Chapter 17

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ABSTRACT

The successful emergence of on-line communities, such as open source software and Wikipedia, seems due to an effective combination of intelligent collective behavior and internet capabilities. However, current internet technologies, such as forums, wikis, and blogs appear to be less supportive for knowledge organization and consensus formation. In particular, very few attempts have been done to support large, diverse, and geographically dispersed groups to systematically explore and come to decisions concerning complex and controversial systemic challenges. In order to overcome the limitations of current collaborative technologies, in this article, we present a new large-scale collaborative platform based on argumentation mapping. To date, argumentation mapping has been effectively used for small-scale, co-located groups. The main research questions this work faces are: can argumentation scale? Will large-scale argumentation outperform current collaborative technologies in collective problem solving and deliberation? We present some preliminary results obtained from a first field test of an argumentation platform with a moderate-sized (few hundred) users community.
THE CHALLENGE: TOWARDS INTERNET-ENABLED COLLECTIVE INTELLIGENCE

The spectacular emergence of the Internet has enabled unprecedented opportunities for large scale interactions, via email, instant messaging, news groups, chat rooms, forums, blogs, wikis, podcasts, and the like. Using such technologies, it is now feasible to draw together knowledgeable and interested individuals and huge information sources on a scale that was impossible a few short years ago. We believe that it is possible to harness these new potentialities to enable “collective intelligence”, i.e. the synergistic and cumulative channeling of the vast human and technical resources now available over the internet (Klein, Cioffi and Malone, 2007) – to address what we call “systemic” problems, i.e. highly complex and widely impactful problems such as climate change, where the nature of the solution depends on the problem setting and the level of analysis (Rosenhead and Mingers, 2001). Reframing the issue in computational terms, we can say that such problems have a very large, unexplored and partially unknown solution space. Through the contributions of large numbers (up to many thousands) of knowledgeable users, a virtual community can enable unprecedented breadth of exploration of the solution space and, if adequately motivated and supported, convergence on high-quality and widely-supported solutions through collective deliberation.

The successful emergence of on-line peer production communities, e.g. for Linux and Wikipedia, seems due to an effective combination of intelligent collective behavior and Internet capabilities (Surowiecki, 2004). In a nutshell, openness, large scale, self-organization and the support offered by adequate, low-cost technologies have allowed large groups of users to achieve outstanding results in knowledge creation, sharing and accumulation, to the point that such virtual communities have become a source of inspiration for both organizational scholars and companies (Gloor, 2006; Raymond, 2001; Tapscott and Williams, 2006; von Hippel, 2001; von Krogh and von Hippel, 2006).

However, current technologies, such as forums, wikis and blogs, while enabling effective information sharing and accumulation, appear to be less supportive of knowledge organization, use and consensus formation. In particular, little progress has been made to date in providing virtual communities with suitable tools and mechanisms for collective decision-making around complex and controversial problems.

In this article we argue that a new kind of web-mediated platform is needed in order to overcome the limitations of current technologies in this regard and to properly exploit the potential of collective intelligence on the Internet. We present the design for such a platform, which we call the Deliberatorium, which applies a knowledge organization and visualization approach based on argument mapping to help large, diverse, and geographically-dispersed groups systematically explore, evaluate, and come to decisions concerning systemic challenges. We will argue that the argumentation approach, by providing a logical rather than a time-based debate representation, and by encouraging evidence-based reasoning and critical thinking, should significantly reduce the prevalence of some critical pitfalls (such as low signal to noise ratios, digression, hidden assumptions, low information disclosure, and so on) often faced by traditional technologies such as forum and wikis, and avoid many of the pitfalls that lead to deliberation failures in small scale groups as well.

The article is structured as follows. In the next section we outline the factors that have a major influence on group deliberation failures and discuss the limits faced by current technologies from the perspective of supporting collective deliberation around complex systemic problems. In the second part of the article we outline the design of a large-scale deliberation platform that we believe can
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