Chapter 1
Executing Collaborative Brainstorming Idea Organization Through Distributed and Parallel Sorting

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ABSTRACT

This chapter examines the post-convergence process of organizing ideas that are generated during collaborative idea generation activities. The method presented reduces the impact of organizing brainstorming ideas on individual participants by dividing the organization activity into smaller, discrete tasks that can be completed individually, and in parallel, by the participants. The entire pool of brainstorming ideas is subdivided into smaller pools and each participant is then tasked with organizing one of the subsets of ideas. The results show that by dividing up the overall activity into subtasks, the subjects experienced a more favorable environment. Furthermore, the subjects were able to work through their subset of ideas and produce results that were similar to those performing the full sort of the entire pool.

Changes in technology and connectedness have yielded a proliferation of tools that enable collaboration between individuals. These collaborative tools vary in sophistication and in the types of collaboration that are enabled, from simple instant messaging to complex Group Decision Support systems. Despite the proliferation of tools and vast body of research, many challenges still exist in making collaboration a simple and reliable approach for broad use. These challenges impede the effectiveness and efficiency

with which individuals and groups can solve problems. Even worse, these challenges keep people away from collaborating (Denning & Yaholkovsky, 2008).

One such collaborative challenge revolves around the ability of large groups to collaborate effectively (Helquist, Kruse, Meservy, & Deokar, 2011; Kruse, Helquist, & Adkins, 2008; Thorpe & Albrecht, 2004). An increasing amount of research is currently underway on crowdsourcing various tasks and harnessing the wisdom of the crowds. These large groups pose a problem as they often do not lend themselves to traditional collaboration tools and methodologies as their characteristics are different.

Two of the key characteristics of large group collaboration are the proximity of the participants and the synchronicity of the collaboration (Helquist, Kruse, & Nunamaker Jr., 2009). Traditional collaboration has focused extensively on synchronous, face-to-face interaction, often led by a facilitator. However, due to physical and logistical constraints, large groups often require the use of physically distributed and asynchronous collaboration (Helquist, Kruse, Deokar, & Meservy, 2013). The increased number of participants, geographic distribution of participants, and asynchronous interaction all increase the complexity of the collaborative engagement (de Vreede, Briggs, van Duin, & Enserink, 2000). These factors can lead to more content being created during ideation and can complicate coordination among participants as they cannot easily communicate, focus attention, or achieve group understanding as they might in a smaller face-to-face group.

Collaborative work activities can be organized by what is called the "patterns of collaboration" (de Vreede & Briggs, 2019; de Vreede & Briggs, 2018). These patterns include the following:

- Generate: Brainstorming to identify solutions to the issue at hand.
- Reduce: Moving from many brainstormed ideas to a few worthy of more attention.
- Clarify: Improving the understanding of the brainstorming ideas.
- Organize: Organizing the ideas into groups or buckets to understand relationships.
- Evaluate: Identifying the ideas that provide the most value or utility.
- Build commitment: Improving the level of buy-in among the stakeholders.

The first stage, generate, is a classic ideation phase where groups brainstorm ideas. The next two steps, reduce and clarify, are convergence activities enable the group to reduce the content by summarizing and combining the brainstorming content. The overall effort of these two activities is to focus and make the content more valuable or usable by identifying the ideas most worthy of further consideration.

The organize phase allows the group to structure and synthesize the content. The brainstorming ideas are grouped into categories or buckets. Typically, this process is handled through a facilitator that guides the group through the organization process. However, in a large group setting, this activity becomes increasingly difficult to execute. Because the tasks inherent in changing the organization or structure of brainstorming ideas is normally a group-level activity, there is a need for an increased level of communication and collaboration between the collaborators.

Without increased coordination or facilitation, the actions of the participants will tend to result in task collisions, confusion and wasted effort. Thus, existing collaborative activities are also largely serial as the participants are forced to work together as a group, even with a facilitator, to avoid these collisions and reach some form of consensus with regard to the final organization phase output.

This research investigates organization activities in an effort to further understand the potential for changing current collaborative processes and tools with respect to large groups. The goal is to improve tools and methodologies that will enable large groups to collaborate effectively and efficiently in a dis-

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