

Triological E-Learning and Emergent Knowledge Artifacts

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(the full paper is available at: http://www.ics.forth.gr/~tzitzik/publications/Tzitzikas_TELCOPS2006.pdf)

Classical Learning Theories

The **Knowledge Acquisition** metaphor: A learner individually internalizes a body of knowledge.



The **Social Participation** metaphor: A group of learners collaboratively appropriate a body of knowledge.



Triological Learning:

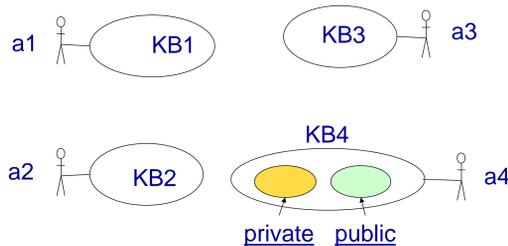
A group of learners are collaboratively developing shared objects of activity.



According to TL, knowledge creation activities rely heavily on the use, manipulation and evolution of shared knowledge artifacts externalizing a body of (tacit or explicit) knowledge.

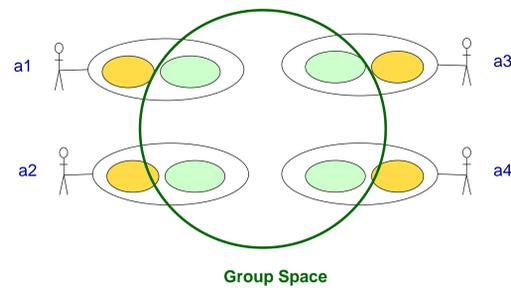
Collaborative Knowledge Synthesis

Each learner is modeled as an actor that can maintain a personal KB.

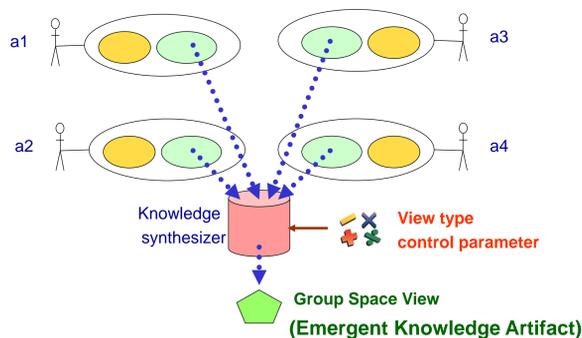


Each personal KB is divided to a private part (accessible only by the learner) and a public part (with no access restrictions).

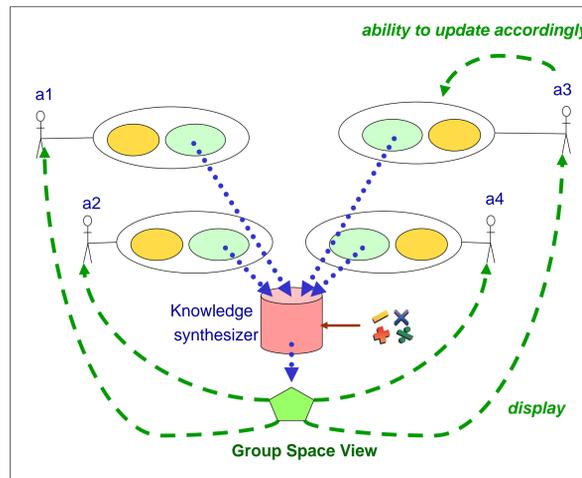
All public parts of personal KBs form the **Group Space**.



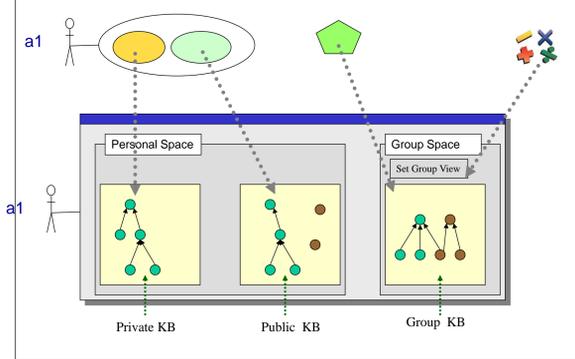
The public parts of personal KBs can be synthesized (according to various methods) and produce **Group Space Views**, else called **Emergent Knowledge Artifacts (EKA)**.



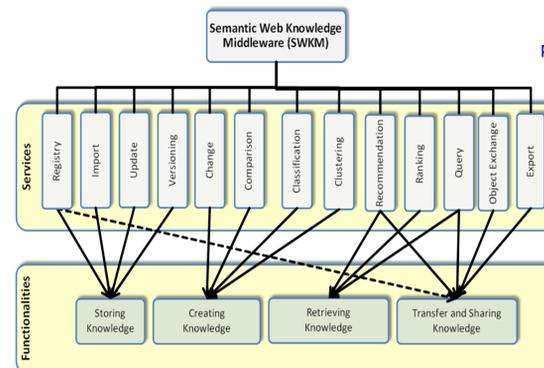
Interaction Through Emergent Knowledge Artifacts



A possible UI

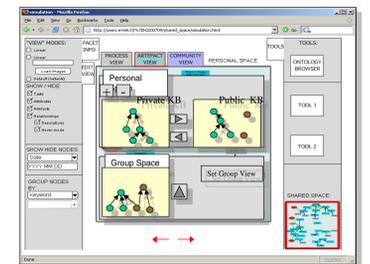


Knowledge Management Services



For editing the personal (private) space

For moving (copying) elements from a group space view to the personal space.



Grading and Progress Assessment



We need to be able to **access the progress** of both individual and collaborative work.

Further Issues

As we step up the expressive power of the representation framework additional issues arise, including Knowledge Evolution (distinction between update and revision) and Measuring Distances between KBs. As the number of actors scales up the need for **Personalised** services and for **Social Network Analysis** becomes important. Note that the Web (WWW) is a primitive form of triological learning: the actors of the web can only create and update their own KB_i (interlinked pages) and the only method to combine the KBs of different actors is to add one-way links between them.

Implementation and Experimentation Plan

We plan to investigate the implement these scenarios using Semantic Web technologies. Personal and group spaces will be based on RDF Named Graphs. We are currently extending *RDFSuite* (<http://139.91.183.30:9090/RDF/>) with Named Graphs management services.

Concluding Remarks

Triological E-Learning requires advanced knowledge management services, probably more advanced than those that have emerged in the database and KR area (including the Semantic Web).

Database and KR technologies have provided stable solutions mainly for the case where there is a commonly accepted conceptualization and world view. Methodologies and technologies that allow diversification and flexible amalgamation of different world views are still in their infancy.



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