InterTwinkles: Facilitating online consensus

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Executive Summary

Problem: Non-hierarchical, participatory, consensus-based decision making has seen an explosion in popularity in recent years. The traditional techniques of formal consensus, however, are limited to face-to-face meetings, which are time consuming and inefficient, especially for geographically dispersed organizations. *InterTwinkles* is a set of online tools to assist existing small and medium-sized groups in engaging in formal consensus decision making online.

Approach: Our approach is a participatory evaluation of web-based tools that facilitate the building of group understanding through structured communication. We will work with existing, real-world groups, and integrate the tools with the groups' current processes. The tools comprise a platform of different communication and educational tools that groups will be able to use beyond the evaluative workshops to further develop their own online decision making process. The accessibility, fit, and diffusion of the tools within real groups is a primary area of investigation.

Novelty: Prior work in group decision support systems does not focus on the needs of real-world, long-standing groups, does not address the communication needs of formal consensus, and does not address concerns of diffusion in non-hierarchical groups. Prior work in e-democracy emphasizes voting and large-scale groups (such as national elections), and does not provide means for building understanding, trust, history, and accountability in small to medium-sized groups.

Evaluation: We will run a series of individual workshops with real world groups which practice consensus-oriented decision making, recruited through snowball sampling. Each workshop will highlight a tool that targets a particular decision-making or group communication need, and teach how the group can facilitate their own discussions with the tool. Online tools will be instrumented to collect use metrics, and workshop participants will be interviewed before and after use of the tools. In addition, we will document the design processes and outcomes.

Abstract

Non-hierarchical, participatory, consensus-based decision making has seen an explosion in popularity in recent years. The traditional techniques of formal consensus, however, are limited to face-to-face meetings, which are time consuming and inefficient, especially for geographically dispersed organizations. *InterTwinkles* is a set of online tools designed to assist small and medium-sized groups in engaging in formal consensus decision making online. I propose to evaluate these tools through a series of workshops with existing real-world groups, and to integrate these tools with the groups' current practices. Evaluation will be conducted through a lens of adaptive structuration theory, and will be informed by pre- and post-interviews, quantified analysis of use metrics, and descriptive analysis of the workshop process, design process and outcomes.

1   Introduction

Beginning in the 1960's, in an effort to reconstitute inter-personal politics in more egalitarian ways, activist groups in the US began experimenting with non-hierarchical forms of organization and decision making. [Polletta, 2004, Cornell, 2011] The best practices that emerged from these original experiments have become a visible component of contemporary movements (as recently exemplified by the Occupy General Assembly). These same meeting practices also comprise the daily decision making work of many standing groups, including cooperatives, collectives, and boards of directors. At it's root, the techniques of formal consensus aim to provide a structured process by which groups can arrive at decisions without hierarchy. The formalization of the techniques helps to prevent dominant personalities and social hierarchies from overshadowing an otherwise equitable process. [Freeman, 1970]

Unlike other democratic forms like "majority rules", in a consensus process, participants try to develop outcomes that every member of the group agrees to – individual members can block courses of action to which they have a fundamental disagreement. This style of decision making achieves greater individual buy-in to group decisions, a greater sense of group solidarity, and heightened potential for creative input from all participants. [Butler and Rothstein, 1991, Susskind et al., 1999] However, the techniques have also been characterized by inefficiency, an inability to effectively respond to irreconcilable differences of principle, and a tendency (by virtue of the potentially lengthy and grueling nature of the process) to be more favorable to the most stubborn, patient, and idle participants. [Sun-

stein, 2000, Economist, 2011] Despite these challenges, the benefits and ideological attractiveness of consensus are strong enough that groups such as Occupy Wall Street have continued to use a modified consensus format, even as the number of participants grew to several thousand and meetings grew in length to several hours every day.

At the same time that consensus-oriented groups were developing what is now a highly sophisticated set of face-to-face group facilitation strategies and meeting tools, researchers in academic and corporate contexts undertook to study Group Decision Support Systems (GDSS) – electronic aids to meeting and making decisions in groups. GDSS research evoked a promise of heightened human potential through more efficient and effective meetings, communication and decision making. However, there has been very little diffusion of theses systems into real-world groups, and the field now remains mostly historical. While contemporary groups have sophisticated practices at their disposal for communication in face-to-face meetings, online practices remain underdeveloped. Most groups defer all decision making and meetings until a face-to-face meeting (or, at minimum, a synchronous conference call) is possible.

Many things have changed since the heyday of Group Decision Support System research in late 1980's and 1990's, including the rise of the Internet and ubiquitous web and mobile technology. Systems that previously would have required groups to travel to specially instrumented conference rooms can now be deployed as instantly available mobile apps. Researchers from the sociology of organizations have also developed analytical techniques to explain the diffusion of technologies, such as adaptive structuration theory, which can help to determine the reasons why a tool might succeed or fail to support the practice of real-world organizations. I hope to combine these advances with the sophisticated facilitation techniques used by groups practicing formal consensus to develop the means for engaging in consensus-based decision making in asynchronous, geographically dispersed, and networked contexts.

Figure 1: A "Group Decision Support Room" at the International Scientific Research and Development Institute in Amsterdam, Netherlands. (2002)

Figure 2: An Occupy Wall Street general assembly in 2011, using sophisticated group facilitation techniques with no digital technology. Source: http://occupiedmedia.us/2011/10/enacting-the-impossible/

2   Formal consensus

The principle of consensus decision making is deceptively simple: a group discusses an issue until everyone can live with a particular resolution. In contrast to lighter forms of "consensus", where a manager might strive to earn the good will of their subordinates before making a decision, a *formal* consensus process makes full participation a normative requirement. Groups adopt this requirement for moral, political, and organizational reasons that extend beyond the practical needs of particular decisions – even if it doesn't impart better immediate results, the benefits from group solidarity, individual empowerment, trust, and respect outweigh the practical challenges consensus brings. As a result of this high bar for meeting process, groups have developed best practices for consensus-oriented meetings which represent a high degree of refined complexity. See the sidebar for a list of various techniques that are regular parts of consensus-oriented meetings.

These techniques, which provide structure to free-form discussion, serve to improve efficiency and efficacy while still ensuring that participation is equitable. Implementation details vary from group to group (such as particular choices of hand signals), but the palette of meeting techniques used by most groups are highly consistent: meetings are broken into distinct phases of check-in, announcements, agenda, and check-out; speakers are queued using stacks, with priority given to procedural requests, questions, and people who have participated the least; a system of hand signals allows non-verbal communication for straw-polls, voting, and indicating the purpose of a comment; formalized facilitation roles guide discussion, while regular orientations and training allow for the introduction of new facilitation techniques; and a variety of different discussion formats suitable to different task types enable efficient task execution.

The high degree of similarity in meeting techniques used by groups ranging from ad-hoc affinity groups to formal boards of directors is no accident – it's due to inter-group sharing of techniques and the emphasis many groups place on educating members. [Polletta, 2004] When people participate in or form new groups, they introduce effective techniques which they learned in other groups. Techniques are also taught by dedicated organizations which specialize in training facilitators. Consensus practicing groups seek out these trainings in order to improve their meeting efficacy. When a group discovers or develops a new technique that improves their process, it quickly becomes a standard part of their regular facilitation practice, and spreads to other groups.

A short list of some of the widely used facilitation techniques in consensus-oriented meetings:

Meeting Phases:
Orientation
Check-in
Announcements
Agenda
Breaks
Check-out

Facilitation tools:
Stacks
Progressive stacks
Clarifying questions
Points of process
Direct responses
Proposals
Friendly amendments
Straw polls
Discussion summaries
Tabling

Hand signals:
Twinkles
Approval / disapproval
Block
Wrap-it-up
New proposal
Point of information
Direct response

Roles:
Facilitators
Note takers
Timekeepers
Vibes watchers
Shepherds
Buddies

Formats:
Icebreakers / fire starters
Open stack
Go-around
Popcorn
World cafe
Dotstorm
Spectrogram
Solipsist's meeting
Neighbor interviews
Break-out groups

3   Group decision support systems

Group Decision Support Systems (GDSS) is a sub-discipline of computer supported cooperative work that is concerned with the design and study of systems which help groups to arrive at decisions. Despite great academic interest in GDSS throughout the 1980's and 1990's, contemporary groups in general – and consensus-oriented groups in particular – have little awareness of and make little use of the results of this research. The lasting contributions of GDSS to date have been primarily theoretical rather than practical.

A seminal text in the theory of GDSS is Joseph McGrath's 1984 "Groups: Interaction and Performance". [McGrath, 1984] It introduces typologies of tasks and groups, as well as a methodological framework within which to contextualize different approaches to researching group interaction. McGrath's typology of tasks (see figure 9 on page 23) has been widely cited and used to frame thousands of later studies; however, most subsequent research in GDSS has failed to retain the methodological humility conveyed by McGrath's exegesis of research strategies, which emphasizes the limitations of ad-hoc groups in laboratory settings as research subjects.
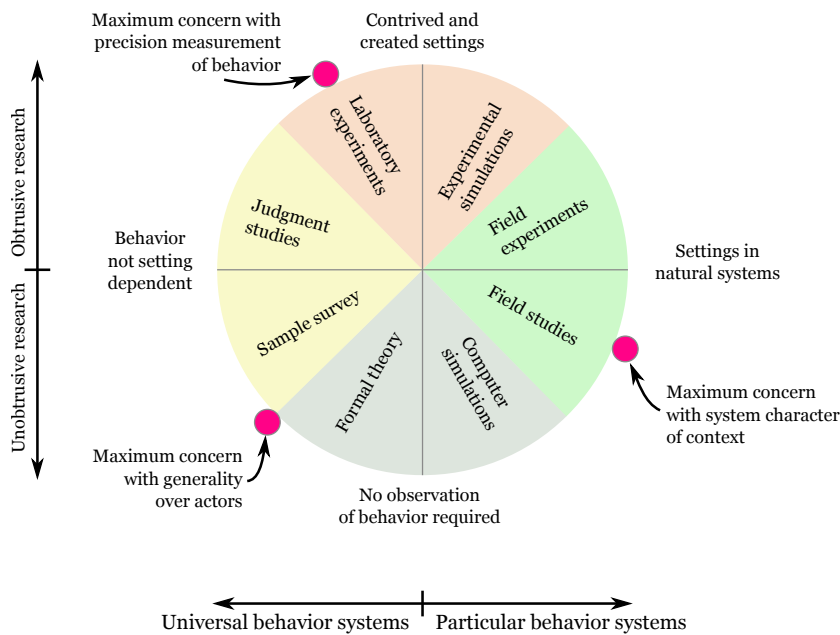

Figure 3: McGrath's (1984) diagram of research strategies for the study of groups.

It is not possible in any single study to maximize all possible study outcomes – that is, to maximally study both the in-situ function of a system, and generalized observations of human behavior. Researchers may choose to engage in laboratory experiments in

contrived settings, field studies or experiments in natural systems, analysis of simulated or theoretical environments, or non-behavioral surveys of judgment or opinion. No choice is inherently more "correct" than any other; however, the epistemological outcomes of each will vary. A system designed for laboratory experimentation cannot be expected to reliably work in the field, but it will enable precise measurements of behavior. By contrast, a field study can result in lessons applicable to the diffusion of group decision support systems in real-world contexts, but will be beset by the particular configurations of the study context and generalize less easily.

Figure 4 shows a breakdown of different group contexts for the study of decision support systems, distinguishing natural groups from composed study groups, and natural tasks from artificially imposed tasks.

| Composed Groups | | | Natural (Extant) Groups | | | |
| Restricted interaction | | Unrestricted interaction | | | | |
Restricted channels	Restricted process	Face to Face Ad Hoc	Limited Term	Very Long-Term		
		Natural Groups →	Expeditions (e.g. space crews)	Embedding systems (e.g. families)	Broad Band of Activities	"Natural" Tasks Endogenous to Group
	Concocted Groups →	Systems tests (not using an existing crew)	Task forces (e.g. study commissions)	Standing crews (e.g. sports teams; work crews)	Limited Band of Activities	
Quasi Groups ↓		Mock studies (e.g. mock juries; artificial families)	Crew practice/training studies		Simulations	
Structured communication channels studies (e.g. restricted modality studies)	Restricted communication process studies (eg communication strategy training studies; brainstorming)	Ad hoc laboratory groups	Crew tests (not on system tasks)		Free Performance Form	Imposed Tasks / Artificial Tasks
Highly stylized constrained task & communication (e.g. PDG; coalitions; communication Nets; Delphi)	Structured task & restricted communication process studies (e.g. NGT)	Structured task studies (e.g. SJT; MAUA; concept attainment task)			Restricted Response Form	

Figure 4: McGrath's (1984) Matrix of forms of social units used in group research, distinguishing natural and composed groups, and natural and imposed tasks.

The choice of group and task type for a study will substantially impact possible research outcomes. While one might find interesting results through the study of any combination of task and group type, artificial groups and imposed tasks are inappropriate for the design

and study of practical democratic systems.

Prior studies of group decision support systems have tended to fall into two camps: laboratory studies of novel decision support systems using imposed tasks (often coming from backgrounds of Human Computer Interaction and Computer Supported Cooperative Work – see for example Computer-Mediated Group Decision Making [Zigurs et al., 1988], Second Messenger [DiMicco et al., 2007], Meeting Mediator [Kim et al., 2008]), and field studies of real-world usage of GDSS within business settings (often coming from backgrounds of organizational sociology; e.g. The Coordinator [Flores et al., 1988], Adaptive Structuration Theory [DeSanctis and Poole, 1994], Using Technology and Constituting Structures [Orlikowski, 2008]). Neither of these study types are adequate to draw conclusions about the design and use of GDSS within groups practicing formal consensus – though we can draw theoretical concerns from the former, and methodological techniques from the latter.

Laboratory decision support studies with composed groups and imposed tasks do not investigate any effects caused by long-lasting relationships between group members, concerns of the group's sense of identity and purpose, or issues of integrating a group decision support system with external constraints such as policies, politics, or mundane practical details. These features have a substantial impact not only on the diffusion of a group decision support system within a community, but also on the basic function of a meeting. Consensus is built on long-term understanding, relationships, and trust – and a system that by design ignores these components of group dynamics will be less likely to work.

Field studies of real-world usage of GDSS within business settings do not investigate issues pertaining to non-hierarchical groups, nor the diffusion of tools within communities of practice. However, the analytical techniques developed through the study of GDSS from the perspective of organizational sociology are of great value in analyzing real-world use and diffusion of technology. Adaptive structuration theory as proposed by DeSanctis and Poole (1994), and extended by Orlikowsky (2000) provides an analytical lens for identifying the reflexive interplay between technologies and social structures. This methodology has great promise to increase our understanding of the structural constraints that influence the adoption and diffusion of a democratic system.

For our purposes, real-world groups are essential. A primary concern of any democratic system is to allow full participation of its *demos*. If the system is inaccessible, impractical, or in other ways fails

to meet the institutional requirements of its context, it tautologically fails as a democratic system. This is especially apparent when we attempt to introduce a system to a non-hierarchical community that is free to electively choose to use or not use the system – with no higher management to mandate a change of process, if the tool fails to improve the group's experience, it will be quickly abandoned. The ability of the tools we build to integrate with existing group practice and to adapt to varying contexts is a primary object of study.

In many ways, the history of the field of GDSS evokes a sense of failure of its promise to revolutionize group decision making. However, the present popular rise of structured deliberation within activist communities is strong evidence for the validity of many of the foundational principles of GDSS. I believe that a significant contribution can be made by combining of methodological advances in the study of the diffusion and adoption of technology from structuration theory, the ease of availability made possible by the Internet, the best practices of structured deliberation from real world democratic groups, and a principled design approach that privileges concerns of adoption and diffusion.

GDSS tool types

When designing GDSS, it's helpful to distinguish the task purpose for which the tool is being designed. "Decision making" is a fuzzy category; the term is used to apply to any manner of different tasks ranging from negotiating power issues, brainstorming or generating new ideas, planning, calculating the correct answer to problems that *have* a correct answer, and selecting among options when there is no correct answer. No single strategy is likely to optimally work for all types. Desanctis and Gallupe [1987] provide examples for possible decision making tools that support work in each of these different areas. In addition, they distinguish between 3 "levels" of GDSS (see table 1) that provide support in different ways.

Contemporary web-based decision support systems available to groups tend to fall into one of two categories: the first are "forum plus voting", in which a web-based forum allows groups to discuss an issue, and then advance a proposal for a vote. The second general category are large-scale e-democracy systems that are intended to support large-scale elections or referenda.

Task Purpose	Task Type	GDSS Level	Possible Support Features
GENERATE	Planning	Level 1	Large screen display, graphical aids
		Level 2	Planning tools (e.g., PERT)
	Creativity	Level 1	Anonymous input of ideas; pooling and display of ideas; search facilities to identify common ideas, eliminate duplicates
		Level 2	NGT, Brainstorming
CHOOSE	Intellective	Level 1	Data access and display; synthesis and display of rationales for choices;
		Level 2	Aids to finding the correct answer, e.g., forecasting models, multiattribute utility models
	Preference	Level 1	Preference weighting and ranking with various schemes for determining the most favored alternative; voting schemes
		Level 2	Social judgment models; automated Delphi
		Level 3	Rule-based discussion emphasizing equal time to present opinion
NEGOTIATE	Cognitive conflict	Level 1	Summary and display of members' opinions
		Level 2	Using social judgment analysis (SJA), each member's judgments are analyzed by the system and then used as feedback to the individual member or the group
		Level 3	Automatic mediation; automate Robert's Rules
	Mixed Motive	Level 1	Voting solicitation and summary;
		Level 2	Stakeholder analysis
		Level 3	Rule base for controlling opinion expression; automatic mediation; automate Parliamentary procedure

Table 1: DeSanctise and Gallupe's (1987) Example GDSS features to support six task types, across 3 "levels" of GDSS. "Level 1" tools introduce new channels or opportunities for communication, "Level 2" tools structure channels for more effective process, and "Level 3" tools perform reasoning or content-based contributions to a process.

Forum plus voting

While there are many competing systems, among the best of current systems targeted at small groups is `http://loomio.org`, a new website which is currently under development and in private beta. The tool provides an intentionally simple space for discussion and voting on proposals, as well as a simple notification system to keep track of active proposals across an organization.

InterTwinkles differs in approach in two primary ways: first, InterTwinkles is intended to support task types that aren't adequately handled by voting systems (such as negotiative or generative tasks) through a modular architecture. Second, the proposal voting tool provided by InterTwinkles offers richer cues regarding group participation (for example, displaying an activity timeline that displays when group members have taken any action with the proposal, including viewing). This provides valuable information to a participant in a consensus-based process, where understanding where each group member is with respect to a proposal is critical.

Figure 5: `http://loomio.org`'s interface, which has a discussion forum on the left, and proposals with voting on the right.

Large scale e-democracy

Large scale e-democracy applications include tools for referenda and elections. Among the most successful of current platforms is LiquidFeedback[1], a system for delegated voting which allows a voting population to flexibly delegate votes to different representatives on an issue-by-issue basis. The goals of this system are to target nation-scale voting, which has dramatically and qualitatively different affordances and needs than small-group consensus. Such systems do little to nothing to address communication needs of a small group, nor issues of understanding, emotional communication and trust building.

[1] `http://liquidfeedback.org`

4   Research Goals

The goal of this research project is to develop tools and processes by which groups that practice formal consensus can engage in decision making online, or to better understand any mismatches between online communication and in-person communication that would make such systems intractable. I will conduct this research through a series of workshops and follow-up studies with real-world groups.

Drawing on lessons from the failure of past decision support systems to catch on, as well as the comparatively successful organic

diffusion of the face-to-face meeting techniques of formal consensus, the platform and tools are designed with the intention of maximizing appropriation and diffusion. Particular design choices are influenced by a combination of participatory design workshops, interviews, and analysis of existing practices of groups that practice formal consensus. There are several important design principles that guide the construction of these tools:

- *Structured processes:* The primary means by which these tools help groups is to structure communication channels to be better suited to the tasks at hand. The structures may be inspired by existing face-to-face techniques, but are adapted to the needs of asynchronous or geographically dispersed contexts.

- *Full participation:* All members of a group should be able to participate; and any non-participation should be clearly indicated. Online tools have a potential to alienate users who have less access, and groups should be able to easily know when they need to turn to other channels to achieve full participation.

- *Modular design:* While "modular design" is obvious for any software architect, the principle often fails to extend to the system implementation level, even though it is as useful there as it is when writing code. It is essential that each of the different tools built for this project be able to stand on their own without the others, so that groups can benefit from the use of one without the others. At the same time, groups may need some degree of integration between different components (for example, shared login systems, definition of groups, and search across different tools).

- *Organizational integration:* A key need for any of these tools is to integrate them into the workflows, policies, and procedures that the group already has in place. This will be done in collaboration with the test groups in the workshop context.

Practitioners of face-to-face formal consensus have adopted a wide array of group facilitation strategies to structure group meetings, including techniques which (1) encourage the participation of all group members, (2) address different topics with different facilitation techniques, (3) utilize non-verbal channels for more efficient process management, (4) provide formal rituals to close off discussion, and (5) provide a sense of closure at the completion of meetings. An online replacement can't just uncritically replicate these processes and expect to work, as the affordances of asynchronous online channels are very different. In particular, the role of a facilitator needs to be

supported in the tools, and practices for facilitation need to be developed together with groups using the tools.

In addition to the functional characteristics of a tool, to be used by real-world decision making groups, the group must:

- Translate their current policies into an online context. For example, what constitutes "quorum" for an online vote? How do online discussions find their way into meeting minutes or other records?

- Develop protocols appropriate for the use of online discussion channels (e.g. when to reply on- or off-list; how to hand off between different channels and tools).

- Navigate the difficulty in conveying emotion and tone over text-based media.

- Find ways to make online tools accessible to all group members.

- Find ways to share and rotate roles and facilitation responsibilities with the tools.

The solutions to these problems are likely to generalize easily within communities of practice; just as many groups have adopted structurally similar processes and tools for in-person facilitation, we can expect well-developed online processes and tools to have wide organic adoption. The proposed research is to develop these processes and tools such that they meet groups' political, organizational, and practical needs, and to document the structural supports and impediments to adoption.

5   Tools and designs

The *InterTwinkles*[2] platform consists of a collection of independent structured communication tools which are designed to minimize barriers to entry (they require no sign-ins, operating on a "secret URL" model), and a "glue" application that provides a group with a centralized platform from which to search, organize, and collect work done with all parts. The central InterTwinkles platform is convenient for bootstrapping a suite of online communication tools for new or newly online organizations, while organizations that are already invested in other tools can benefit from the modular components. Below I will briefly introduce the existing and proposed tools. All of the tools are implemented as standards-compliant web applications that work on tablets, phones, and laptops.


Figure 6: A collection of hand signals from an Occupy London meeting, including "Twinkling" (top-left, under "shake hands"). Source: https://en.wikipedia.org/wiki/File:Occupy_movement_handsignals_diagram_bank_of_ideas_nov_2011.jpg

[2] The name "InterTwinkles" comes from combining *Internet* and *twinkling*. "Twinkling", a widely used hand signal in consensus-oriented meetings, is derived from the American Sign Language sign for "applause", and indicates approval. The hand signal is used as a way to indicate approval that is less obtrusive than audible applause (as it doesn't occupy the limited audio channel), but still provides for an immediate expression of affinity with what a speaker has said. *InterTwinkles* strives to bring this type of light-weight but rich communication tactic to the Internet.

InterTwinkles Platform

The InterTwinkles platform site is a centralized entry-point to the decision making tools. The site is designed to make the construction and management of a group of users trivially simple – adding a group is accomplished by listing the email addresses of all group members, after which each automatically is invited to join the group and receives access when they accept the invitation.
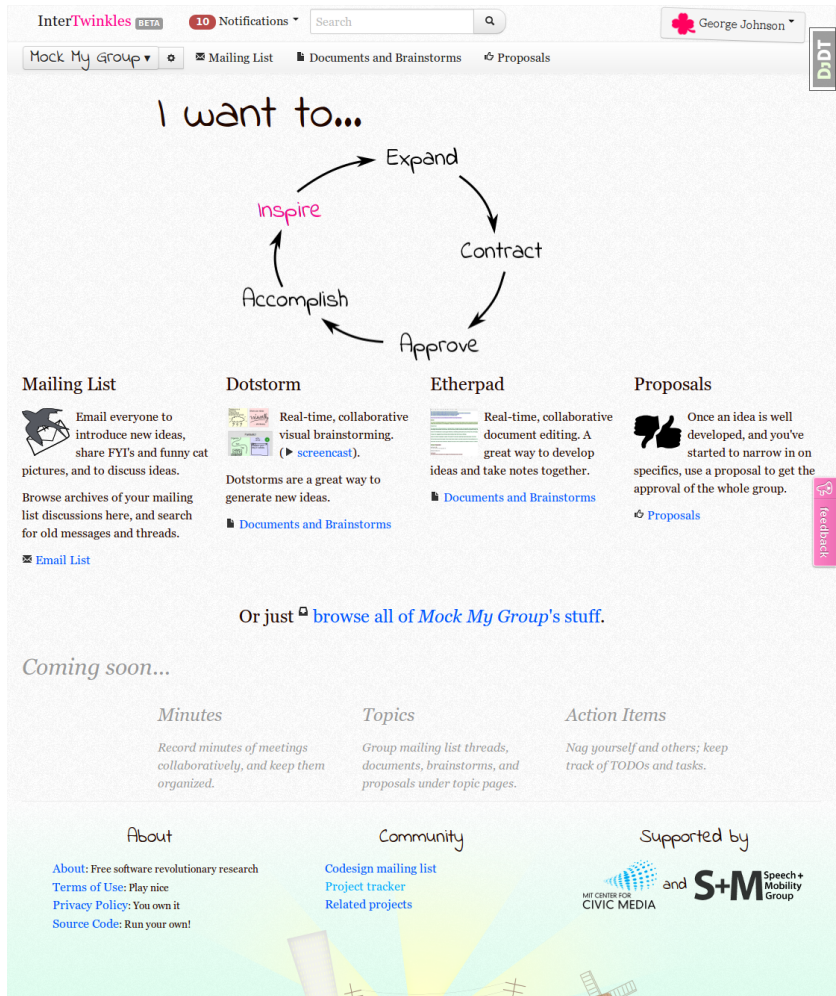
The purpose of the centralized platform is to provide a single point from which to manage the constitution of a group, and searchable and browsable access to all of the group's history and work. The modular design enables additional 3rd-party tools (such as Etherpad, a collaborative document editing tool, and mailing lists) to be integrated within the group's system.

As a primary goal of this research is to create tools available for

easy appropriation and diffusion, the InterTwinkles platform provides a virtual private server installation system that allows the entire platform and all parts to be installed by anyone with basic skills as a network system administrator, allowing groups to host their own private instances of the entire platform and all component tools.

Status: The InterTwinkles central platform is currently under development, and will enter testing with real groups by January 2013. Most of its constituent components are already functional and in use, or will be sooner than that date.

Proposals

A "proposal" is the primary tool of organization used by consensus-oriented groups to make decisions. When someone wants to ask the group to change the status-quo, they must propose the change to the group. Proposals consist of a single statement of the desired change or course of action, and usually are an outcome of discussion around a topic.

The proposal tool provides a simple voting system for resolving a proposal. It intentionally lacks features for discussion; that is intended to take place in other channels. The role of this tool is similar to the role of the scheduling tool "Doodle"[3] – it addresses the information aggregation problem of responding to a proposal, but not other deliberative functions. It removes this aggregation from the discursive channel, allowing it to be a mutable object of discussion.

[3] http://doodle.com

One of the major challenges of any asynchronous proposal system is how to handle modifications to a proposal after someone has already voted, since the coordination costs of asking people to re-vote are high. A system that invalidates votes on any change to the proposal (or which requires the creation of a new proposal rather than allowing an edit) has the downside of requiring extra work if one's change is minor; whereas a system which allows modifications to a proposal without invalidating votes has the potential to misrepresent the approval of those who voted prior to the change. This tool takes a middle path: stale votes are still retained, but are counted in a separate tally. Participants whose votes have become stale are notified and asked to confirm their position.

Drawing from the common practice of consensus-oriented groups, participants can choose to "Strongly approve", "Approve with reservations", "Need more discussion", "Have concerns", "Block", or to abstain due to a conflict of interest. In addition, each participant is invited to explain their position with a short statement. In addition to

Proposal

Should we give up city trash pickup, and switch to just burning
our trash in the driveway?
This could save us a lot of money. Here's a video of some trash
burning: https://www.youtube.com/watch?v=aq9Ym...

added JULY 8, 2012 by That Person
last revised JULY 12, 2012 by Admin

Edit

Deadline Sat July 7, 11 p.m.

Finalize

Response totals:

Strongly approve 2
Approve with reservations 3
Need more discussion 1 1
Have concerns 1
Block 1
I have a conflict of interest. 1
No response yet 2

Activity timeline:

Visit
New response
New twinkle

Sep 28   Oct 6   Oct 14   Oct 22

Responses

George Johnson   *Strongly approve*
Oy she val! Here's my explanation.
Edit TUE OCT. 23, 5:15 P.M.

SEVEN   Have concerns
Concern me.
FRI SEPT. 28, 10:08 P.M.

Bill Bryson   *Approve with reservations*
Reserve me.
FRI SEPT. 28, 9:57 P.M.

Joe Johnson   *Approve with reservations*
How trashy.
FRI SEPT. 28, 9:55 P.M.

Tirly Dat   Need more discussion
Let's chat.
FRI SEPT. 28, 9:53 P.M.

Nirika   *Strongly approve*
This is awersomea.
FRI SEPT. 28, 9:49 P.M.

Martha Guitierez-Lopez   Block
OH NO!
FRI SEPT. 28, 9:47 P.M.

This member is non-voting.

That Person   *I have a conflict of interest.*
I want to understand the something something.
THU JULY 12, 5:02 P.M.

Admin   *Approve with reservations*
This time worky at http://tirl.org the fun never
stops at http://intr.tw.
And so it goes.
THU JULY 12, 1:57 P.M.

The proposal has changed since this opinion
was recorded.

Charlie   Need more discussion
Get yer spelling fixed. !
WED JULY 11, 6:35 P.M.

these responses, the tool allows users to "twinkle" (express approval)
proposals and responses, which generates a light-weight notification
to the author. The goal of this process is to allow the group to quickly
determine who in the group has concerns with a proposal, how con-
cerned they are, and to determine what sort of modifications might
be necessary in order to move the proposal forward.

The tool also aggregates and displays a timeline of events per-
taining to the proposal – all visits, responses, twinkles, and revisions
to the proposal generate a point on the timeline, enabling users to
quickly see at a glance who has been participating and in what ca-
pacity.

Status: The proposal tool is in development and will enter testing
with real-world groups by December 2012.

Dotstorm

Dotstorm is a collaborative brainstorming tool modeled after a structured brainstorming technique of the same name, which is itself a variant of the Nominal Group Technique. The tool allows groups to share, organize, and group images, drawings, and text via the metaphor sticky notes. Dotstorm works in real-time, allowing users to simultaneously add and move "notes" from multiple devices, with all changes instantly available (within the limits of network latency).[4]

[4] An introductory video demonstrating Dotstorm: `https://www.youtube.com/watch?v=dj_yW2WfsEw` Dotstorm is available for immediate use at `http://dotstorm.intertwinkles.org`

The intention of Dotstorm is to allow the nominal group technique to function in an asynchronous and geographically dispersed context, as well as to allow graphical communication (which engages different types of creative thinking) in an online brainstorming context. Its design enables users to add notes using phones, tablets, computers, or cameras (which enables the use of paper as an input medium).

Status: Dotstorm has been publicly available since June 2012, and is already in use in several real-world groups.

Ten Points

Ten Points is a real-time collaborative tool for constructing a statement of shared values, principles, or central questions for an organization. The tool is intended to parallelize the challenging task of coming to consensus around a set of value statements for an organization. In contrast with the other tools under development for InterTwinkles, Ten Points is currently intended exclusively for synchronous use (though it functions well in geographically disperse contexts that have a shared channel such as audio or telephone conference).[5]

[5] Ten Points is available for immediate use at `http://tenpoints.intertwinkles.org`
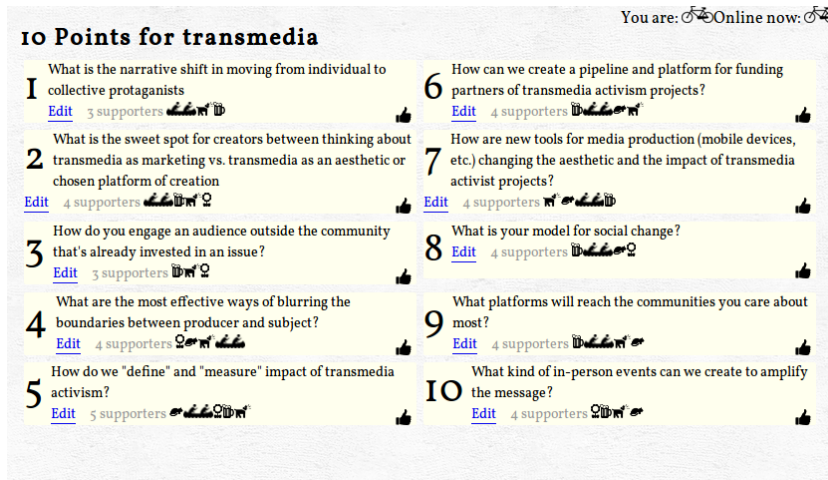
Status: Ten Points has been publicly available since April 2012, and is already in use in several real-world groups.

Minutes

Minutes is a proposed application to assist groups in taking minutes of meetings, and to subsequently allow follow-up conversation to the meeting online. Its intention is to make archives of minutes easier to create, manage, and use.

Status: Minutes is in early development. Design mock-ups were created as part of a participatory design process. It is expected to be usable by January 2013.

6 Evaluation and Research Plan

The development of the suite of InterTwinkles tools and central platform began as a participatory design project, with three design workshops in early 2012, and interviews with potential users. I intend to continue with a participatory evaluation of the tools in real-world use contexts through a workshop model. I will analyze the resulting use through the lens of adaptive structuration theory, in order to identify the ways in which the tools succeeded or failed to meet the needs and use cases of existing organizations, and how future tools might improve. I already have preliminary data in the form of outcomes from 3 design workshops, interviews with members of four different groups, and tools in active use in at least 4 different groups, all of which will be documented in the dissertation in a chapter exploring
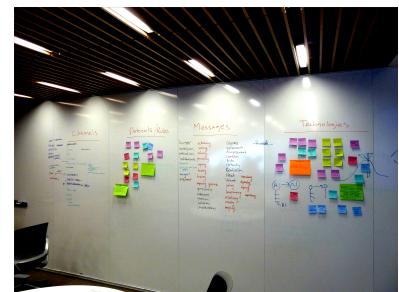

Figure 7: Outcome of an ideation session at the first InterTwinkles participatory design workshop in 2012. A full writeup of this and other workshops is available at http://project.intertwinkles.org.

the design process and considerations.

From January through June 2013, I will complete a series of at least six workshops with real-world groups in order to introduce tools from *InterTwinkles* and identify ways that the tools can fit into the groups' use cases. Before each workshop, I will conduct an interview with members of the group to learn about the practices and structures pertinent to potential adoption of online decision making tools (see the appendix on page 23 for a list of potential interview questions). The workshop will then introduce tools that the group members identify as being of the most interest, establish any requisite accounts or system setup required for the group to use the tools, and address concerns about integrating the tools with existing practices and policies. The workshop participants will practice using the tools, and develop a plan for future usage, with particular consideration of how different members of the group will express and share roles as facilitators or guides of online processes.

Within a week to 10 days following each workshop, I will follow up with members of the group to determine whether they are in need of additional support with the tools, and to provide further training as needed. Around 6 weeks after each workshop, I will follow up with members of the group to determine whether and to what extent the tools were used, and to identify reasons for success or failure. If the tools do enter regular use among the group's communication processes, I will take advantage for the opportunity to do a more detailed longitudinal analysis of the group's usage, appropriation of the tools, and diffusion of the tools beyond the group. If adoption does not occur, I will perform a detailed analysis with the lens of adaptive structuration theory to explain how the tools are a mismatch to the group's desired processes, and to identify techniques that the groups use to accomplish the same tasks the tools would have facilitated. Throughout this process, I will engage in further iterations of the tools' design to better meet the needs of all groups, and document these design changes.

The results of interviews, design documentation, descriptions of workshops, and outcomes of group usage will be collected to form a corpus of knowledge on group usage of online tools for consensus decision making, which will be shared with the participating groups. The project will be considered successful if the tools prove useful and beneficial toward group decision making practice, or if we document and identify reasons why they failed to do so. While we hope the tools will prove useful, we do not presuppose that online can necessarily be beneficial to all groups, and will accept clarified understanding of the insufficiency of our designs to meet groups' needs as

a positive outcome.

7   Committee Members

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Chris Schmandt, the O.G. (original geek), is the Principal Research
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Sepandar Kamvar

Sep Kamvar is the LG Associate Professor of Media Arts and Sci-
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Prior to MIT, Sep was the head of personalization at Google and a
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ing at Stanford University. Prior to that, he was founder and CEO of
Kaltix, a personalized search company that was acquired by Google
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Sep is the author of two books and over 40 technical publications
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the technical advisory boards of several companies, including Clever
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Modern Art in New York, the Victoria and Albert Musem in London,
and the National Museum of Contemporary Art in Athens.

Sep received his Ph.D. in Scientific Computing and Computational Mathematics from Stanford University and his A.B. in Chemistry from Princeton University.

8   Appendices

Meeting structures and task typologies

The following is a diagram of the different aspects that contribute to the structure of a meeting, adapted from McGrath (1984). Each of the components co-determines the outcome of the interaction. Different group structures (including hierarchies, power positions, seniority, etc.), different individual circumstances (identity categories, prior knowledge, etc.), different tasks (negotiative, generative, decisive, or executionary) and different physical settings (rooms, Internet, meeting on the sidewalk, etc) all contribute to the process of a meeting.
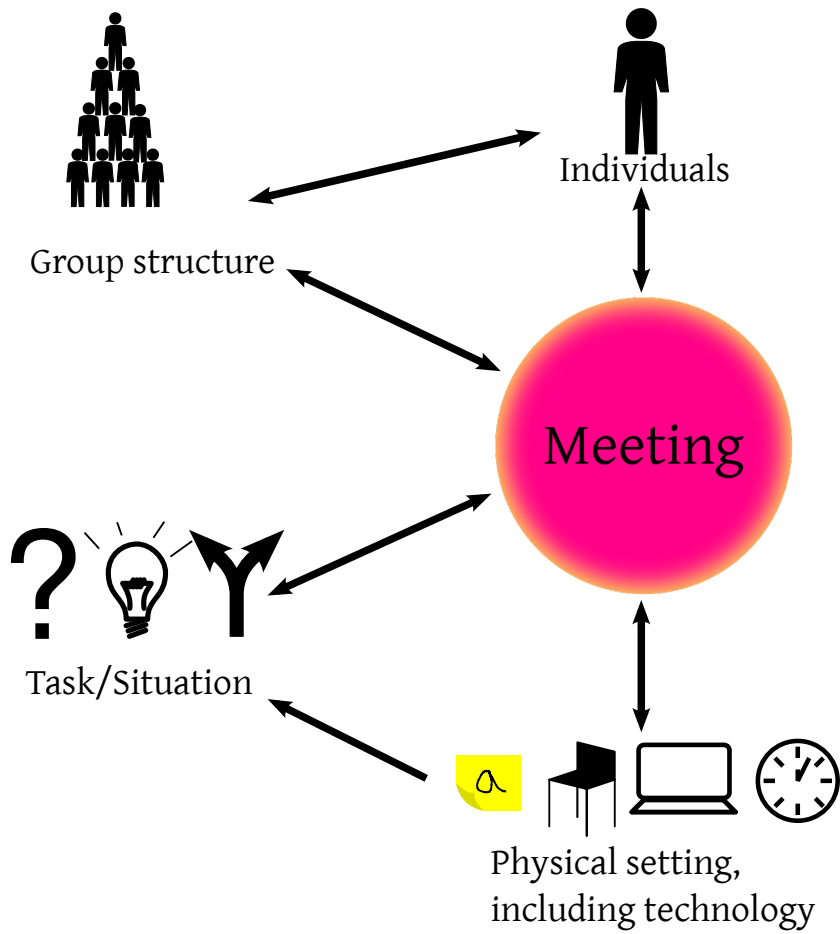
Figure 8: A simplification of McGrath's (1984) conceptual framework for the structure of group interactions. Arrows indicate reflexive influence.

Individuals

Group structure

Meeting

Task/Situation

Physical setting, including technology

The following is a circumplex of task types adapted from McGrath (1984), distinguishing tasks that operate via conflict or cooperation, and tasks that are primarily conceptual or behavioral. Each of the different categories of task are likely to benefit from different meeting tools or structures.
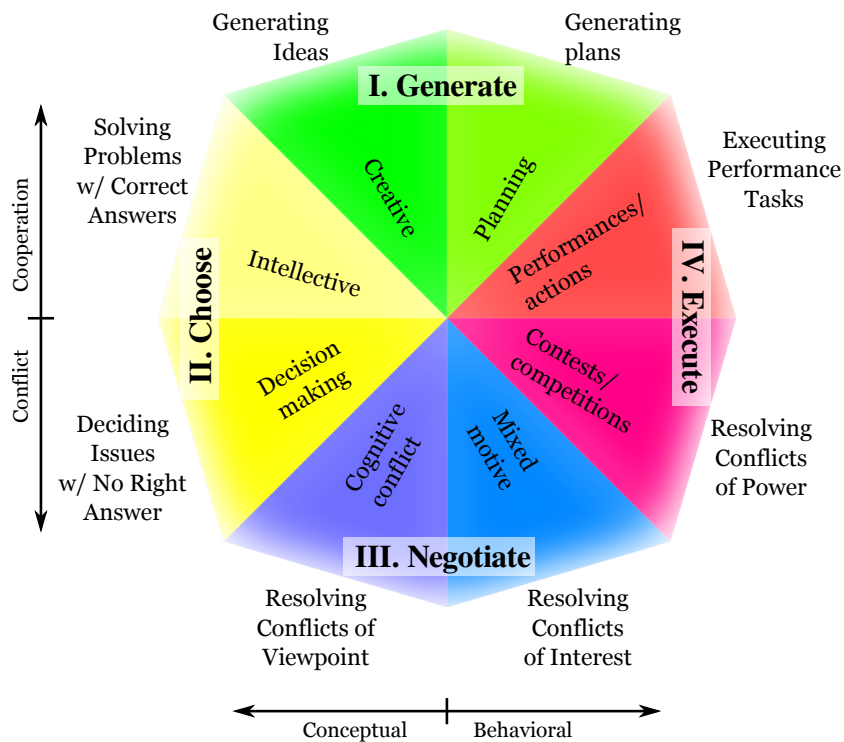

Figure 9: McGrath's (1984) Task Typology Circumplex. Consensus oriented groups engage in decision making tasks that span all types in the circumplex.

Interview Topics

Before introducing the research tools to potential user groups, I will interview members of the groups to learn more about the structural characteristics informing potential design consdierations for decision making and online tool use. Some example questions include:

• Describe your group, in your own words.
  Goals: identify the potential user group's characteristics (size, number of participants, etc). Are they open to anyone to participate, or is it a closed group? Is it a consistent set of people over time, or a changing cast?

• Describe how meetings in your group work.
  Goals: identify the basic mechanics of meetings. Conference calls? In-person? Google hangouts? What tools for remote col-

laboration have you used in your group? e.g. Google Docs, etherpads, IRC, google hangout, conference calls, mailing lists, livestreams, radio, newsletters, twitter, facebook, etc.

- In what ways can a decision be considered "approved"?
  Exercise: can we build a flow-chart that describes the process? Use google drawing tool to try.

- How do you feel when you are using different channels? e.g. anxiety when you receive email? Pressed for time/rushed in a F2F meeting? Excited when you reach agreement for a complex issue?

- What do you think of your ability to express yourself using different channels? Do you articulate your self better with words? With text? With pictures?

- What frustrates you the most about your current meeting process?

- What is the most rewarding about the current meeting process?
  Exercise: Construct two persona. The first is the person themselves, and the second is the closest thing to an opposite of the person themselves, who would still be a participant in their group.

- Follow-up: reflect on the exercises, the use of the tools, and the interview.

Following the workshops and a period of time during which the group has had a chance to use the tools, I will follow up with a free-form interview to learn more about how the process went. Topics will include any stories of success or failure in attempts to use tools, any concerns regarding the use of online communication for consensus processes, and ways that knowledge about this can be shared with other groups.

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