Software architecture and intelligent support of self-organised group learning processes in Metafora

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The Metafora project aims at the support of groups of students in project-like challenges in science and math domains that should be tackled in a self-organised and planned manner.

For this end a system is currently being developed that allows the flexible combination of domain-based learning tools, e.g. math simulations or ecological microworlds, with argumentation systems and planning tools. The combination should overcome the usage of a mere "toolbox", instead also allowing for semantic interoperability across tools, e.g. by referencing in discussion spaces to activities performed in domain tools.

We will describe the web-based integration and communication architecture that enables this semantic interoperability. We also demonstrate how this architecture supports a de-centralized and flexible analytic system using artificial intelligence methods that is meant to provide feedback to both students and teachers about domain-specific and also cross-tool behaviours with the system.