Inter-organizational Coordination in the Wild: Trust Building and Collaboration Among Field-Level ICT Workers in Humanitarian Relief Organizations

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Abstract As many NGOs find themselves responding to the same crises, they have realized the potential benefits of coordinating their information and communication technology (ICT) activities—sharing satellite communications and internet access, sharing disaster assessment information—and have created cross-organizational coordination bodies. Coordination at the headquarters level across organizations has proven to be insufficient, and some bodies are now engaging ICT personnel in their field offices in coordination efforts. This case study presents the findings of one body's field office coordination efforts among its ICT workers, where trust building through collaborative activities is revealed to be essential elements in successful coordination across organizations.

Résumé Alors que de nombreuses ONG doivent faire face aux mêmes crises, elles ont pris conscience des bénéfices potentiels d'une coordination de leurs activités en matière de technologie de l'information et de la communication (ICT - *Information and Communication Technology*), par le partage de leurs communications satellite et de leur accès à Internet, ainsi que l'échange de leurs informations sur l'évaluation des désastres. Elles ont également créé des instances de coordination

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inter-organisationnelles. La coordination au niveau du siège social à travers les organisations s'est révélée insuffisante et certaines instances recrutent à présent un personnel ICT pour leurs bureaux de terrain dans le cadre d'efforts de coordination. Cette étude de cas présente les constatations portant sur les initiatives de coordination d'un bureau de terrain d'une organisation entre ses collaborateurs ICT. Il apparaît qu'une confiance bâtie grâce à des activités de collaboration s'avère être un des éléments essentiels contribuant au succès d'une coordination à travers les organisations.

Zusammenfassung Viele nicht-staatliche Organisationen reagieren auf die gleichen Krisen und haben so die möglichen Vorteile einer Koordination ihrer Informations- und Kommunikationstechnologie erkannt; sie teilen sich die Satellitenkommunikation sowie den Internetzugang, tauschen Informationen über die Katastropheneinschätzung aus und haben organisationsübergreifende Koordinationsgremien gegründet. Eine Koordination auf der Verwaltungsstellenebene zwischen den Organisationen hat sich als unzureichend erwiesen, und einige Gremien beauftragen nun Mitarbeiter im Bereich der Informations- und Kommunikationstechnologie in ihren Büros vor Ort mit der Koordination. Die vorliegende Fallstudie präsentiert die Ergebnisse der Koordinationsbemühungen zwischen den Informations- und Kommunikationstechnologiemitarbeitern eines Gremiums in seinen Büros vor Ort, wo sich der Aufbau des Vertrauens durch gemeinschaftliche Aktivitäten als ein wesentlicher Faktor für eine erfolgreiche Koordination zwischen den Organisationen herausstellt.

Resumen Dado que muchas ONG se encuentran respondiendo a las mismas crisis, se han dado cuenta de los beneficios potenciales de coordinar sus actividades de tecnología de la comunicación e información (TCI) compartiendo comunicaciones por satélite y el acceso a Internet, compartiendo información sobre evaluación de desastres y han creado organismos de coordinación interorganizacionales. La coordinación a nivel de la sede central en las organizaciones ha demostrado ser insuficiente y algunos organismos ahora están implicando a personal TCI en sus oficinas de campo en esfuerzos de coordinación. Este estudio de caso presenta los hallazgos de los esfuerzos de coordinación de la oficina de campo de un organismo entre sus trabajadores TCI, donde se revela que la creación de confianza mediante actividades de colaboración son elementos esenciales en una coordinación satisfactoria entre organizaciones.

Keywords Inter-organizational coordination · NGO · ICT · Humanitarian relief · Trust · Trust building · collaboration · Coordination · Sub-organizational coordination

Introduction

Humanitarian relief organizations are typically non-governmental organizations (NGOs) who engage in emergency response and relief efforts to attenuate the magnitude of the crises faced by people affected by natural (floods, storms, fires,

earthquakes, etc.) and man-made (armed conflicts, genocide, etc.) disasters. Humanitarian relief efforts are complex responses to emergent situations where the facts and challenges on the ground can change rapidly. NGOs have begun to explore *coordination bodies* that facilitate inter-organizational coordination of informational and technological resources to maximize the effectiveness of their responses to emergent disasters and enhance the delivery of humanitarian relief to affected communities around the globe. Coordination of information, processes, and technologies among humanitarian relief organizations, some of whom have competing missions and compete for donors and sponsorship, is an enormous challenge. Coordinating across organizations with different organizational structures in multinational contexts to address these emergent disasters adds layers of political complexity at international, national, regional, and local organizational levels (Tierney 1985; Stephenson and Schnitzer 2006; Stephenson 2005).

Information and communications technologies (ICTs) that allow personnel to communicate and share information within their organizations play a critical role in decision-making and response to the emergent disasters and on-going relief efforts of humanitarian organizations. During the initial stages of a disaster, for example, when the communications infrastructure is often disrupted (or non-existent in very remote regions), having the ability to use satellite communications technology is critical for communicating the needs of the affected communities to the appropriate decision makers within the organization's hierarchy. The types of ICTs employed by organizations shape the types of information collected by initial responders; the form it takes within a variety of databases and documents used to capture that information; as well as constraining how the information is transferred, communicated, and used by the people within or outside of these organizations. However, the diversity of forms, formats, and protocols for storing information often results in an incompatibility among organizations' information systems such that sharing information becomes problematic and burdensome for ICT units within these organizations.

One reason for the incompatibility is that humanitarian organizations have differing financial and skill constraints with which to acquire, create, or utilize ICTs. Second, their information needs are often idiosyncratic and related to their particular mission focus (e.g., some are focused primarily on the needs of children while others are focused more on the longer term rebuilding, education, and economic independence of the affected community), but there is still some degree of information overlap with other organizations resulting in redundant information collection efforts. This redundancy is problematic insofar as it is an inefficient use of human, informational, and technological resources among humanitarian organizations (Paton et al. 1998; Middleton and O'Keefe 1998; Kreps and Bosworth 1994). Moreover, the people in crisis are often asked repeatedly for the same information by multiple organizations, which in addition to being an inefficient use of resources, becomes an unnecessary burden for the disaster victims.

Despite these complex challenges—or perhaps because of them—there have been several efforts by NGOs to create coordination bodies to enhance the effectiveness of disaster response. These efforts have focused primarily at the executive or upper levels of organizations. The personnel at this level have decision-making authority with respect to process and budget, and are therefore in a position

to drive change. However, they are not always aware of the difficulties that such change can engender at the micro level within their organizations. Effective organizational change often means approaching challenges not only from the top-down, but also from the bottom-up (Stephenson 2005). Coordination at the headquarters level across organizations has proven to be insufficient, and some bodies are now engaging personnel within their ICT units in field-level coordination efforts. In terms of ICTs, this means coordination of processes and policies among the chief executives and directors of ICT units as well as personnel who implement the technological solutions and maintain the technological infrastructure at the local level and among those who utilize ICTs in the field during a crisis. The coordination of field-level ICT units across multinational organizations with diverse organizational structures and political realities is a complex endeavor (Middleton and O'Keefe 1998). Changes to ICT infrastructure, adoption of new technologies and software, or facilitating the sharing of information have to be considered in multiple emergent and organizational contexts and decision channels.

In this article, we present the findings of an exploratory case study of one such field-level coordination effort, where trust building through *collaborative* activities is shown to be essential elements in successful coordination across organizations. In the following subsections, we describe the coordination body we studied in terms of their mission and situate it within the larger context of humanitarian NGOs. We describe its origins, its organizational structure, and the development of coordination efforts among field-level IT workers among NGOs that belong to the coordination body. Our understanding of the goals and functioning of the coordination body yields specific research questions we set out to answer as we studied the creation and development of coordination efforts at the field level. Briefly, we wanted to know (1) to what extent interpersonal relationships and collaborative activities affected trust building, (2) to what extent do field-level groups reflect the goals of collaboration and resource sharing prioritized by the headquarters-level coordination body, and (3) do the field-level groups generate value for their member representatives? These questions are delineated at the end of the next section and provide a structure for our research approach and methodology. Our data and findings are presented in the subsequent section, followed by an analysis and discussion in which we focus upon the role of trust in establishing relationships among field office organization representatives as well as the collaborative activities in which they were engaged. We conclude the article with an assessment of the value of field-level coordination bodies based on their goal of providing value to their members.

ICT Coordination and Collaboration in Humanitarian Relief

In this section, we contextualize our research with CLIN.[1] We situate CLIN within the larger humanitarian relief, assistance, and development context. We then offer a

[1] CLIN is an anonymized acronym for the *C*oordination Body of the *L*arge *I*nternational *N*GO we studied. CLIN-HQ and CLIN-FL stand for the headquarters and field levels of the coordination body, respectively.

survey of the literature regarding cooperation, coordination, and collaboration among humanitarian NGOs and the notions of trust building among such organizations. We describe the formation of CLIN, its mission and goals, and its project of extending its coordination efforts to the field-level IT workers among its member organizations. We conclude this section be delineating three specific research questions that enabled us to explore how the organization engaged in trust building, encouraged collaboration, and generated value among its members at the field level.

Our case organization, CLIN and its field offices are embedded in the broader domain of humanitarian assistance coordination. In that broader domain UN efforts, particularly those spear-headed by its Office for the Coordination of Humanitarian Affairs (OCHA), attempt to coordinate across a broad range of organizations and across a variety of programs and specialist areas such as information management and information technology. Within this broader context, the large international NGOs have attempted to coordinate among themselves, and CLIN is one such entity that does so in the domain of ICTs.

Inter-organizational *coordinating bodies* engage in more than just coordination; they also engage in cooperation and collaboration. The concepts of cooperation, coordination, and collaboration reflect differing levels of commitment, and it is important to understand these subtle differences with respect to the joint design and deployment of ICTs and information management systems in humanitarian NGOs. Coordination is distinct from cooperation, which manifests as a primarily verbal dialogue in informal settings and is typically without formal contract or agreement (Hord 1986). *Cooperation* activities among NGOs (e.g., sharing online time) generally do not interfere with autonomy and have little risk for loss of independence for each organization (Mattesich et al. 2001). Coordination is the process whereby two or more organizations create or use existing decision-making rules to deal collectively with a shared task (Rogers and Whetten 1982). *Coordination* is more formal than cooperation and occurs primarily when organizations find their goals are similar, so they can work together on "their separate, yet compatible missions" that do not alter individual organization authority (Czajkowski 2007; Mattesich et al. 2001). *Collaboration* occurs when organizations share authority and responsibility for planning and implementing an action to solve a problem. They devise shared rules, norms, and procedures through an interactive process, and work together on a specific task rather than working on independent tasks towards a common goal as would occur in cooperation (Wood and Gray 1991; Hveinden 1994).

Coordination bodies are meant to engage in cooperation, coordination, and collaboration to resolve the problems of information redundancy, duplication of effort, poor planning and implementation, and basic lack of knowledge and information regarding the disaster situation. Inter-organizational coordination has a number of barriers to its effective implementation that have been consistently identified across the literature: (1) bureaucratic barriers and turf-protection, (2) divergent goals and conflicting interests, (3) resource dependency, (4) competition for scarce resources, (5) information issues, and (6) assessing and planning joint activities (Uvin 1999; Thompson 1967; Bui et al. 2000; Saab et al. 2008).

The notion of trust as a critical dimension of effective inter-organizational collaboration is also well supported by the literature (Gambetta 1988; Gulati 1995; Zaheer et al. 1998; Ring and Van de Ven 1994; Newell and Swan 2000; Noteboom and Six 2003; Dirks and Ferrin 2001; Comfort et al. 1999, 2003). However, differences in perception, cognition, values, interests, and needs with respect to the information gathered and shared poses trust barrier to effective coordination (Bui et al. 2000). Coordination and collaboration of relief efforts requires access to and understanding of information. Information is as crucial as trust to effective coordination and collaboration of relief efforts, where the information gathered and disseminated across heterogeneous organizations must be trusted for decision-making and implementation efforts (Suparamaniam and Dekker 2003; Stephenson and Schnitzer 2006; Saab et al. 2008; Orlikowski 1992; Newell and Swan 2000; Knuth 1999; Czajkowski 2007; Benini 1999; Bui et al. 2000). Indeed, field workers must be able to trust the information they receive if they are to engage in appropriate activity that leads to effective outcomes (Bui et al. 2000).

In addition to information and trust, effective coordination will also depend on the ICT staffs who are responsible for the management of information for relief efforts. Building trust among these field-level personnel is an important component in effective coordination and collaboration among relief organizations. Field workers need the flexibility to act in complex and fluid environments with workers from a variety of organizations without needing to coordinate things with those above them in the organizational hierarchy. Stephenson (2005) argues for the development of organizational cultures that actively encourage improved inter-organizational trust that leads to more effective cooperation. For this study, we adopt his four-level framework (see Table 1 in "Results and Discussion") for analyzing the level of trust in our field-level coordination bodies.

CLIN-HQ Organizational Structure and Constraints

CLIN-HQ formed in 2001 as a consortium of humanitarian relief organizations with the specific mission of improving and facilitating the deployment of ICTs during natural and man-made disasters. Membership is by invitation only, and as of 2007 there were 22 member organizations, CLIN members are CIOs, ICT Directors, and other technical staff of the member organizations. Their experience has reinforced for them the notion that effective collaboration in emergency response situations rests heavily on the establishment of trust among members.

Table 1 Types of inter-organizational trust (Stephenson 2005)

Trust based on judgment of good will and how much one considers the other to be a friend
Trust based on the perceived ability of others to carry out needed tasks or get the job done
Trust based on whether behavior is consistent with contractual agreements
Trust based on expediency because of the need to accomplish goals quickly

CLIN adopted a market coordination structure (i.e., networked) instead of a hierarchical coordination structure (Thompson et al. 1991; Malone 1987), which relies more on consensus building for selection of collaborative projects, policies, and platforms that are to be recommended for adoption by member organizations. As a networked organizational structure and as a consortium of humanitarian relief organizations, it has no inherent authority to impose its activities or agenda on its member organizations. It must seek consensus among interested members to develop and implement projects. It must also rely on member organizations to fund such projects either through donors or from their respective budgets as CLIN-HQ has limited ability to provide such funding. Member organizations have a variety of motivations for proposing projects and varied capabilities with respect to funding and implementing them. Consequently, a set of formal and informal practices and criteria have emerged for choosing projects and identifying consent by interested members at the headquarters level.

CLIN-HQ keeps its decisions within the realm of practicality and avoids political decisions. CLIN-HQ's decision-making process entailed several formal and informal practices. Decisions are made through formal communication channels such as telephone and in person meetings. Coalition building is achieved through informal communication channels (e.g., social activities such as after-work drinks or dinners), which supports the decision-making process in formal settings. Decisions are made collectively, in which the whole membership participates, using a form of modified consensus. A valid consensus is achieved when at least three member organizations agree to undertake a suggested project and provide appropriate funding (if needed) for its development and implementation. Although consensus may have been achieved, member organizations are not required to participate in projects if, for example, they determine that it will not serve their mission or interests.

The Formation of CLIN-FLs

During its first few years as a coordination body, the member representatives and the CLIN-HQ principals came to strongly believe that effective coordination must also include trust building and collaborative activity components. They also realized that working only across the headquarters level of their organizations was only semi-effective and that they needed to replicate their success at the field level, where their people confront the emergent disasters and difficulties of ICT creation, usage, and deployment. This realization became the impetus for creating a field-based organization, CLIN-FL, to address ICT issues across their organizations to become more effective in their inter-organizational coordination and ultimately to better serve the communities affected by humanitarian disasters.

In 2007, CLIN-HQ established four pilot CLIN-FLs in India, Sri Lanka, Africa, and Indonesia. There was also a nascent CLIN-FL forming for Latin America, but had yet to fully form at the time of our study. There were no formal rules for deciding whether a CLIN-FL is established for a particular country or a particular region, rather the country/region difference depended largely upon the scope of activity by the member organizations. Most of the member organizations had

separate country operations for India, Sri Lanka, and Indonesia, but had regional operations for Africa and Latin America.

CLIN's member agencies are diverse in terms of their missions, funding, and technological capabilities. Field workers and ICT staff at the local level may have benefited from some of the projects undertaken by CLIN-HQ, but rarely did they have the opportunity to establish trust among themselves at the field level and build relationships that would lead to more effective disaster response. Rarely were CLIN-HQ representatives geographically present when responding to the disasters; rather personnel from local or regional offices of the member agencies are the most involved. CLIN-HQ members realized that coordinating ICT issues at headquarters level was not enough:

> To date, the formal connections made through CLIN have mostly been through CIO's and other technical staff coordinating at headquarters level. While organizations have benefited from this collaboration, there has always been a sense that much more could be accomplished if the field staff of these organizations could also work together in the same way as their HQ counterparts. (CLIN-HQ member)

CLIN-HQ recognized this barrier to their effectiveness at the local level, such that trust is not automatically conferred upon non-local personnel from organizations operating with a particular country or region:

> If I were to approach the [National] telecom authority and say I want to get this done. I would get shunned quickly, this [foreign] guy coming to ask us. It is much more relevant for the [within-country] organizations to do it. Even then in most countries, foreign aliens are not viewed in a bright light. The point is that for local change to happen, local people need to take the lead. (CLIN-HQ Member)

Research Questions

Our specific research questions provided a structure upon which to evaluate the extension of coordination bodies to the field level. They can be characterized into three general categories: trust building, coordination and collaboration, and the value of participation.

Trust Building

One impetus behind the formation of CLIN-FLs was to replicate the collaboration efforts at headquarters level. CLIN-HQ saw trust building as integral to their experience of effective collaboration. How do the CLIN-FLs build trust among its member agencies and their respective representatives? Does it occur through the establishment of bilateral (i.e., interpersonal) relationships outside of CLIN-FL activities? Does it occur through collective action and/or working on collaborative projects within the CLIN-FL? These questions lead us to our first research question:

R1 *To what extent does each—bilateral relationships and collective action—play a role in trust building?*

Collaboration

CLIN's goal is to improve and facilitate the collaborative deployment of ICTs during natural and man-made disasters. They achieved this goal through collaboration and sharing of resources and they surmised that similar efforts at the local level could result in more effective response to disasters among the field workers and ICT staff on the ground. Further, it was presumed that being physically in the midst of a disaster these personnel would experience an even more acute need for collaboration and resource sharing. This leads us to our second research question:

R2 *To what extent do the CLIN-FLs adopt the goals of collaboration, coordination, and sharing of resources as determined by CLIN-HQ?*

Value of Participation

Given the complex challenges of humanitarian relief in multinational and multi-organizational contexts, it would seem that CLIN-FL members face plenty of external intercultural challenges in carrying out their own organizational missions, why would they want to compound them with internal intercultural challenges by joining a CLIN-FL? To better define the value of a CLIN-FL operation we developed the following value propositions to serve as initial measures for the motivation of members to participate:

P1. Provides what no other organization can (including, for example, competing organizations with similar missions, professional societies, or even the local golf club).
P2. CLIN-FL projects overlap with the goals of the member organization, thereby helping members to accomplish their own work.
P3. Through the creation of a social network, CLIN-FL membership helps to achieve members' other work not formally taken up by the CLIN-FL.
P4. Provides social support for its members outside of work-related projects or goals.

The anticipated value of participation in CLIN-FLs is likely to be related to member representatives' level of agreement with these propositions and leads us to our third research question:

R3 *Do CLIN-FLs generate value for its member representatives in terms of their work and/or social networks?*

Methodology

In this section, we detail our research methods. Our research on CLIN-FLs employed an exploratory case study approach, which consisted of document

analysis, interviews, and surveys. Since the data were collected at the beginning stages of the coordination body formation, we consider it exploratory, requiring validation once the organizations have been in place for some time.

CLIN is a *coordination body* consisting of several NGOs that had been in existence for several years at the executive organizational level. We acquired a variety of documents (i.e., meeting minutes, reports, publications, email discussions, etc.) from a related coordination body (ITEA[2]) and CLIN that provided an initial understanding of the organizations in terms of its formation, mission, activities, and inter- and intra-organizational interactions. We constructed our semi-structured interview questions and survey questions from informal conversations with CLIN principals and our document analysis.

At the time of our study, CLIN was engaged in an effort to extend their coordination efforts to the field level. Our study is framed around three interdependent facets of coordination body formation. The first facet focuses on trust building, the second on collaborative behaviors, and the third on the anticipated value of participation to its members. We developed specific research questions related to each of these facets, which provided a structure through which we could analyze documents and communications, create a survey, and construct interview questions.

To understand the background and goals of the organizations, we interviewed seven persons who could speak about CLIN-HQ and CLIN-FLs. These interviews were semi-structured and focused on the question of organizational models and interactions. Because of the global dispersion of and limited access to participants, each interview was conducted by phone over an 8-month period and each lasted 45–90 min.

To capture potentially diverse perspectives of the members, we constructed a web survey to gather information on demographic data, meetings, motivations, and expectations regarding the CLIN-FL and CLIN organization and activities. Given increasingly low response rates for organizational surveys generally, the survey design focused on ease of use, using mostly a multiple-choice format with limited use of open-ended items. The survey was administered in two rounds. The first round targeted to members of the Africa CLIN-FL organization generated a total of nine responses from a total of 17 members. At the time of the survey, Africa had only one meeting. Based on these nine responses, we revised the survey to include specific questions about types of trust (Stephenson 2005; Zaheer et al. 1998) and revised the question on interactions between members to gather finer detail. We contacted 29 potential respondents from the India and the Sri Lanka CLIN-FLs and received 15 survey responses, giving us a total of 24 responses from all CLIN-FLs contacted from a pool of 46 respondents (a 52 % response rate). At the time of the survey for India and Sri Lanka, they had had ten and six meetings, respectively.

[2] ITEA is an anonymized acronym for a time-limited *I*nformation *T*echnology for *E*mergencies *A*lliance group, some of whose participants were already members of CLIN. After ITEA's disbanding some of its efforts were taken up by CLIN.

Results and Discussion

In this section, we discuss the results from our interviews and surveys. We frame the discussion in terms of the research questions elaborated above.

Trust Building and Collaboration

CLIN-HQ, building upon their experience at headquarters level, devised a rationale for CLIN-FL formation. In order to collaborate effectively, first there must be trust between the representatives of the member agencies. Trust was established through two mechanisms: face-to-face meetings and collaborative projects. In simply meeting with each other and talking about what each agency does and how its ICT units function, trust can develop. CLIN-HQ also created guidelines for CLIN-FL formation that included working together collaboratively on projects of interest to the FL representatives. Collaboration serves to reinforce trust if the representatives involved in a particular project are able to derive some value from it. Conversely, distrust may be reinforced through collaborative interactions if the project is considered by members to be of no value to them or, if it does have value, their teammates are perceived to be incompetent (Stephenson 2005). If the collaborative activities and behaviors are seen as having value and to be reinforcing trust among FL representatives, the CLIN-FL is considered to be a success from CLIN-HQ's perspective. Figure 1 illustrates CLIN's simple collaboration model.

The agenda for the first CLIN-FL meetings included an overview of the CLIN organization and its rationale for establishing FLs (i.e., barriers to the top-down approach). It served as both an information-sharing exercise between the headquarters and field levels, between organizations at the field level, and provided a vision to help structure the purpose and activities of the CLIN-FL. CLIN-HQ provided representatives a template from which to present about their agency, work, ICT challenges, and expectations at the initial CLIN-FL meeting. Using the template provided a structure for sharing information and a basis for discussion concerning expectations for the CLIN-FL. Sharing of information—about oneself, one's organization, and one's social network and resources—was the first step in creating trust. Sharing information is sometimes made more difficult because of language diversity:

> Of course you add in the language problems and the misunderstandings and misconceptions that can be found when one person will say a lot of things and it can be misconstrued by a second person who's native language is not the language that the first is using. (CLIN-HQ member)

Even with the language difficulties, HQ and FL members viewed the initial meetings as successful because it provided a level playing field in which all the

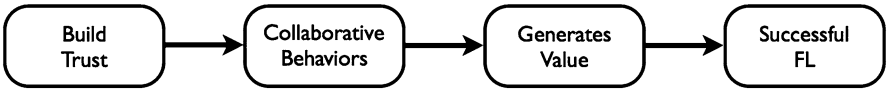


Fig. 1 CLIN collaboration model

member agencies could participate regardless of size or technological or financial advantage, and it illuminated many common issues faced by all the member agencies.

R1 *To what extent does each—bilateral relationships and collective action—play a role in trust building?*

The purpose of the CLIN-FL is to facilitate collaboration with respect to ICTs. One might expect that task and formal trust dimensions (Table 1, items 2–4) to be weighted more heavily as the coordination body is job focused. According to the results of our surveys and interviews, the most important factor in trust building among CLIN-FL members is goodwill and friendship (i.e., bilateral relationships; Table 1, item 1). It is interesting that the interpersonal dimensions of trust would be considered more important than project task or formal dimensions of trust among the respondents, but perhaps not surprising. These responses were focused on the first meeting of the CLIN-FL members in their respective organizations, where nearly all of them were meeting for the first time. In order to work together effectively on collaborative tasks, a personal relationship of trust is requisite among the respondents as they establish individual and group norms and expectations.

The decision mechanism for undertaking collaborative projects—modified consensus—worked well for the FL members, at least in the formation stage. Further research needs to be conducted focusing on whether consensus continues to work well as the FL members establish stronger interpersonal relationships that potentially lead to competing subgroups within the FL. Our research indicates that there is no formal conflict resolution mechanism in place to deal with the potential paralysis when consensus is unachievable.

Trust building is not necessarily a straightforward enterprise. CLIN-FL representatives are members of NGOs whose executive officers often compete for resources and funding. However, at the field level, member representatives share similar challenges in which sharing information is beneficial and which are somewhat more removed from solicitation of funding among donor organizations. In emergency relief contexts in particular, understanding a Customs Agency's rules and regulations with respect to ICT—what is allowed in terms of communication and satellite equipment—and the regulatory licensing schemes created by national governments is vital information if an NGO is to provide timely and effective relief. Sharing this type of information allowed CLIN-FL representatives to respond more effectively by knowing what types of ICTs and, consequently, what their budgetary constraints are for a particular country or region.

Collaborative Activities

CLIN-FL members saw collaborative activities as important. They believed that collective action would result in better collaboration on future projects, but they also believed that it would facilitate stronger relationships and trust between members. Table 2 lists what survey respondents considered to be the perceived benefits of collaborating on action items that came from their first meeting. The ranking highlights the importance of the social networks and relationships (interpersonal and

organizational) that are being developed as part of the FL. This ranking also holds true for each CLIN-FL pilot chapter responses—the top ranked benefits (>50 % of respondents) are identified as those related to social networking and relationships, not preparedness or project relevance.

CLIN-HQ has been very deliberate in terms of structuring the interactions that foster trust and collaborative activities that reinforce success. At the initial CLIN-FL meetings, the CLIN-HQ advisors outlined expectations and constraints with respect to CLIN-FL activities. Some of these arose out of legal considerations, but not all. Table 3 lists the formation guidelines and recommended activities for CLIN-FL. It covers the areas of governance, initial activities, rules and guidelines, and tools. Our survey indicated that 67 % of the respondents clearly understood what rules and guidelines they are expected to follow as a CLIN-FL.

CLIN-FLs are in a similar situation as headquarters with respect to developing, funding, and implementing projects. Therefore, it seemed logical to CLIN-HQ that CLIN-FLs adopt a similar criteria and practice for achieving consensus around projects. One CLIN-FL made decisions about the initial collaborative project by exploring the many projects in which each member is already involved. Consensus formed around the type of project in which most members were involved. A CLIN-FL member from India describes how they achieved consensus and then relegated management responsibility for the project to the vice president of the FL:

> Like I said we moved to a general discussion how to do exercises, and for each member that is there, put on the number of possible projects, and we put on the *X*-axis for each member are you involved in it. If it appeared this project was one which most members are worried about we looked at it. We left it up to the Vice President of the CLIN-FL who is responsible for projects. He agreed to pull more technical meetings together on that. What equipment to get, what permits are needed, what communication links are required and on and on.

Our data revealed that CLIN has a distinct collaboration model that begins with trust building among members of both HQ and FL. Interpersonal trust allows for

Table 2 Ranking of perceived benefits from action items

Rank	Resulting benefit from action items	% of Respondents
1	Better collaboration on future projects	71
2	Stronger relationships and trust between members	67
3	Allow agencies or members to combine their expertise	67
4	Will strengthen organizational relationships between agencies	54
5	Will make my job easier	42
6	More effective emergency preparedness response plan	33
7	More relevant projects to my agency	33
8	Allow smaller or less well-funded agencies to participate more	29
9	More effective leadership	25
10	Will establish my agency as a leader in humanitarian relief in this region	17
11	Other	13

Table 3 Formation guidelines and recommended activities for CLIN-FL

Category	Description
(1) Governance	HQ suggests each FL appoint a President, Vice President, and Secretary who lead the FL; and HQ has assigned an advisor to each FL to assist and provide oversight
(2) Initial activities	a. Exchange contact information; exchange supplier information;
	b. Create and share member profiles;
	c. Develop an emergency response plan;
	d. Establish and collaborate on projects such as ICT Skills Building and/or an ICT resource center
(3) Rules/ guidelines	a. Meet by phone at least once per month and in person twice per year;
	b. Do not establish legal entities;
	c. Do not bind CLIN-HQ into legal agreements or contracts;
	d. Do not approach donors on behalf of CLIN-HQ unless explicitly approved;
	e. Use the approved CLIN-HQ logo
(4) Tools	Use CLIN's collaborative software platform to store meeting minutes, contact lists, and other FL documents

collaborative activities, which are decided through consensus. Figure 2 depicts our model of the collaboration among member representatives. Collaboration among member representatives from each agency begins as they establish interpersonal relationships with their CLIN-FL colleagues. The representatives engage in collective actions through CLIN-FL meetings and projects, which reinforce their organizational relationships. In addition to a shared relationship between all members, members may also establish interpersonal (i.e., bilateral) relationships.

R2 *To what extent do the CLIN-FLs adopt the goals of collaboration, coordination, and sharing of resources as determined by CLIN-HQ?*

The CLIN-FLs seem to have adopted fully the goals of collaboration, coordination, and sharing of resources. They all selected projects that would lead to greater connectivity—more information connections and more storage capacity—so as to facilitate their organizational missions. The CLIN-FL members recognize the value in working with other agencies to achieve common goals. They realize that by coordinating their efforts, they could leverage their collective buying power to negotiate lower costs for connectivity.

CLIN-HQ headquarters has established clear guidelines (see Table 3) for CLIN-FL formation that includes suggestions for (1) how the CLIN-FL is governed; (2) initial trust-building activities and subsequent project activities; (3) rules and guidelines; and (4) use of the collaborative platform. This alignment of headquarters and field levels of CLIN can be visualized simply, as depicted in Fig. 3.

With respect to (1), the overlap and alignment of goals between CLIN-HQ and the CLIN-FLs are nearly total. In terms of governance, the CLIN-FLs adopted the recommendations of headquarters. At the initial meetings, the participants agreed to the CLIN-HQ's schema of electing a President, Vice President, and Secretary to lead the CLIN-FL and manage its activities. Each has an advisor appointed by

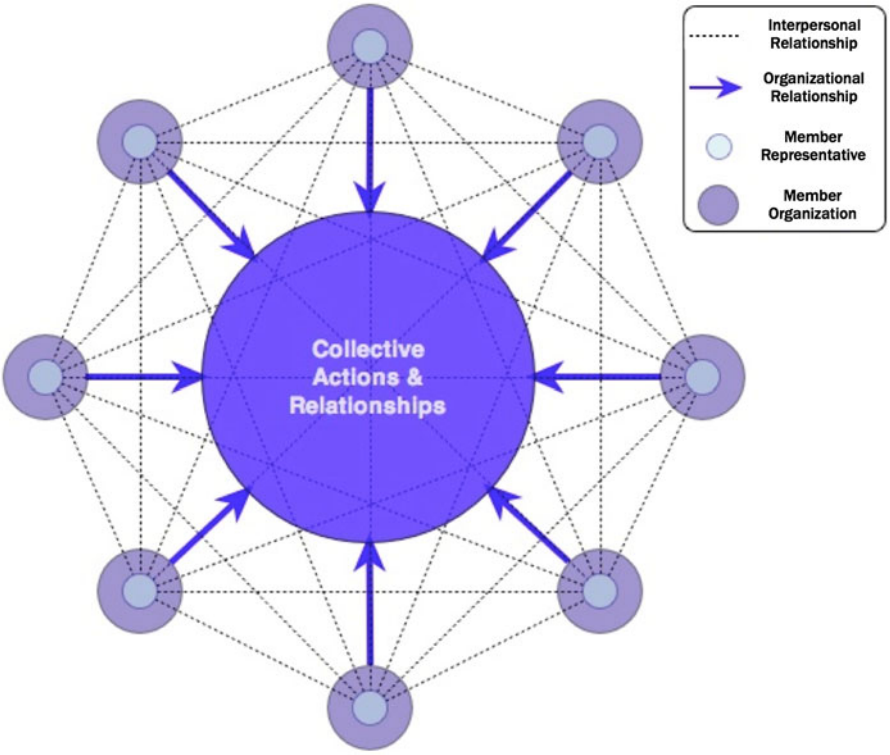
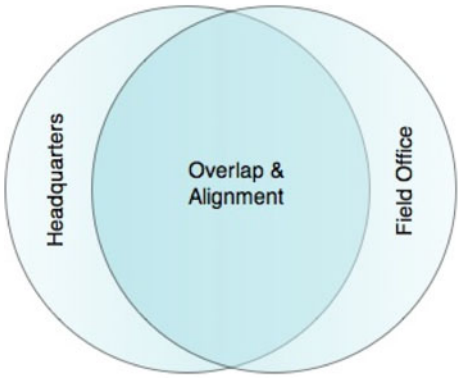


Fig. 2 Model of CLIN-FL collective actions and bilateral relationships

CLIN-HQ. Planning for future elections of officers seems to have been left undetermined. It is unclear as to how long a person can hold office, how often they can be re-elected, if they can be removed through a vote of "no confidence" among the membership, or what happens if they move to another organization who is also involved in the FL.

The CLIN-FLs also adopted the initial activities recommendations of headquarters (2), which had created the agenda for the meeting. The members gave

Fig. 3 CLIN goal alignment



presentations about themselves, their organizations, and the challenges they faced in their work. These presentations by the advisors and members fulfilled the goals (2a) and (2b) for initial activities as listed in Table 3. All of the members found these presentations to be very helpful in creating trustful relationships with other members. The connectivity project, though not specifically an emergency response plan, is a critical component of it and can be considered as contributing to the overall goal of (2c) an emergency response plan. The Africa CLIN-FL also decided to take on initial projects that included ICT Skills Building, which was a direct suggestion of headquarters and which fulfilled goal (2d).

Of the five goals listed as part of (3), the rules/guidelines of a CLIN-FL, only (a) is under the control of the CLIN-FL members. The members agreed that monthly teleconferences and biannual meetings were goals they wanted to adopt. The other four—legal entities, legal agreements/contracts, donor solicitation, and use of the logo—are requirements imposed by headquarters. With respect to (4), the survey responses indicate that a slight majority feels that use of HQ's collaborative software platform as a repository for CLIN-FL documents, meeting minutes, contact lists, etc. will be an effective tool to help members collaborate on projects.

Generating Value

Despite the many organizational, governmental, and cultural challenges they face, do the CLIN-FLs provide value to its members? We set forth four value propositions earlier in this article and revisit them now to consider the value of participation for CLIN-FL members.

R3 *Do CLIN-FLs generate value for its member representatives in terms of their work and/or social networks?*

Did the CLIN-FL provide what no other organization or professional society could? This proved to be the case. We discovered that the Inter Agency Working Group (IAWG)[3] was an organization that mirrored the goals and functionality of a CLIN-FL. And while many of the members of the Africa CLIN-FL were also members of the IAWG, nearly all came to the conclusion that the IAWG did not fulfill its mission (or at least not as effectively) and that IAWG would disband in favor of membership in the CLIN-FL. Other than the IAWG, most CLIN-FL members did not belong to any other IT or humanitarian relief group or professional society. Member representatives see the CLIN-FL as fulfilling an important role for ICT staff in each region.

In terms of the first value proposition, CLIN provides a unique opportunity for ICT staff at the field level of humanitarian NGOs to come together, share information, and engage in collaborative activities. The CLIN-FLs encourage the creation, expansion, and integration of social networks that fulfill individual and organizational needs. The individuals are able to connect with others who share similar interests in ICTs, for which there seemed a great thirst among those we surveyed. CLIN-FLs also facilitate the enhancing of skill sets for the individuals, who take on the responsibility of mentoring each other according to their strengths.

[3] http://www.humanitarianinfo.org/iawg-nairobi/.

Organizations are able to tap into the social network and gain a wider view of the ICT landscape—from connectivity issues and costs to geographies and governmental regulations—that have the potential to enhance their preparedness for and responses to emergencies, disasters, and long-term development.

The second value proposition—that CLIN-FL projects overlap with the goals of the member organizations and help member representatives to accomplish their work—also seems to be fulfilled by the CLIN-FL initiative. Each CLIN-FL elected to use the governance model proposed by CLIN-HQ and elected a president, vice president, and secretary to lead the CLIN-FL. They exchanged information regarding themselves, their organizations, and their suppliers. Although not specifically an emergency response plan, each CLIN-FL selected projects that worked towards enabling greater connectivity at lower cost, which would facilitate emergency response in the future. The Africa CLIN-FL also took on an ICT Skills Building project, as suggested by CLIN-HQ.

In the third value proposition, we posed the question: through its social network, does CLIN-FL membership help to achieve members' other work not formally taken up by the CLIN-FL? We found support that it does. Some members specifically mentioned that accessing or combining expertise was a significant benefit to them. They saw it as a cost-effective way of achieving goals for projects for which they were responsible within their organization. Tapping into the expertise of other CLIN-FL members allowed them to meet their responsibilities, without budgetary constraints:

> The other thing was CLIN-HQ is bringing expertise. It is possible that I can get somebody who is very skilled in a particular area in my organization but at more cost. If I had to go outside and go consulting for that it would cost more. I am meeting the common problems; I think we are adding a lot of value for sharing the knowledge within the organization. (Africa CLIN-FL member)

The final value proposition—providing social support—is also perceived by the members as having been fulfilled. Working as ICT professionals in developing regions is often an isolating experience. Few people have ICT-related skills, and many perceive ICT staff as technicians, not managers or leaders. Each of the CLIN-FL members we interviewed expressed their excitement and desire to get together with other professionals on a personal level. They had a strong desire to connect with others who understand their experiences with implementing and managing ICT in their region. Simply interacting with others who shared similar experiences provided the social support that enabled the members to continue fulfilling their professional missions—something they normally had done in relative isolation in their own organizations. Indeed, responses to the survey indicated that one of the primary reasons for making contact with other members was simply to talk with a friend.

Conclusions

Coordinated action in humanitarian response is a key challenge that is now being addressed in the domain of ICTs. While extant research has identified a number of

barriers to coordination, it has also suggested that trust and information sharing can help overcome those barriers. In this study of the formation of a series of field-based coordination bodies for ICT personnel we found that, at least at the outset, it appears that the model of coordination used in a related headquarters-level coordination body can be successfully applied to field-level organizations. The model includes development of both communal and bilateral relations, as well as working together on specific collaborative projects that may or may not be directly related to disaster response.

CLIN-FLs each exist in multicultural context and face both internal and external intercultural challenges. Language diversity often accompanies cultural diversity and poses challenge for members, particularly for CLIN-FLs that span regions. Some of these challenges are attenuated by their membership in a common "IT culture"[4] that provides them an initial foundation for communication and understanding, which are seen as necessary for building trust. They also face a variety of challenges related to geography, types of disasters, and the cultures of the communities they serve. Some of the CLIN-FLs deal with a single national government and its policies, while others deal with multiple national governments and their policies. CLIN-FLs that cross international boundaries must handle a variety of challenges in terms of legal requirements and/or restrictions that are not experienced by those FLs that focus on a single country.

With the formation of CLIN-FLs, CLIN-HQ created a mechanism through which trust among humanitarian NGOs, with diverse organizational cultures, is actively encouraged in the hope that it will lead to more effective coordination among its members. This research also finds that among four types of trust that range from relationship-oriented to task-oriented, the field-level members find the greatest value in the coordination body's ability to foster relational trust. We propose that this emphasis on relationships among field-level ICT personnel may be due in part to their isolated experience as humanitarian ICT personnel in less technology-intensive societies.

While CLIN-HQ does not provide financial support for projects, it provides an organizational structure through which the members can devote resources to collaborative projects. CLIN-FLs provide a forum in which common problems and solutions that are important to the field-level personnel can be discussed and acted upon. It empowers the field-level ICT workers with decision-making ability with respect to ICT utilization during disaster response. By moving the locus of control over ICT utilization closer to where it is implemented, the NGOs benefit from the expertise of their ICT staff in responding to humanitarian crises. However, keeping the financial responsibilities for projects with the NGOs, the CLIN-FL members are required to coordinate projects with their own agencies and engage in advocacy behaviors for which they may or may not be prepared.

The impetus for the establishment of CLIN-FLs came largely from the work of the ITEA. One member of ITEA we interviewed was familiar with the CLIN-FL project was very enthusiastic about the organization. He said that NGOs often do not put a high priority on ICT, and the CLIN-FL project can play a public relations

[4] From interview of Africa CLIN-FL member.

role in advocating for the importance of ICT among humanitarian NGOs—not just in terms of technological equipment or as technicians maintaining that equipment, but in terms of information management, leadership, and ICT Skills Building. He envisions a larger role for ICT and wants NGOs to embrace the bigger picture when it comes to ICT.

People outside the organization see CLIN's vision and value-added activities as central to success of ICT in NGOs. They highlight an ICT Skills Building session with the Africa CLIN-FL as one instance of expanding the understanding of ICT's impact on organizations. CLIN-FLs can be advocated for change, helping to develop a leadership model for ICT staff, enabling them to be more than simply technicians, demonstrating the importance and relevance of project management within ICT for organizations. Their activities could help in grooming future leaders of ICT units within NGOs and cross-training staff to function more effectively. At the very least, they provide a forum for discussion for these types of projects.

Future research can help to validate many of the findings of this exploratory study. First, further study of field-level versus headquarters-level coordination efforts is required. In particular, it would be interesting to see if field-level organizations persist longer than their headquarters counterparts and whether or not our findings from the initiation of these organizations last. Second, the market coordination model adopted by CLIN brings forth an issue of intra- and inter-organizational advocacy and the ability of field-level ICT workers to effectively create and fund projects they see as useful to humanitarian relief efforts. Our research indicates that there is no formal conflict resolution mechanism in place to deal with the potential paralysis when consensus on such projects is unachievable. Future research might investigate the efficacy of a market coordination model for field-level personnel. Third, research might examine the role of coordination bodies in enhancing ICT skills in field office locations, as well as leadership and consensus-building skills. Fourth, and arguably most important, studies should examine whether or not, and if so to what extent, organizations involved in ICT coordination bodies coordinate more closely during disaster response.

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