An Online Environment for Democratic Deliberation: Motivations, Principles, and Design

Todd Davies (tdavies at csli.stanford.edu)
Brendan O'Connor (brendano at stanford.edu)
Alex Angiolillo Cochran (someone at stanford.edu)
Jonathan J. Effrat (jje at cs.stanford.edu)

Symbolic Systems Program, Stanford University
Stanford, CA 94305-2150

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ABSTRACT

This paper elucidates the experience and thinking behind our new web-based environment for asynchronous group deliberation: Deme (pronounced "deem"). Deme grew out of participation in and observations of group decision making and community democracy, and is being developed within a university-community partnership to enhance civic participation and to bridge digital divides. Civic decisions in the low-income, multi-lingual community of East Palo Alto, California, have mostly occurred in face-to-face meetings. This leads to a number of problems for community engagement that are amplified in a town where many people work odd shifts, have long commutes, and do not have good sources of local information other than Internet-based ones. Deme addresses these issues with a web environment aimed at making asynchronous text communication compatible with tasks that are ordinarily performed in face-to-face meetings. It has been designed for, and in collaboration with, small to medium-sized civil society groups that currently use email or message-board systems. We describe four criteria for groupware aimed at groups that ordinarily meet face-to-face: supporting the group's overall needs, comprehensive task support, enhancing group participation, and facilitating high-quality decisions. Deme's features are described with reference to these criteria.

Keywords

Groupware, Online Deliberation, Social Software, Civil Society.

[1] INTRODUCTION

We have created a platform for online deliberation called *Deme*,[1] which is designed to allow groups of people to engage in collaborative drafting, focused discussion, and decision making using the Internet. This paper outlines the thinking behind Deme's design: our motivations for creating it, the principles that guide its construction, and its most important design features.

Our design has drawn on a number of other projects' and authors' insights, and Deme shares features with many other groupware tools. Our intention is to point to these relationships in discussing the assumptions behind Deme, but also to contrast our approach with others' when notable differences exist.

Although it should be useful to a wide range of groups, Deme is especially designed for small to medium-sized groups that (a) have a substantial face-to-face existence that predates or is independent of any interaction on the Internet, (b) are geographically limited so that all members can meet each other face to face, and (c) have

[1] "Demes" were the divisions or townships of ancient Attica (from the Greek word *demos*, the populace). In ecology, a deme is a local population of closely related plants or animals, and in modern Greece a deme is a commune (OED, 1989).

difficulty meeting face-to-face as much as they need or would like to. Examples of such groups include neighborhood associations, places of worship, community interest groups, university groups (e.g. dormitories), and coalitions of activists .

We believe that the groups we are targeting suggest a distinct set of design criteria from those that govern groupware for "virtual" (Internet-based) groups, businesses, or large organizations. The decline in participation within the U.S. in small, community-based civil society groups such as the ones we are targeting has received considerable attention from political scientists and sociologists recently (e.g. [10][11]).

[2] BACKGROUND

In January of 2002, students and faculty affiliated with the Symbolic Systems Program at Stanford University began a consultative partnership with staff of the newly forming East Palo Alto Community Network. East Palo Alto is a vibrant, low-income, multi-ethnic, and multi-lingual community of 29,506 residents (U.S. Census, 2000), situated three miles from the Stanford campus. The East Palo Alto Community Network[2] comprises a community website or "portal" (EPA.Net), ten technology access points ("TAPs" -- public computer clusters located throughout the city), and staff members employed by the local community technology center Plugged In, who work to connect residents to the technology resources of both the community network and the Internet generally.

The Symbolic Systems Program is an interdepartmental program at Stanford, focusing on the relationships between computers and people. It draws faculty and students who are interested in topics such as cognitive science, artificial intelligence, and human-computer interaction. A series of discussions took place between Symbolic Systems' and Community Network staff over the latter half of 2001. As a result of these discussions, grant funding was obtained to support Stanford undergraduates with pertinent academic interests and background to work on helping the community network serve the surrounding community as a whole (which includes both East Palo Alto and the part of Menlo Park known as "East Menlo Park", which is demographically similar to East Palo Alto). Over the first year (2002) of this partnership, which is now known as the Partnership for Internet Equity and Community Engagement (PIECE), projects included studies of how the needs of the area's diverse groups relate to the Internet and of the realized and unrealized role of Internet tools in improving civic engagement in the community.[3] In the second year (2003), we focused on (a) outreach to the community, (b) follow-up data collection to assess the impact of the community website one year after its launch, and (c) designing a tool for online deliberation, which is the topic of this paper.

[3] MOTIVATIONS

In an earlier paper [2], members of our team argued that East Palo Alto residents and community organizations can gain a great deal through the use of the Internet. This was one of the motivating principles behind the Community Network and other recent technology initiatives in East Palo Alto.[4] Our research looked especially at barriers that keep residents from knowing about, participating in, and influencing decisions that affect them, and at how Internet tools could reduce or eliminate those barriers.

Our early research drew two broad conclusions concerning the use of Internet tools for enhancing democratic decision making in East Palo Alto:

- The ability to use computers and the Internet is distributed very unevenly within the community, and has been especially absent among Spanish-speaking residents who do not speak English very well (68% of the

[2] The community network has been funded primarily by grants from Hewlett Packard and the National Telecommunications and Information Administration's Technology Opportunities Program (TOP), with software donations from Microsoft.

[3] These and other projects, including Deme, are discussed on the PIECE website (http://piece.stanford.edu).

[4] Other recent initiatives include the Digital Village Initiative (DVI), funded by Hewlett Packard (2000-2003), the One East Palo Alto (OEPA) Neighborhood Improvement Initiative (2001-present), and a redesign of the City Government's website in 2002 in partnership with DVI, OEPA, and the neighboring but more resource-rich City of Palo Alto.

Latino population, which is 59% of the city; U.S. Census, 2002; [13]). We refer to eliminating "digital divides" as the goal of ***Internet equity***.

- When the ability to use the Internet is commonplace among members of a group, Internet communication can address many of the difficulties associated with democratic participation in East Palo Alto's organizations and the City Government, for that group of Internet users. Using both the existing community website (EPA.Net) and developing new networking tools appear necessary to best achieve the goal we refer to as ***community engagement***.

Much of the Community Network's expenditure and effort, and some of PIECE's work, is aimed at improving Internet equity (the focus of the first conclusion) through, for example, providing hub computer access and training open to all residents, making the content and functionality of the EPA.Net website motivating and accessible (e.g., through community news coverage and automatic translation), and reaching out to community network users and potential users. A forthcoming paper will report on efforts to bring about Internet equity in East Palo Alto.

The present paper primarily concerns the *second* conclusion, whose focus (community engagement) is a goal that many in the city, including Community Network staff, have been working to fulfill. The PIECE team has been addressing community engagement through both research and tool development. We began by attending several types of meetings, including those of advisory boards for nonprofit organizations, informational and feedback meetings open to community or neighborhood members, and official functions of the City Government, and by subscribing to both organizational and community email lists in East Palo Alto.

Through participant-observation, reading, and interviews, we found that most group decisions made in East Palo Alto occur in face-to-face meetings, often involving volunteers or people who receive little compensation for participating. Residents have, in many cases, very little free time (e.g. they work double-shifts, or have long commutes to their jobs), and there is a widespread perception that decisions are made by a handful of people who serve on multiple committees, are well-connected, and sometimes have their own agendas, and that groups are not empowered in proportion to their population. Although our observations generally indicate a high level of interest, effort, and public-spiritedness among the city's leaders, this substantive reality is sometimes undermined by perceptions of procedural injustice (see [14]).

This situation is mirrored in many communities, and our study of East Palo Alto, combined with our own experiences in other settings (e.g. activist, church, labor, and university groups), suggest the following list of typical community engagement difficulties that Internet tools might address (see also [2]):

1. *Attendance and representation.* When attending a face-to-face meeting is the only way to have input into a decision, many people are disenfranchised because they cannot attend, because of work or family obligations or other engagements, and this is likely to make attendees collectively less representative of all stakeholders.
2. *Meeting duration and frequency.* When meetings are not held very frequently (frequent meetings being difficult for everyone to attend), or when the time available for meetings is scarce, groups are less able to act in ways that are timely or with adequate discussion.
3. *Communication between meetings.* When groups lack efficient means for communicating between meetings (e.g. if they do not have an email list, or if not everyone is on the list), meeting quality suffers because attendees are likely to be underprepared, or worse, they may not know the time/location of the next meeting.
4. *Available information during meetings.* When decisions are made in a setting where some or all attendees are unable to access information that may be relevant to a decision (e.g., a room with no computer or Internet connection, or the relevant experts not present), meeting quality suffers because attendees must rely on memory, common knowledge, or the word of others who may persuade them, rather than basing opinions on the best information.

5. *Communication between groups.* When groups' decisions affect each other (e.g. subcommittees, groups in coalition, or multiple stakeholders), traditional means of communication between them are often inadequate, leading to conflicts, duplicated effort, and uninformed decisions.
6. *Group records.* Groups making decisions in face-to-face meetings often have inadequate records of their own past deliberations and decisions when they meet, which can lead to disputes, conflicting decisions that must be revisited, and duplication of previous effort.
7. *Decision procedures.* Face-to-face meetings often lead to streamlined, time-saving procedures for making a decision, which may not fit the complexity of what the group must decide, or which may unduly empower the chair or agenda-committee (e.g. presentation-sensitive procedures, voting that does not take into account relative preferences among multiple options, etc.).
8. *Transparency.* Face-to-face meetings are difficult to record or to broadcast, so that those who cannot be present are often left unable to know exactly what has happened. This can lead to mistrust, side-dealing, and general disenfranchisement.

The above findings point to a clear role for Internet communication as either a supplement to, or in some cases a replacement for, face-to-face decision making. Many of the above observations would apply to more affluent communities, and we have observed them in many settings outside of East Palo Alto. But the difficulties posed by an almost exclusive reliance on face-to-face meetings are amplified in East Palo Alto because, in comparison to the more affluent residents of neighboring communities, East Palo Alto's residents are more dependent on community resources, they have more experience with being disenfranchised or otherwise being victimized (and are therefore more likely to break off trust relationships), and they have fewer means to participate outside of public forums, which they may be unable to attend. Prior to EPA.Net, East Palo Alto did not have its own media (newspapers or a broadcast station), and residents still have great difficulty getting information about what is happening in their city.

Some of the challenges we have identified for community engagement in East Palo Alto can be addressed through existing features of the Community Network: e.g. getting organization members access to the Internet and email accounts, setting up email lists, collecting relevant information about groups and the city on the community website, and publicizing important meetings. But to address the above challenges fully requires a kind of groupware that, we shall argue, does not presently exist. We have therefore created a new platform aimed at filling this gap.

[4] PRINCIPLES

The challenges listed above (1 through 8) lead easily to the idea that Internet tools for group decision making could address these challenges for a particular group, if its members each have regular Internet access. Attendance and participation would be easier because members would not have to travel to participate, and if the tool allowed asynchronous communication, members could participate at their convenience instead of needing all to be present at the same time. Discussion comments could be composed at a more leisurely pace and with more care, and the group would not be constrained by its announced meeting times and durations. Even if face-to-face meetings were to continue to be the primary setting for decisions, Internet communication could occur between meetings, and relevant outside information as well as communication with other groups could be more easily incorporated into discussions through linking. An online archive of the group's activities would make it less likely that the group would get bogged down due to a lack of collective memory, and, since the Internet can be used as a form of broadcasting, all stakeholders could follow what was happening in the proceedings of a group.

The observation that Internet communication can address challenges 1-8 is, however, just a starting point. The interesting question then becomes how the Internet can best be used to address these difficulties, serving the general goal of enhancing the ability of group members and/or stakeholders to participate in decisions that affect

them. We argue that *the design of a platform or toolset for groups that have a substantial non-Internet existence, should ideally satisfy four top-level criteria.* The criteria take the form of outcome goals that are intended to be evaluated with respect to a particular group or set of groups.

The first criterion requires that online interaction enhance, or at least not diminish the group's overall effectiveness , on- and offline. We call this the criterion of *supportiveness*.

> ***Supportiveness***. The platform should support the group overall, so that there is either an improvement or no decline in the ability of the group to meet the needs of its members or stakeholders.

The second criterion (comprehensiveness) expresses a desire to liberate the group from a dependence on having face-to-face meetings. While groups might still choose to meet face-to-face, eliminating the need to *rely* on face-to-face meetings would mean that there would no longer be an excuse for inner-circle, closed-door decision making, because no task would require it.

> ***Comprehensiveness.*** The platform should allow the group to accomplish, in an online environment, all of the usual deliberative tasks associated with face-to-face meetings.

The third criterion expresses a desire to make decision making more participative relative to what occurs in face-to-face meetings.

> ***Participation*.** The platform should maximize the number of desired participants in the group's deliberations, and minimize barriers to their participation.

Finally, the fourth criterion, that of quality, expresses a desire not to reduce the group's satisfaction with the process and substance of its decisions.

> ***Quality*.** The platform should facilitate a subjective quality of interaction and decision making that meets or exceeds what the group achieves in face-to-face meetings.

Combining these four criteria with general principles of design yields a richer set of design principles. These derived principles are closer to the level of actual design, and provide an outline of the functionality for our platform. In the subsections below, we discuss the design principles and goals (highlighted in *italics*) that we have derived from each of the four outcome criteria listed above.

4.1. Supporting the Group

The criterion of supportiveness is analogous to Hippocrates' famous dictum "do no harm".[5] We interpret supportiveness, in part, to mean that groups should have *autonomy* over the toolset that they use for deliberation, so that group members can determine as much as possible for themselves when and how to use online tools, how and whether to modify them, and what resources should be devoted to their maintenance. Inasmuch as tools can be made available as *free and open source* software, supportiveness does not seem consistent with a model that draws resources away from groups (e.g. monetary payments that exceed or are not tied to fair compensation for labor and other costs), or that limits access to online tools for commercial purposes or to benefit the provider at the expense of groups. Open access to the code seems especially important for software that is going to be used for decision making (e.g. elections), where group members may worry whether they can trust the results.

Supportiveness also implies that online deliberation should not lead to reduced satisfaction with the group on the part of its members or stakeholders. The online platform should therefore *build in feedback and assessment* from group members, shared both within the group and with tool providers, at different stages during and after tool adoption.

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[5] This appears, not (as many believe) in the Hippocratic Oath itself, but rather in Hippocrates' *Epidemics*, Bk. I, Sect. XI.: "As to diseases, make a habit of two things—to help, or at least to do no harm" (http://www.geocities.com/everwild7/noharm.html).

As a guiding principle, a supportive platform should not take away capabilities that the group possessed before its adoption, but should *integrate with existing practices* as much as possible. If group members are using email as a group communication tool, for example, and want to continue doing so, supportiveness implies that any new platform should incorporate email usage where it can be accommodated, without also diminishing the effectiveness of the earlier practice (e.g. by maintaining the option to communicate with the group by email and not creating a separate interaction space that is unnecessarily inaccessible through email) .

4.2. Comprehensive Deliberation

The criterion of comprehensiveness implies that we can map the usual activities of face-to-face deliberation onto the design of an online toolset. Meetings in organizations feature discussion that is typically *focused on particular agenda items.* These items give structure to the meeting, and are usually discussed in some order. One type of agenda item is simply a topic of discussion, such as a question on which members of the group brainstorm or express their opinions. Discussion items are often well suited to existing online forums (e.g. web message boards or even listservs) because the topic can generally be specified simply, e.g. by posting a question. But organizations often must go beyond exchanges of opinion to *numerical polling or formal decisions,* in which some agreed-upon procedure is applied, such as voting or testing for consensus. Furthermore, each group has its own procedures for decision making, and if an online platform is to provide comprehensive support for the group's deliberations, it must give the group *options for decision making procedures* that are sufficiently close to its offline practice.

A general design principle of *flexibility and customizability* derives from the goal of comprehensive deliberation support. This can also be applied to another important type of agenda item: the drafting of a document. Documents such as bylaws, flyers, press releases, and budgets, should ideally be expressions of a group's will. *Collaborative drafting* is a cumbersome process that often gets delegated to one or a few people who can meet face-to-face. But the power that is delegated in such cases can be considerable. Even if the group must ultimately approve a document, those who participate in drafting it in its earlier stages are likely to have a disproportionate influence on its content. At a minimum, an online platform should support the same level of document collaboration as can occur in face-to-face meetings, and at best it offers the possibility of exceeding that standard.

Documents (including nontextual material such as images and videotapes) can be objects of discussion in meetings both as part of collaborative drafting and as the centerpieces of debate (e.g. as evidence that bears on a decision). An important feature of face-to-face meetings, compared to the lists of messages that usually comprise online discussion, is that a document can be placed in the common view of a meeting's participants, e.g. by distributing copies or projecting it onto a screen, and oral discussion can center on the document through synchronizing references (such as: “Everyone look at the paragraph beginning with `Maria said...'.”). The importance of common views or WYSIWIS (“What you see is what I see”) has been stressed from the early days of research on computer-supported cooperative work (e.g., [12]). The ability of meeting participants to function simultaneously in two discourse spaces – the document and the discussion, generally by applying separate perceptual modalities (visual and auditory), is a formidable advantage of face-to-face meetings that must somehow be captured in a fully online platform if the criterion of comprehensiveness is to be met, to allow *document-centered discussion.*

The structure of both civil society and government groups typically resembles a network of clusters, exhibiting relatively high levels of connectivity within groups (clusters), and low (though important) connectivity between groups. This argues for *each group having its own online space*, with the ability to close access for nonmembers, but also to establish lines of communication with other groups. Groups usually include subgroups such as committees, or they may segment meetings into different topics. These observations imply that each group should be able to create *separate online spaces for different subgroups or meeting topics.* Often, groups

of representatives from different groups form coalitions, which implies that *meeting areas should be able to be linked across groups* as well.

Collaborative drafting, document-centered discussion, rich support for decision procedures, and hierarchical and network structuring of group meeting spaces are all cumbersome in standard message-list online environments. We have therefore emphasized these in our design principles/goals for an online deliberation environment. There are many other activities associated with face-to-face group meetings that are well supported in current groupware, such as *announcements*, the keeping of a *common calendar*, the *sharing of personal information* by group members, and *the ability to share files and links.* Since we assume that groups will desire minimal inconvenience in moving between these capabilities, we infer that they should be integrated with a deliberation toolset so that groups can have an all-purpose online space to call their own.

4.3. Maximizing Participation

The participation criterion has a number of consequences for the design of a deliberation platform. Maximizing the number of people who can participate implies that communication should be *asynchronous* so that group members can participate at their own convenience. The software should be *compatible and interoperable* with the widest possible range of server and user environments, so that those who might participate are not prevented from doing so for technical reasons.

Participation is likely to be affected by a number of other factors that will determine how comfortable group members feel using the platform, e.g. *familiarity of features, design simplicity* and *intuitiveness, accessibility to those with special needs, execution speed* and *robustness,* trustworthy *privacy protection,* and *secure communication.*

For those who can use an online deliberation tool, overall participation may be enhanced merely by this fact. A number of authors have noted the tendency of computer mediated communication to equalize participation [7] [9]. Of course, accessibility is key in realizing this potential.

4.4. High-Quality Deliberation

The criterion of quality could be assessed subjectively, through the kind of *built-in feedback* referred to above under "Supporting the Group". There are also numerous principles that have been proposed for creating sound deliberation, such as the conditions of the "ideal speech situation" defined by Habermas ([5][6]; see also [7]), and other theorists of "deliberative democracy" (e.g. [4]). In general, enhancing decision quality seems to call for greater *structure around which discussion can take place.* Farnham, Chesley, McGhee, and Kawal [3] have demonstrated that more structured discussion in a chat room (i.e. preauthored scripts) improves the ability of a group to come to consensus.

A full treatment of the theory of deliberation is beyond the scope of this paper, but it seems possible for an online platform to support good discourse practices through, for example, *built-in tutorials* and *models of practice*, as well as *features that encourage directed discussion* (e.g., encouragement to quote comments being responded to, when possible, rather than to paraphrase them; clear options for one-on-one replies when a more visible discussion is not justified, etc.). An excellent discussion of the relationships between deliberative democracy and the design of groupware is contained in a recent article by Beth Simone Noveck [8].

[5] DESIGN

Applying the above principles within what is technically and otherwise feasible for us has led to the creation of Deme: an online environment for group deliberation.[6] In this section and the next, we describe the design of Deme and attempt to relate its features to the design principles and goals derived in the previous section. The design of Deme was refined through a series of meetings with prototypical target groups: the Community Network staff in East Palo Alto, prospective users at Stanford, and a grassroots group of labor activists

[6] See the Deme website at http://piece.stanford.edu/pod.

organizing a labor media/technology conference. These groups provided valuable input to the design, and Deme's features reflect their comments.

Deme is organized around *group spaces*: subsites that are each devoted to a particular group. A *group* is assumed to be either a well-defined set or a looser cluster of individuals who identify themselves with a *group name*, which also names their online group space.[7] Entry into each group space is provided through the *group homepage* (see Figure 1).

Figure 1. A group homepage.

The group homepage shows the group's name (e.g. "Labortech") and an *introductory description* at the top. It also identifies the user (if logged in) and provides the user entry into his/her *member profile*, or a link for joining the group if the user is not a member.

For the most part, these should be familiar features for those who have used web group sites such as Yahoo! Groups, MSN Groups, and Smart Groups. The somewhat novel feature of the group homepage is the availability of an arbitrary number of meeting areas. Each meeting area link takes the user to a new page (a *meeting area viewer*), where group members can interact and/or deliberate. A meeting area might correspond to a committee or working group that is either a subgroup or a group connected to the group on whose homepage the meeting area is linked, or it might be set up around a topic for discussion or decision of interest to the group as a whole. A meeting area viewer is shown in Figure 2.

[7] Modifiers may be needed to make group space names unique when conflicts arise, but this is not yet implemented.

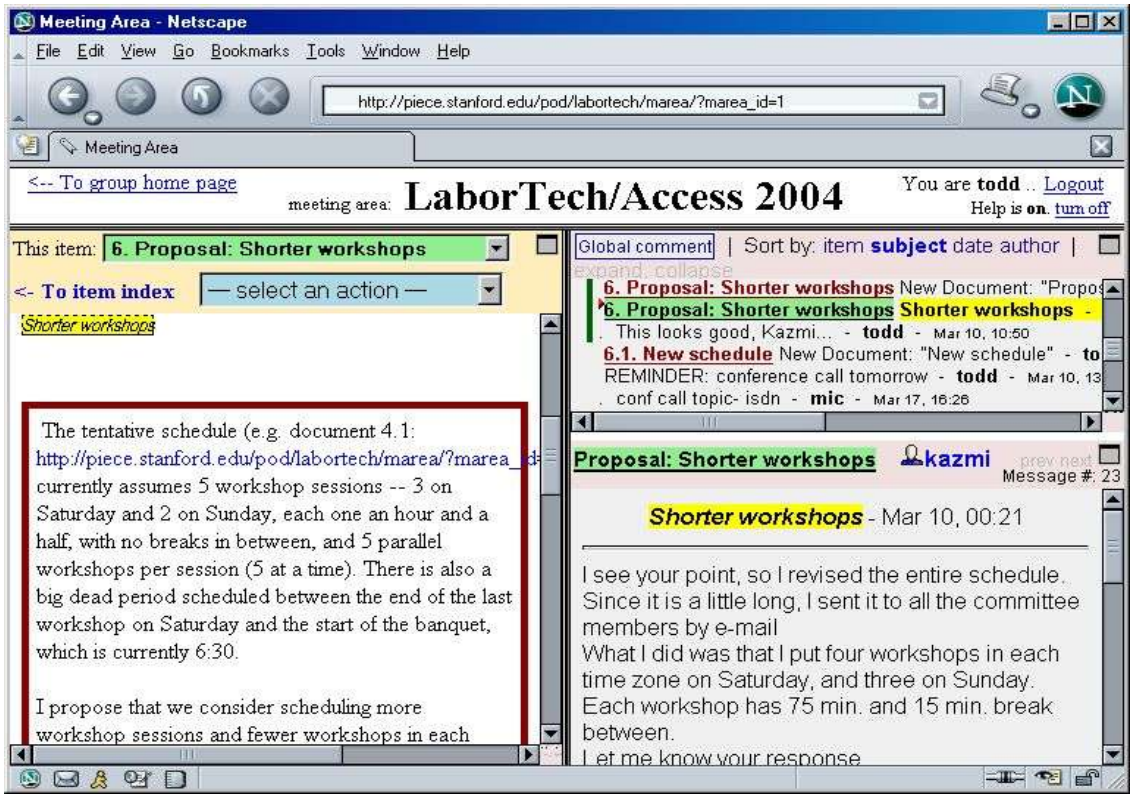

Figure 2. A meeting area.

Beneath the *meeting area banner* at the top of the viewer page in Figure 2, the browser window is divided into three *panes*. Each pane can be viewed and operated upon either in the part of the screen shown (which is the *standard view* of a meeting area), or it can be made to fill most of the browser through the *enlarge button* located in the upper right corner of each pane. Under the banner, the standard view of a meeting area is divided *vertically* into the *discussion viewer* on the right side of the screen (consisting of a *comments index* pane that sits above a *comment reader* pane), and, on the left side of the screen, a pane known as the *folio viewer* . These left and right side viewers in the standard view are used to view and manipulate the two main types of objects in a meeting area: *items* and *comments*. Items comprise a meeting area's *folio*. Items are intended to be focuses of attention for the participants in a meeting area. The types of items include *documents, links, discussion items, nonbinding polls,* and *decisions*. Comments comprise a meeting area's *discussion*. A comment may be posted in reference to a particular item, or as a response to another comment, or as a *global comment.* In general, the meeting area is designed so that items are the objects of comments, and comments can refer to items.

When a comment refers to an item, the *comment header*, as shown in both the comments index and comment reader, contains an *item reference*. Item references are shown as underlined red links at the beginning of the comment header. When an item reference is clicked on, it becomes *active* , and the item to which its comment refers gets loaded into the *item display*, which takes up the bulk of the folio viewer and is located just beneath the *folio viewer control panel*. If an item reference is active, it is highlighted using both green shading and a small arrow in both the comments index and the comment reader. Clicking on a comment header, either by clicking its item reference or by clicking on its *subject line*, makes the comment itself (as opposed to the item reference) active. If there is an active comment, its subject line is highlighted in yellow in both the comments index and comment reader.

Comments may be viewed independently of the active item reference by clicking on their subject lines. But when an item reference is first clicked on, both the item reference and the comment that was first associated

with the item reference become active. Right after a click on an item reference, the referenced item is loaded into the item viewer so that the *comment reference* that is tied to the item reference can be seen in the display of the item, the comment is loaded into the discussion viewer, and the comment reference is highlighted in yellow inside the item display to indicate that both the comment and its associated item reference are active. A comment may reference an item either as a *general comment on the item* or as an *in-text comment*. In-text comments are unique to documents. The comment reference of an in-text comment can appear in any blank space within the document, and the document and the location of the comment reference together become the comment's item reference, indicating to Deme what the user should see in the folio viewer when an item reference is clicked on in the discussion viewer. All items can have general comments that reference them.

As an example, in Figure 2 the user has clicked on the item reference "6. Proposal: Shorter Workshops", which is highlighted in green with a small arrow pointing to it in the comments index. This item reference appears in the comment header for the comment "Shorter workshops", which was posted by "kazmi". The document itself appears on the left in the folio viewer, with the active comment reference highlighted in yellow above the text of the document. Documents may be entered directly (typed or pasted in as plain text), which allows in-text commenting, or they may be uploaded in any format and made available for general comments.

There are additional features and subtleties in the design of the meeting area viewer which we hope will be intuitive for users. The main point to understand is that the meeting area viewer is designed to embody the principles discussed in the section above on "Comprehensive Deliberation". Through a division between items and comments, and an architecture for referring to each, the meeting area viewer more closely approximates the processes of collaboration and item-centered discussion that happen in face-to-face meetings. Additional item types – discussion items, web links, nonbinding polls, and decisions (e.g. majority, approval, plurality, and consensus procedures)– are integrated into the meeting area to allow a full range of deliberation activities.

[6] EXPERIENCE AND PLANS

Consistent with our conclusions about how best to support groups, Deme is a freely available, open-source tool that can be accessed either through the server that we maintain or else installed on a group's own server. Our intention is to create an autonomous membership organization of groups who wish to support and direct an application service provider (ASP) service for Deme. The code is written in PHP using MySQL, with fairly heavy use of DHTML for the frame-based meeting area interface, and popups for the posting of new comments and items. The attempt to create desktop-like functionality in a web interface presents many technical challenges related to cross-browser compatibility and the difficulty of controlling client-side interactions. It is also difficult to provide the kind of response speed that users of desktop applications such as email readers are accustomed to. For these reasons, users may desire a desktop version that will run more efficiently than the web-based version, but we believe that web-based users should be given the best possible access to ensure that the tool does not become driven by home users.

Although we think the basic design of Deme is relatively user-friendly, there remain many challenges to making it more accessible, secure, customizable, and feedback-oriented, goals derived above as ways to maximize participation and enhance the quality of deliberation. Regarding integration with other software, which is important for several of our outcome criteria, users can presently opt for different levels of email notification when items and comments are posted, and closer integration with email lists is planned for the future.

An early release version of Deme was made available on Freshmeat.net in January of 2004, and group spaces were set up for tutoring new users, for internal development discussion, and for an early-adopter (test) group planning the LaborTech 2004 conference at Stanford. The response from users so far has been positive, with many new users commenting that it has great potential to enhance participation in groups of which they are members. Several groups have requested that group spaces be set up for them, and one person has downloaded the software for installation on an independent server. The platform has proved useful for our test group in providing a common archive of documents and discussion.

Our experience with the test group demonstrated, however, the importance of full email integration. Because the group's Deme space was set up as a supplement to its regular email list, members continued to use the email list in addition to the group space, which has caused confusion and duplicated effort. We have concluded that Deme must offer to groups the ability to transfer their email list wholesale into Deme, which means that it will need to support posting to (not just reading and being notified of) meeting area discussions via email. Several design issues are associated with this task, and we are currently working to address them.

[7] RELATIONS TO OTHER WORK

Our survey of available groupware concluded that, prior to our project, there was no web-based platform that approached having the kind of integrated toolset needed to substitute for face-to-face meetings. We also found no tools with the flexibility that is really required for each group to customize the environment for the particular way it conducts business (e.g. by supporting many different voting methods).

Having said that, many of Deme's features have appeared in some form in other tools. Web-based tools exist for document-centered discussion (e.g. Quicktopic), collaborative authoring (e.g. TWiki), polling and integrating email with message boards (e.g. in Yahoo! Groups and phpBB), petition signing (e.g. PetitionOnline), survey design (e.g. Zoomerang), event scheduling (e.g. Meetup), and many other useful applications for groups. Previous work reported at CSCW has explored in-text comments of the type implemented in Deme [1]. Furthermore, interface designs have been developed to address the multiple points of focus that characterize group meetings; e.g. flexible split-screen interfaces in desktop applications such as the FreeAgent newsreader and the D3E discussion environment. We wanted to develop a platform that integrated many of these functional and interface ideas and was entirely web-based, so that, ideally, a group's members could log into the platform from any computer on the Internet.

In the context of social science, our work generally aligns with the perspective known as “deliberative democracy” (see, e.g., [4]), which holds that democracy can be enhanced by tying social decisions to thoughtful, fair, and informed dialogue among stakeholders, rather than through the filtering and manipulation of raw public opinion by power holders.

[8] CONCLUSION

A common theme of participant-observations leading up to the design of Deme was that the need to make group decisions in face-to-face meetings often serves as an excuse for inner-circle, nontransparent decision making at many levels in society, ranging from small informal activist organizations to the U.S. Government. Deme is being designed to help eliminate that excuse, so that stakeholders can legitimately demand to be included in decisions even if they cannot be present at face-to-face meetings or are not in an executive body. Our hope is that tools like Deme will eventually change the culture of democracy to one in which we expect more participatory inclusion from institutions and more participation from ourselves.

[9] ACKNOWLEDGMENTS

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