

Beyond Discussions: Designing for Sociability and Structure

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ABSTRACT

An increasingly-distributed workforce is intensifying the need for tools that support informal deliberations. In this position paper we highlight the importance of three design goals for such tools. The first, argument structure, is motivated by the need to alleviate costly and time-consuming post-discussion manual summarization. The second, sociability, reflects the importance of engaging a broad spectrum of people in the deliberations. And the third, usability, addresses the need to make navigation easy enough for casual users to find places to contribute to the discussion. Current systems have not yet fully addressed these design goals especially for the kind of informal deliberation that is common in enterprises. This position paper describes the design of a prototype system which incorporates models of argumentation along with principles of social media design and usability to create a lightweight online deliberation tool.

INTRODUCTION

A common need in the workplace is getting informed answers to unstructured questions for which there are no obviously correct solutions such as “What are the critical software technologies that we should be paying attention to?” or “How will we scale this system to millions of users?” According to Gartner [15], “the vast majority of organizations make thousands of increasingly collaborative decisions, often with poor outcomes, without insight into how decisions are made or their effectiveness” (p5). Moreover, the growing trend towards distributed work [10], makes decision-making with face-to-face meetings impractical; and conference calls can be an unsatisfactory alternative. For these reasons, researchers are turning their attention to new tools that can support group decision-making and deliberation online [11, 13]. These tools combine collaborative capabilities, including those enabled by social software, with more structured information, processes and tools.

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In this position paper, we consider collaborative deliberation in the context of three design principles: sociability, usability and structure. In the next section, we briefly describe these three principles and then illustrate how our approach applies them in *Beyond Discussions*, a prototype collaborative deliberation tool.

DESIGN FOR COLLABORATIVE DELIBERATION

Collaborative deliberation begins with collecting a set of ideas from which the best are distilled and carried forward into the next phase of decision-making. How well that process works depends on finding and engaging the right people to generate the ideas (sociability), helping them to participate in evaluating the strengths and weaknesses of the ideas (usability) and having reliable methods for organizing the ideas (argument structure).

Sociability

Collaborative deliberation is a social activity governed by individual behavior, group processes, and organizational context. While social environments generally facilitate collaboration, deliberation activities can also engender unintentional biases. For example, individuals with strong personalities have been known to dominate discussion, leading others to suppress conflicting views. Similarly, ‘group-think’ may bias deliberation because group members reach consensus to avoid conflict or because of a lack of different perspectives. Further, organizational imperatives may cause bias by inhibiting participation of junior members who may avoid revealing personal interests or coming into conflict with authority figures. These biases have been observed in face-to-face meetings [8] and can become exaggerated when the deliberation occurs online due to the absence of social cues.

Technology can also be used to overcome some of the biases. In an effort to encourage broad participation, some online discussion tools allow contributions to be anonymous. By concealing identity, contributions can be evaluated on their own merit instead of interpreted through the social lens of the author [12]. On the other hand, people can engage in “flames” and other anti-social or disruptive behavior by hiding behind the anonymity provided online.

An alternative to anonymity is to incorporate social networking elements into tools to increase the level of engagement as some researchers are doing with collaboration tools [17]. Social networking and social profiles can reduce the psychological and social distance between participants by elevating awareness of others' expertise and reputation and by leveraging existing social relationships [6, 16]

For instance, internet-based "Q&A" sites including Stack Overflow [2], Facebook Questions [1], and Yahoo! Answers [3] have introduced social media elements. These sites target informational questions that have clear answers. Questioners can vote to "accept" a solution. Users who get more "accepts" develop reputations for providing good answers. While many of these sites have social features (e.g., the ability to rate postings or vote, social networks, or ways to establish user reputation), they do not emphasize discussion, conversation, or constructive argumentation. On the contrary, since any posting could be promoted to be the "accepted" answer, people are encouraged to make their solutions self-contained and are discouraged from referring to other messages in the same thread.

Usability

In addition to ordinary usability requirements, online deliberations must also take care that both dedicated and casual users can easily find where they can best contribute to the discussion, and, that all users can readily navigate the content and understand the structure of the discussion. We identify three particular usability challenges:

- **The Goldilocks problem.** Online deliberations can suffer from the "Goldilocks" problem. Too much content means the decision-maker is overwhelmed and the regular user loses the sense of the discussion. Too little content means there is insufficient information on which to base a decision. To get just the right amount of information, tools can encourage contributions from users but also provide sufficient structure to simplify navigation so that the users can easily get a sense of the gist and direction of the discussion and avoid duplications. Some systems have tackled this problem by providing visual maps to represent the argument structure [5, 7, 11, 13].
- **Visibility.** Even with a moderate amount of activity, it is easy for valuable contributions to get lost. A single comment amidst many others on a different topic can easily get overlooked, resulting in a potentially important contribution getting lost. Thus, some kind of visual organization is necessary to filter and delineate the discussion.
- **Getting engaged.** It can be hard for a user to figure out where and how to jump into an ongoing discussion, especially if they have not been part of

the discussion from the beginning. If the user cannot see where and how to contribute, he may become disengaged which is a loss to the discussion.

Online deliberations benefit from participation by a broad range of users. However, in order for the decision-maker to benefit from the diversity of perspectives and opinions it is important that the system makes it easy for occasional and infrequent users to see where and how they can contribute and that their contributions are sufficiently well-integrated into any summarization.

Argument Structure

General-purpose online discussions, such as Usenet, work well for sharing knowledge and for asking simple questions of a community. But for questions that require a more complex answer, it is unlikely that a good answer will simply emerge spontaneously. In an unstructured format, the discussion around each answer can get fragmented and lost. There is also a risk that popular or controversial answers "rise to the top", leaving potentially more relevant or important answers buried. Discussions often ramble and then just stop, whether or not the discussion is getting closer to some kind of closure. Moreover, these tools provide no support for separating the suggestions from other general comments, and, distilling the arguments in favor or against each position. There are several approaches that have been tried to encourage participation while also distilling the key ideas at the end.

One example comes from IBM which has run a series of large, open discussions called "Jams" to crowdsource innovation from a broad and diverse set of people [4, 9]). Jams are generally well-attended, generate many good ideas, and provoke interesting discussions. In practice, however, most of the visions and insights emerged after the Jam was over, when a group of people manually sifted through the postings to harvest the key ideas that would be carried forward to the next phase of action [4]. This method is very successful at collecting ideas, but the lack of structure and the labor-intensive manual analysis and moderation makes it expensive and impractical to hold Jams frequently.

At the other end of the spectrum are systems that make the work of distilling the ideas easier by explicitly capturing the argument structure which may then be represented in the form of maps [5, 7, 11, 13]. These systems extend beyond deliberation into problem-solving where quality, reliability and transparency of rationale and evidence have to be considered. However, in order to assign the right structure to the content, these systems require users to assign some level of structure to their input to indicate, for instance, whether their post is in favor of or against a particular argument. The additional burden may inhibit some users from participating and have typically required skilled

facilitators or moderators to guide users into the proper structure assignments.

BEYOND DISCUSSIONS

There are systems that support discussions, but we believe that discussions are only the first step for online deliberation and in developing a collective cognition. We envision a system that allows people to easily contribute to a deliberation, ask questions, propose solutions, add arguments for or against proposals, and evaluate the quality of contributions. In addition, the system should be able to highlight emerging trends and themes, direct people to places where they can effectively contribute to the discussion, and provide summaries and visualizations that enable people to understand the conversation as it is evolving and later for review.

Our group at IBM Research is working to address challenges with existing discussion systems and their effectiveness in supporting decision-making. To that end we have built an initial prototype, *Beyond Discussions*, which is a forum for posing questions to the community to get possible solutions to aid in making a decision.

Figure 1 provides a screen shot of the latest version of the system. We combine the social features found in some question answering systems with real-time analytics and conversational facilitation from structured deliberations to produce a better platform for group deliberation. The left-hand side of the display shows summary information for the discussion: who has participated, visual summaries, and a list of extracted keywords. Hovering over a participant's picture shows where that person has contributed and provides a shortcut to those contributions within the context of the entire discussion. Clicking on a participant, either here or elsewhere, takes the user to a page that shows the person's contributions throughout the system. The main section of the display is devoted to the issue being raised and the various solutions that are being proposed. Both issues and proposed solutions can be augmented or clarified with comments. In addition, people can add pros or cons to each proposed solution.

On the right-hand side of the display is related material in the system – people who have participated in similar discussions as well as pointers to those related discussions. These related people may be useful to invite to join the conversation based upon their established expertise and interests. Finally, across the top of the display is a dual search bar/question bar. Raising a new issue in the system is the same as searching the system. As the user types his or her question, he or she can choose to view related questions that the system has found or, if none of those questions really address the issue at hand, he can create a new question in the system.

We briefly discuss how the current design and future enhancements of *Beyond Discussions* are informed by the principles of sociability, usability and argument structure.

Sociability

Beyond Discussions is designed to facilitate collaboration between users by incorporating social media features, including tracking each person's social network so that they can find and follow the contributions of people they know. We also provide tools to help the decision-maker select their audience. Using social network analysis, the system will, in the future, suggest people based on their set of affiliations, such as which groups they belong to, their past behavior in similar discussions and their expertise. In addition, users are given the ability to easily suggest an ongoing deliberation to people they know who have interests and expertise around the subject, promoting social spread of participation. Gamification features like points, leader boards, and badges could be used in the future to help encourage user participation. We currently use Lotus Connections data to provide information about users, including social network membership, interests, and expertise. This enables us to offer users information about what questions members of their network are participating in and to suggest users who might have interest and expertise in a particular question.

Usability

One of the primary goals in the development of this system is to maintain an ease-of-use that will encourage adoption and use while gently guiding users toward effective participation. We have deliberately kept our argumentation model very simple in order to not burden users with subtle distinctions or unfamiliar jargon. We provide overviews of existing deliberations to help new participants get a quick sense of the state of the conversation. In this way, they can participate without necessarily reading everything that has gone before. We make extensive use of text analytics to help users discover questions similar to ones that they are about to pose, or to help them avoid proposing suggestions that have already been made. We support discovery of interesting questions on the *Beyond Discussions* home page by presenting users with questions that have attracted participation by their social group, and also support social referral of questions by users to people they believe have the expertise and/or interest in a question topic. In addition, the system can keep track of postings that have perhaps been neglected and actively promote those so that every idea gets a fair hearing.

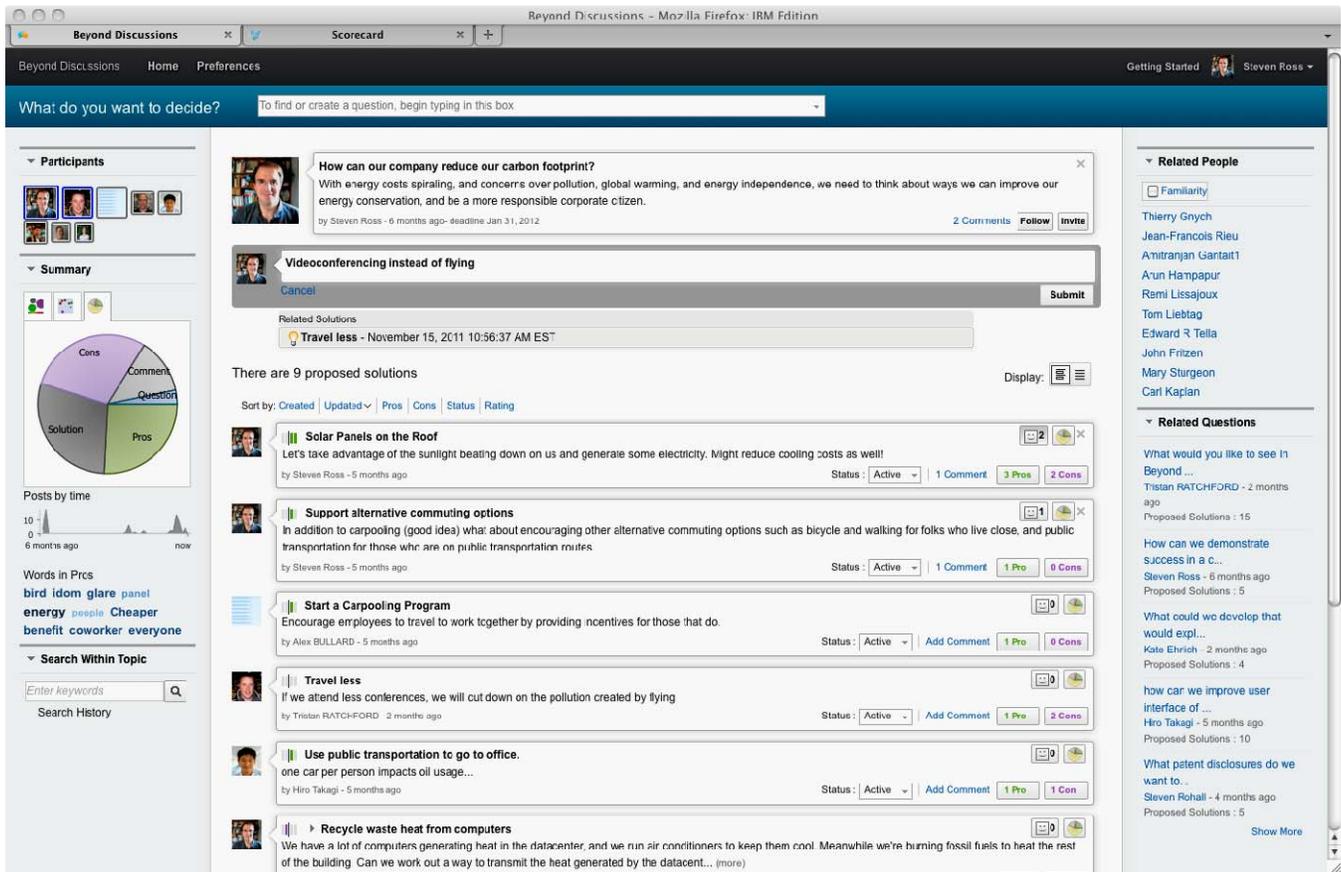


Figure 1: Sample screenshot of *Beyond Discussions*

Argument Structure

To make it easier for the decision-maker and users to understand the current themes and trends, we use an Issue – Solution – Argument structure. The decision-maker kicks off a new discussion by posing a question. The example in Figure 1 is “*How can our company reduce its carbon footprint?*” The decision-maker can optionally add a brief description e.g. “*With energy costs spiraling, and concerns over pollution, global warming, and energy independence, we need to think about ways we can improve our energy conservation, and be a more responsible corporate citizen.*” As shown in Figure 2, users can provide solutions, e.g. “*Solar panels on the roof*”, or discuss a proposed solution by providing arguments that are for (Pro) or against (Con) the proposed solution. Users can also provide evaluations of the strength of an argument. In this way, we not only crowdsource the solutions to important problems, we also have that same crowd participate in the analysis of the discussion. The provided structure makes it easy to quickly review the solutions proposed thus far, and to evaluate the pros and cons of any particular solution. Taking advantage of this information to provide visualizations and summarizations of the deliberation, and to make suggestions about how a user might contribute

based on an analysis of the emerging structure of a deliberation is a top research priorities moving forward.

We are starting to deploy this tool for testing and use within our company, and will collect usage data and qualitative information to understand where and how it is used, refine the user interface and experience, determine the effectiveness of different features, and gain insights into the situations in which tools like these would be useful. We also intend to use this prototype as the basis for further explorations on visualization, additional text and social analytics, automatic orchestration of deliberations, and the application of game-like techniques and incentives to increase participation.

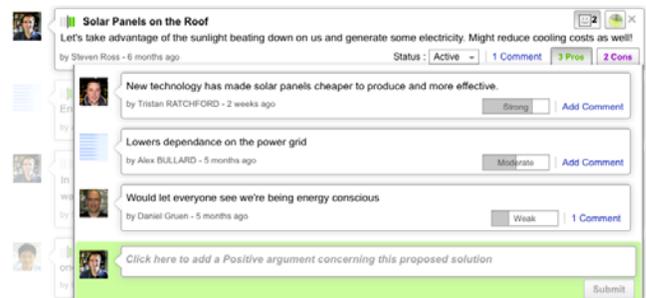


Figure 2: Arguments and ratings display

DISCUSSION

In this brief position paper, we have suggested that the design of online collaborative deliberation tools should pay attention to three principles: Sociability, usability and argument structure. Although some of these requirements underlie the design of other collaborative tools, we have tried to interpret them for the specific needs of collaborative deliberation and decision-making.

We illustrated the requirements by describing our prototype, *Beyond Discussions* which was designed to support questions that frequently arise in the workplace and that would benefit from getting participation of the group of people who are most knowledgeable or most affected by the decision. Thus, our system is targeting settings that lie somewhere between simple questions which an individual can get answered using a Q & A site, and more complex questions that business intelligence and other formal systems are designed to answer. Moreover, questions such as, “*What are the critical software technologies that we should be paying attention to?*” may only require group members to participate over a short period of time. In comparison with the IBM Jams or even the climate change Collaboratorium [14], we expect *Beyond Discussions* to be used by smaller groups. These factors of question type, type of user, length of time and size of group led us to focus our design on engagement through social media and strong usability with just enough back-end analytics to avoid the need for manual filtering. As we begin to evaluate the system with real users we hope to learn more about the implications of our design for other systems of online deliberation and decision-making.

There were several features that have not yet been included in our design. First, there is currently no provision for online facilitation, which has been used in the past to ensure participation and as a way of focusing the discussion in a particular direction. There is nothing in our design which prevents an individual from taking on the role of facilitator but neither is there any explicit support. Second, we do not currently support the final decision-making process, which involves not only prioritizing the solutions, which we do implicitly through our mechanism of rating pros and cons for the solutions, but also assigning ownership and actions to the decision, and establishing criteria by which the solutions can be compared. This is something we intend to examine in a future version. Finally, our system is not currently tied to a content repository such as those that might be used in business intelligence, although this too is something we may investigate in future versions.

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