Supporting team-work in the Geosciences using web based mind maps and collaborative tools.

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Graphical representations of a research project are very helpful during the proceeding of a scientific research. These graphs consist of nodes with connecting arcs, representing relationships between nodes. The nodes are labeled with descriptive text, representing the "concept", and the arcs can be labeled with a relationship type. The graphs are not computational unless they have an associated semantics. That is, the map's node and link types and their interconnections must be constrained to allow for computer support.

When computation is expected, formal representation is needed. When human teamwork is envisaged, graphs should be informal meaning flexible and forgiving. In fact, in highly complex field as the geosciences the interaction between partners with different backgrounds, can create difficulties for partners in sharing the same perspective and therefore in converging to any target. Concepts should not be formally defined in order to avoid conflicts in connotation. Instead, they need to be labeled in their function to gather information regarding a specific issue. This raises the awareness of partners and at the same time offer a map where information can be located.

Many free and commercial software exist on the market that are able to produce mind maps. But very few of them can be integrated in a web based Computer Supported Collaborative Software (CSCW) that could fit the need of scientific projects. The key of the innovation we propose is the use of Scalable Vector Graphic (SVG), which is a XML W3C standard to represent vectors. This format allows to keep objects separated so that they can be unequivocally identified. Each of these objects can embed methods as functionalities or scripts, so that for example hovering over one of them additional information can appear or for example hyperlinks can be established in order to redirect users to specific web pages containing the information he/she is interested in. Besides, SVG rendering is performed by the client (the pc of the partner who is exploring the graph) so that zooming and panning is very fast and there's no overloading of the network.

After an SVG mind map is designed with some of the software available, this is uploaded into a CSCW that identifies the nodes and configures automatically the system to offer to the users file storage and messaging. A systems has been tuned for this purposes starting from the CSCW developed at OGS called COLLA (Diviacco 2007).What developed has been tested to support scientific collaboration in some projects of different dimensions, from small team-works, to large European project.

P. Diviacco, 2007 "Data systems and the social aspects of Scientific Research", Eurpean Geosciences Union (EGU) Vienna, April 2007
[SVG], http://www.w3.org/Graphics/SVG/