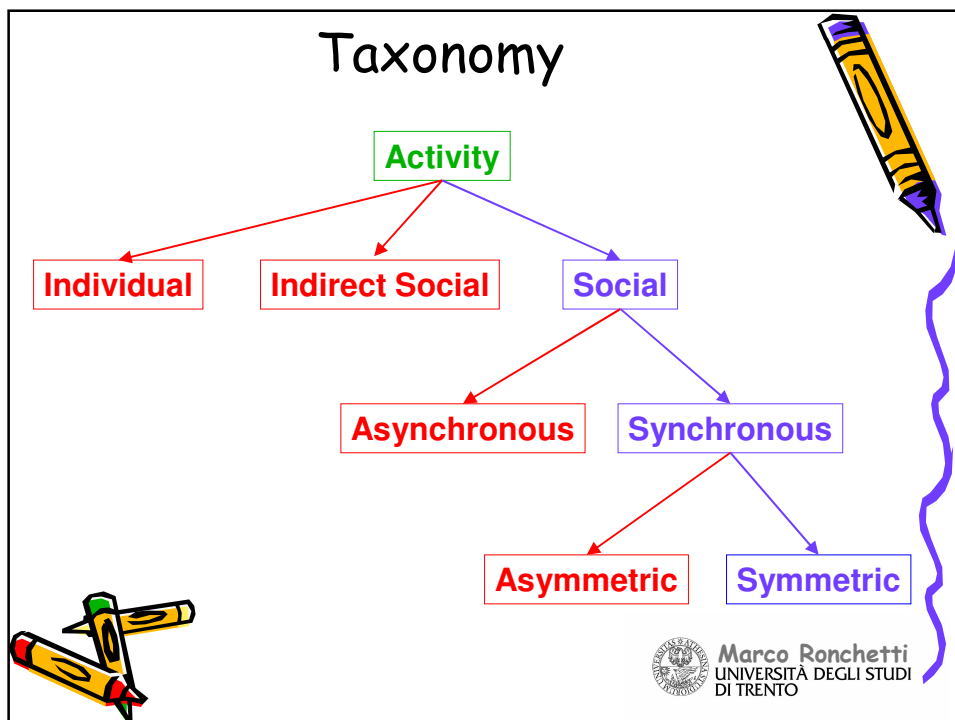
SYMMETRIC SYNCHRONOUS COLLABORATIVE NAVIGATION

Luca Gerosa, Alessandra Giordani
Marco Ronchetti
Università di Trento, Italy

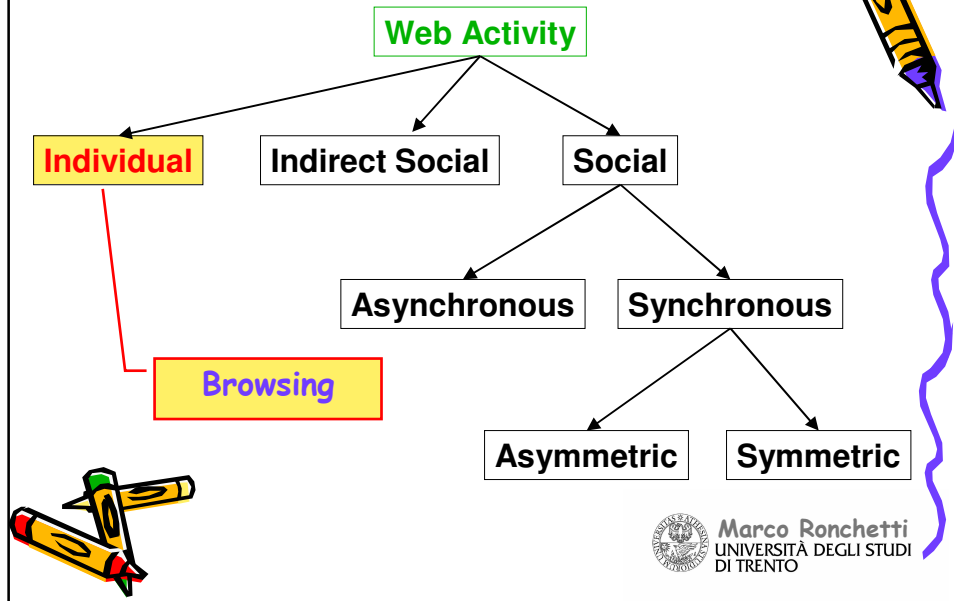
Amy Soller Ron Stevens
Irst-ITC, Italy UCLA/IMMEX Lab USA



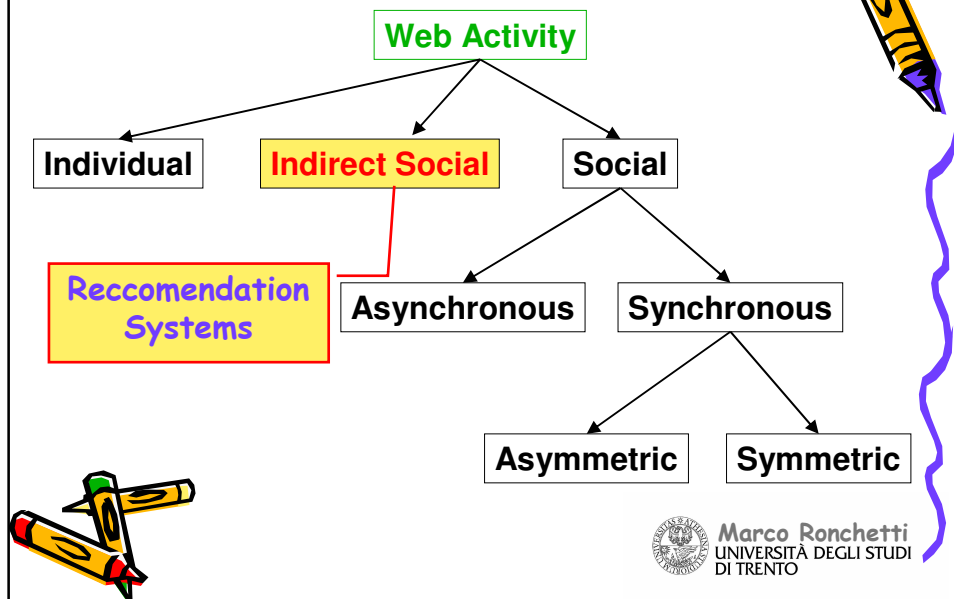
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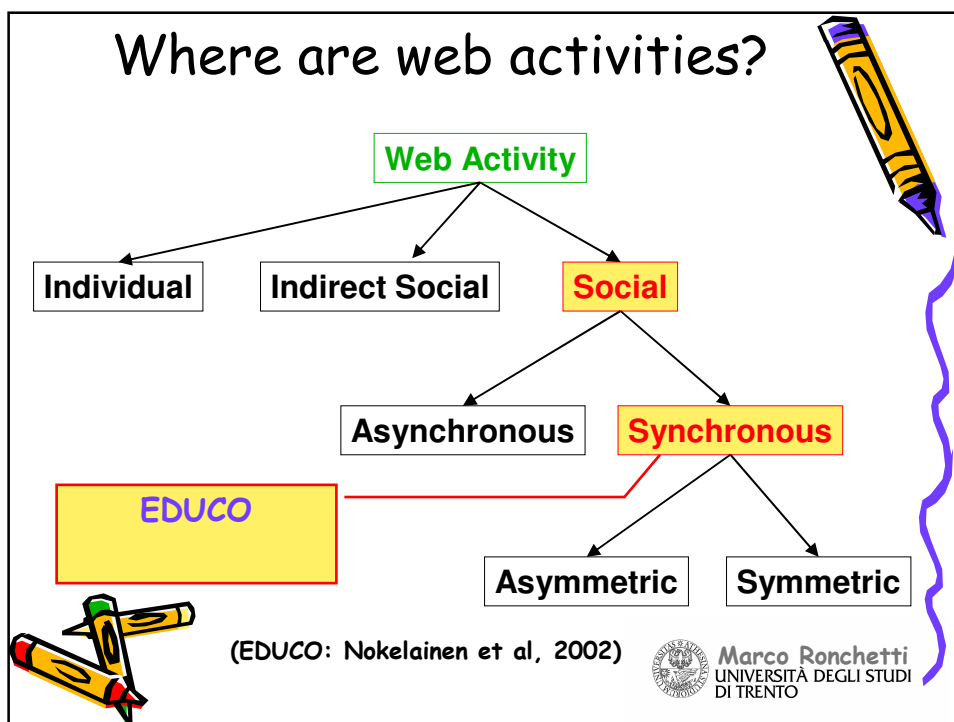
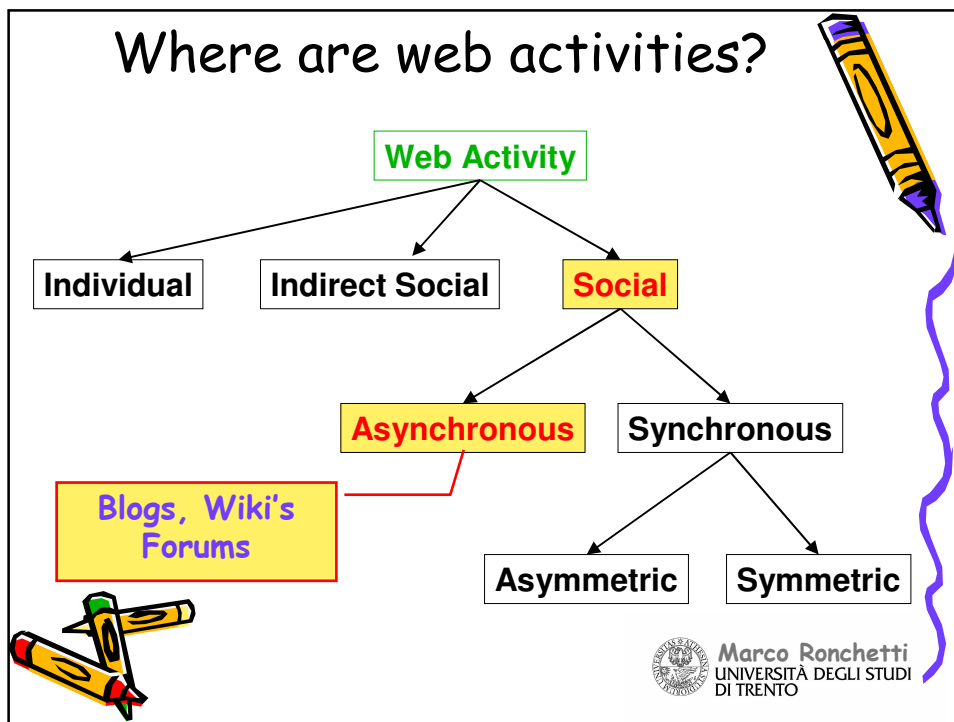


Where are web activities?

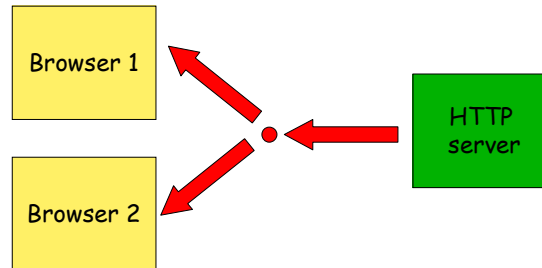


Where are web activities?





Co-browsing



Intriguing scenario,

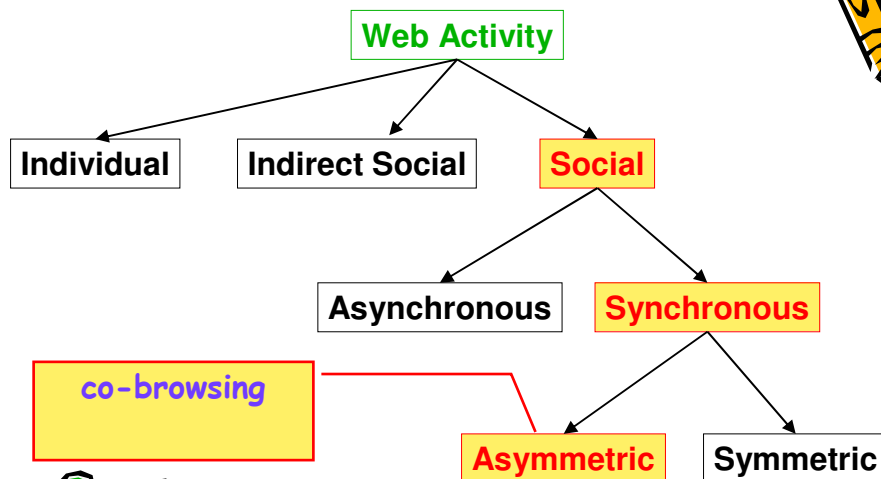
Alredy proposed.

Is it really useful?



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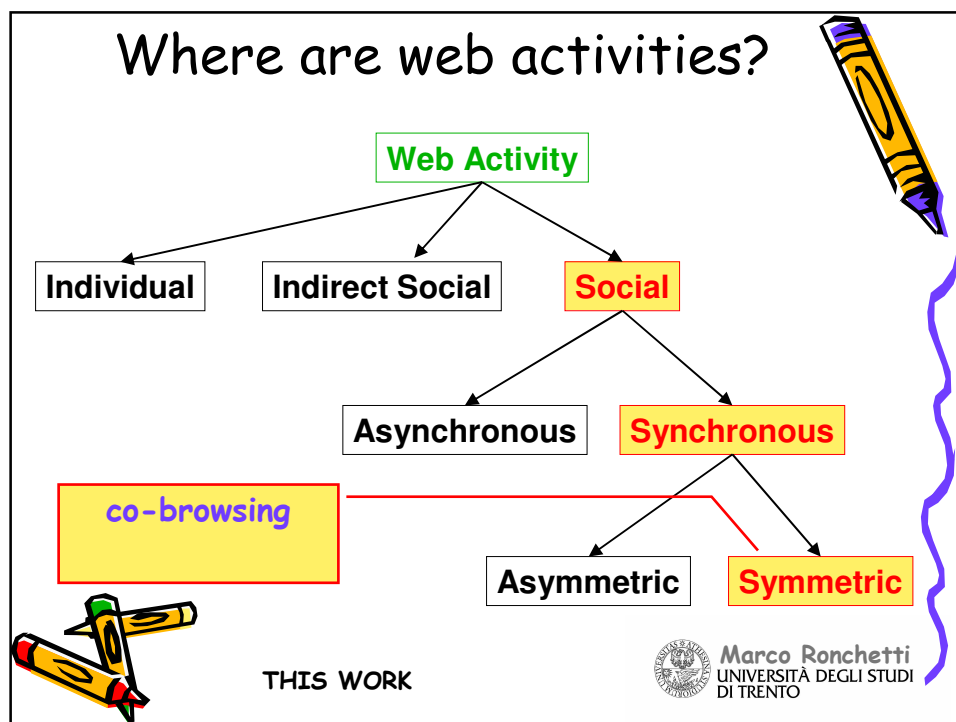
Where are web activities?



Yeh et al. (1996) - Master-slave mode



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IMMEX

IMMEX™ (Interactive Multi-Media EXercises: www.immex.ucla.edu)

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IMMEX

- Problem-based learning (problem-solving approach)
- Students must formulate hypotheses and analyze laboratory tests while solving real-world problem
- It does not allow students to perform an exhaustive exploration of the problem space

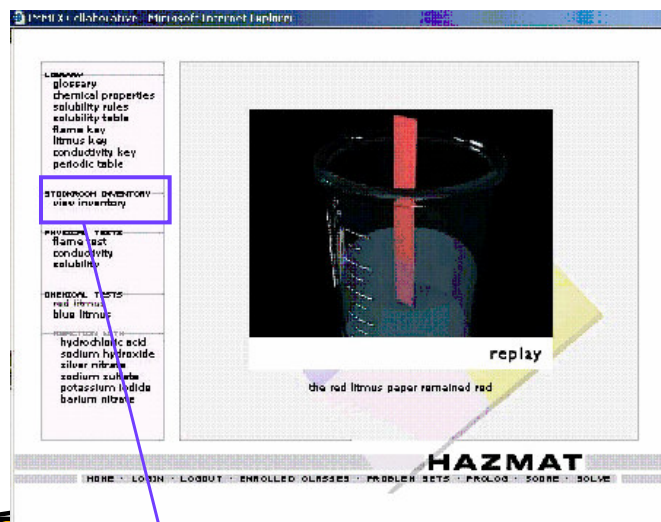
Used in science classes across middle and high schools, universities, and medical schools in the U.S.

Over the past 12 years has logged over 140,000 student problem solving performances (Stevens and Palacio-Cayetano, 2003)



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Environment



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HAZMAT

HOME LOGIN LOGOUT ENROLLED CLASSES PROBLEM SETS PROLOG SCORE SOLVE

Possible Experiments


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HOME LOGIN LOGOUT ENROLLED CLASSES PROBLEM SETS PROLOG SCORE SOLVE

Knowledge Tools


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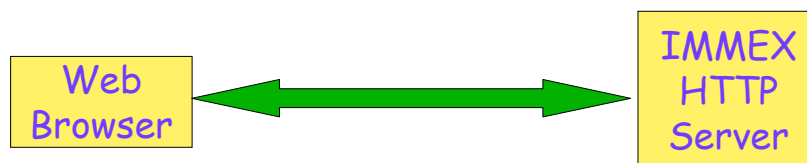
IMMEX - new twist

- Profiling problem solving strategies (manual)
•Profiling evolution of problem solving strategies (manual)
R.Stevens et al.
- Profiling problem solving strategies (neural networks)
•Profiling evolution of problem solving strategies (neural networks)
R.Stevens et al.
- Profiling evolution of problem solving strategies during collaboration -> Motivation of the work presented here



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Architecture



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Architecture



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Definition

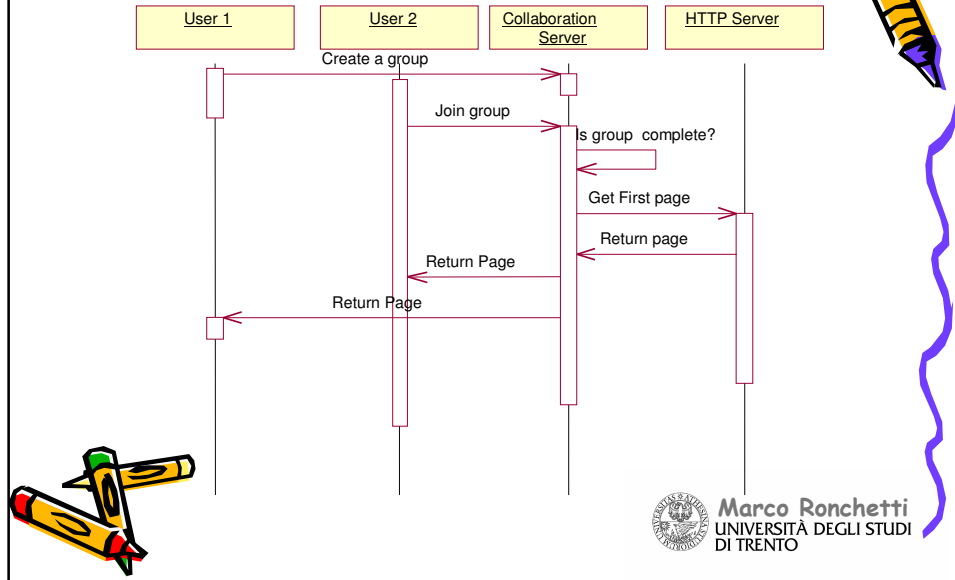
Collaboration Server

- Proxy server that:
 - Manages user groups
 - Aligns the browsers of all users belonging to a group
 - Controls concurrency problems
 - Activates a communication channel (chat)



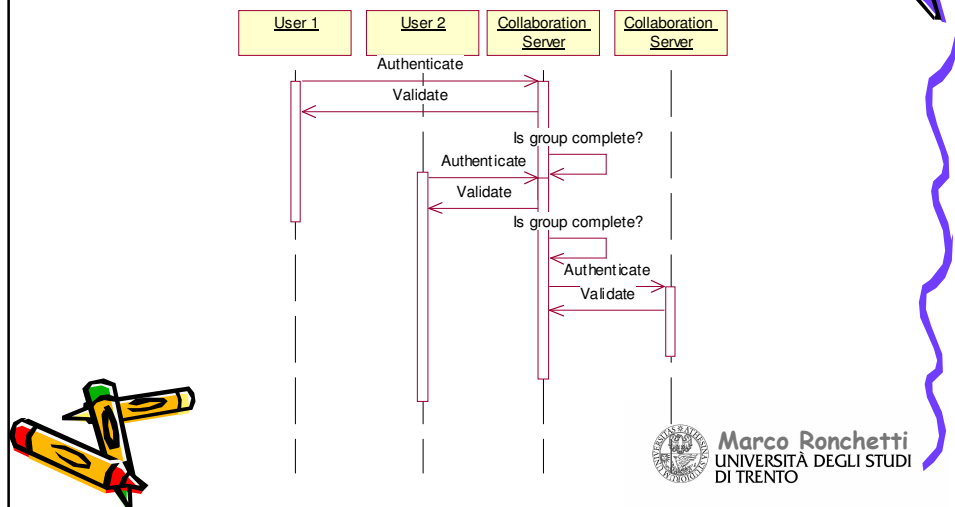
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Startup: setting up the group

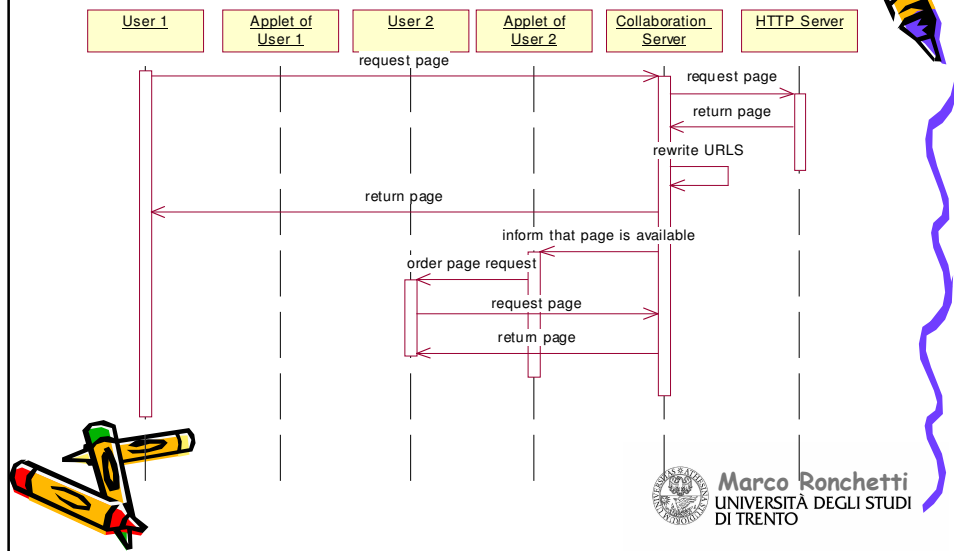


Authentication

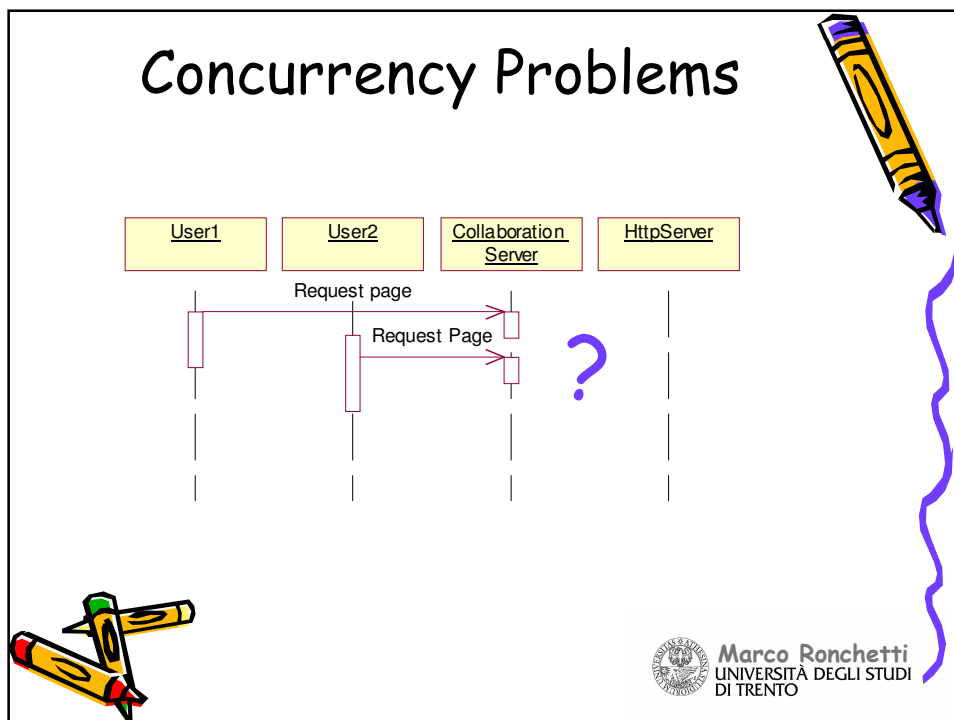
From the server's point of view, a group is just a user



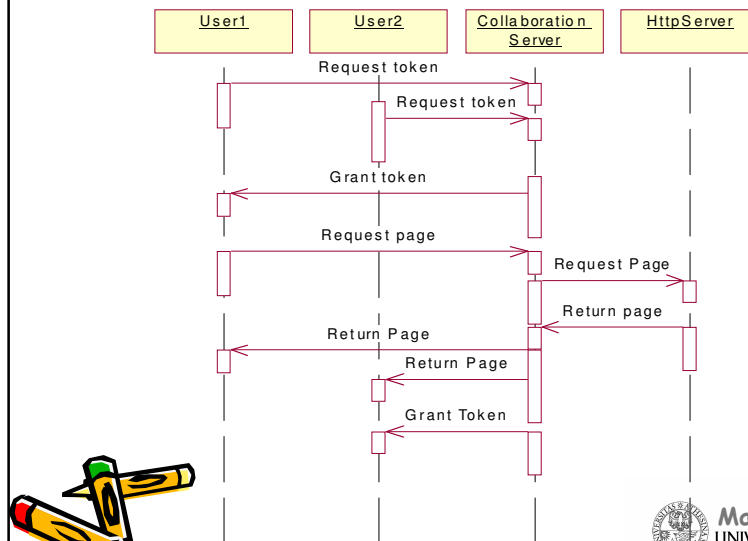
Browsers alignment: Pushing pages



Concurrency Problems

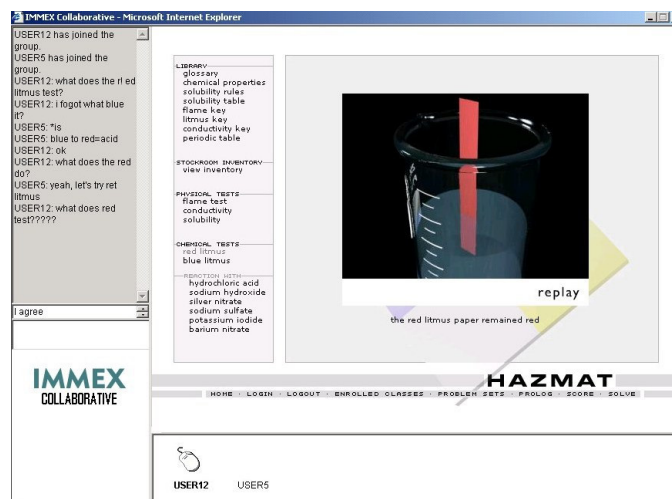


Concurrency Problems



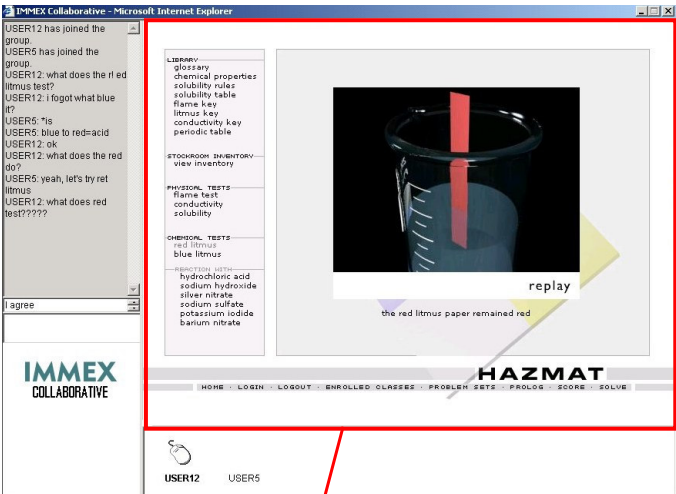
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Collaborative IMMEX



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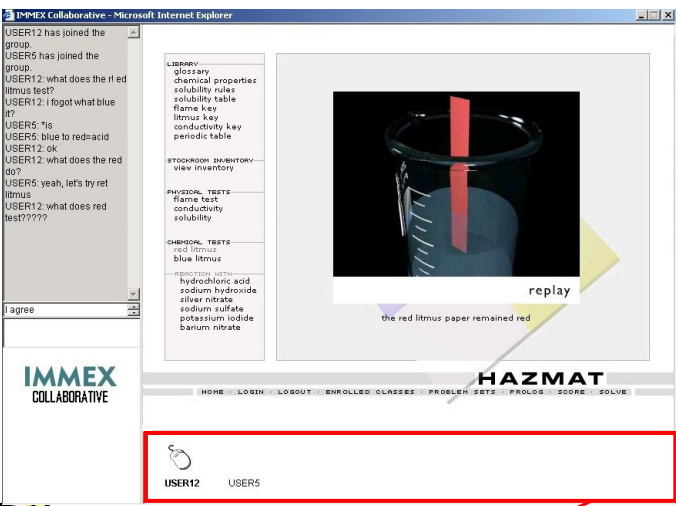
IMMEX COLLABORATIVE

HAZMAT

Original page

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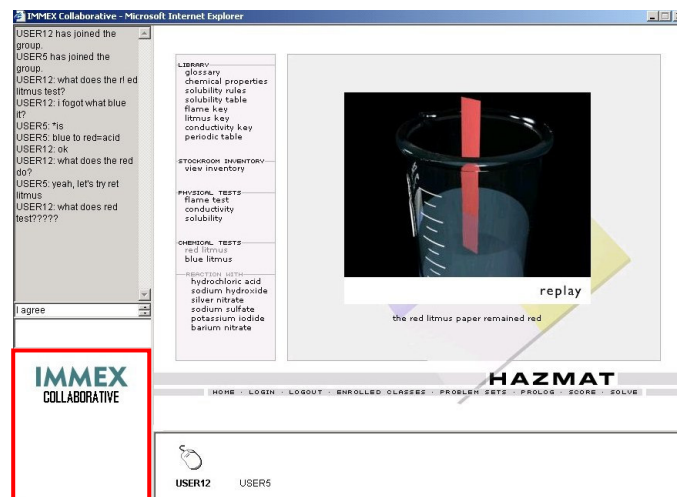
IMMEX COLLABORATIVE

HAZMAT

Concurrency control applet

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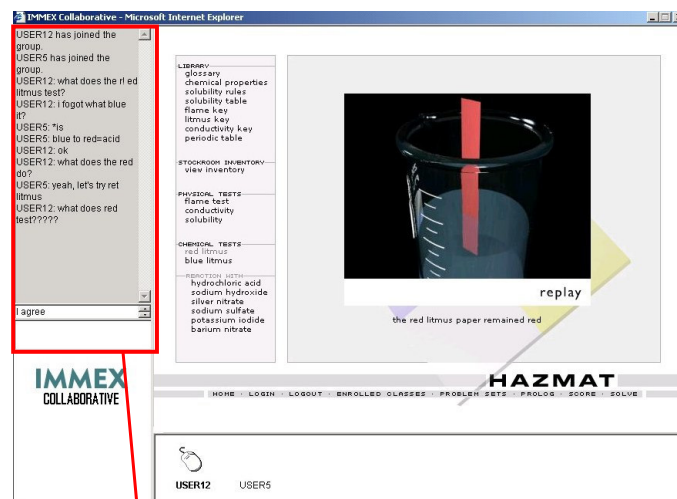
IMMEX
COLLABORATIVE

Flow Control
Applet



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COLLABORATIVE

Chat



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Authors	System	Browser	Architecture	Note
Yeh et al. 1996	Albatross	Special purpose		
Greenberg and Roseman, 1996	GroupWeb	Special purpose		
Zeiliger 1998	Nestor	Special purpose		
Laurillau 1999	Co-Vitesse	Special purpose		
Cabri et al. 1997		Any (?)	Master-slave	Focus on cache optimization
Esenther 2002		Microsoft only	Symmetric	Special purpose Server !
Oliveira et al. 2003.	Jasber	Netscape only	Symmetric	
		Any	Symmetric	REAL WORLD APPLICATION

Comparison

THIS WORK

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The gory details...

- How cookies are treated
- What happens with embedded links (e.g. links into Flash objects)
- The Javascript nightmare....

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Conclusion

- We have implemented Co-Browsing in a browser-independent, symmetric way.
- We have provided an interesting scenario in which co-browsing is needed
- We are starting to use it in the field



Thanks!



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