

## Software Engineering Rewards for Brainstorming Online (SEREBRO)

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**Abstract.** Our multi-faceted tool called SEREBRO (Software Engineering Rewards for Brainstorming Online) is an embodiment of a novel framework for understanding how creativity in software development can be enhanced through technology and reinforcement. SEREBRO is a creativity support tool, available as a Web application that provides idea management within a social networking environment to capture, connect, and reward user contributions to team-based, software engineering problem solving tasks. To form an idea network, topics are created that typically correspond to artifacts needed to achieve specific milestones in the software development process. Team members then perform the activities of *brainstorming* (initiating) ideas, *spinning* ideas from current ones by agreeing or disagreeing, *pruning* threads that are non-productive, and *finalizing* emerging concepts for the next milestone. Each idea type is represented by a corresponding icon and color in the idea network: *brainstorm* nodes are blue circles, *agree* nodes are upright, green triangles, *disagree* nodes are upside down, orange triangles, and *finalized* nodes are yellow pentagons that have tags associated with contributing ideas. SEREBRO can display threads as a series of posts or in a graphical view of the entire tree for easy navigation. Team members also use SEREBRO for scheduling meetings and announcing progress. Special idea nodes can be used to represent meeting minutes. The meeting mode associates a clock with each idea type and allows multiple users to be credited. Rewards are propagated from leaf nodes to parents to correspond to idea support. They are supplemented when a node is tagged by finalization. These rewards are represented as badges. Reputation scores are accumulated by the direct scoring of ideas by team members. A user's post publicly displays both reward types. The current version, SEREBRO 2.0, is supplemented with software project management components that enhance both the idea network and reward scheme. These include uploading files for sharing, version control for changes to the product implementations, a Wiki to document product artifacts, a calendar tool, and a Gantt chart. The website with a video of SEREBRO 1.0, data collections, and link to SEREBRO 2.0 to view various idea nets, the wiki, uploaded documents, and any resulting prototype development by the teams, as well as publications, including submissions, can be found at <http://www.seat.utulsa.edu/serebro.php>. Guest access to SEREBRO is available by email request to [gamble@utulsa.edu](mailto:gamble@utulsa.edu).