

Citizen Participation in the Specification and Mapping of Potential Disaster Assets

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ABSTRACT

Asset-mapping is a strategy used in disaster preparedness planning, however participation is typically limited to a small number of organizations with specific expertise related to disaster response. Broader strategies are needed to ensure identification of assets is comprehensive and to stimulate innovative thinking about which attributes of a community are potential assets for response and recovery. As part of The EnRiCH Project intervention, asset-mapping was used as a collaborative activity to promote identification of a broad range of assets which could be used to enhance resilience and promote preparedness among high risk populations. In this paper we present a study (in progress) which explores innovation and empowerment among a collaborative community group in Canada. Qualitative content analysis was used to analyze focus group transcripts from 2 sessions where the participants (n=18) learned how to use google docs and create a database of community assets, while developing collaborative relationships.

Keywords

Resilience, engagement, asset-mapping, collaboration, empowerment, innovation

INTRODUCTION

In the field of disaster and emergency management, it is now recognized that community resilience provides a foundation for multi-level planning, response and recovery. Resilience within a community is a macro level dynamic state that is built upon awareness, communication, and collaborative relationships across (Pooley et al., 2006; O'Sullivan et al., 2012). Complexity is inherent within geographically defined communities, with multiple systems, organizations and individual agents; therefore efforts to enhance resilience must consider complexity when planning community interventions to enhance adaptive capacity (Berkes & Ross, 2012).

Asset-mapping is an important strategy to enhance awareness and strengthen inter-organizational collaboration (Lemyre & O'Sullivan, 2012). When communities identify and know how to mobilize relevant assets ahead of a disaster, response organizations are able to more readily access resources to provide support. In the field of disaster management, asset-mapping exercises usually involve face-to-face meetings among a small number of response organizations, whereas broader inclusive consultations are less common. Most asset mapping activities concentrate on the hard assets (i.e. equipment and facilities) and not on the social infrastructure elements (people and skills), which are more often cited as the key components in individual and community resilience. However, as our previous work has shown, inclusive engagement of community organizations which provide secondary response and support is beneficial in enhancing awareness of the assets which can be utilized to support innovative prevention, preparedness, response and recovery activities (O'Sullivan et al., 2012).

Interprofessional collaboration in many fields has become more computerized, with an emphasis on interoperability and asynchronous communication capabilities (Carroll, 2007). Asset-mapping strategies and tools have also become more computerized, to leverage technology and enhance interoperability between different response agencies (Lemyre & O'Sullivan, 2012).

Information system (IS) design typically focuses on the technological aspects, as computerization involves

digitization of processes, such as support for decision-making, communication and information management. However rigid systems are frequent causes of user dissatisfaction (Kushniruk & Patel, 2004). Defined requirements are necessary to ensure properly engineered systems, but if systems are too rigid they will not be responsive to the unique needs of users. Co-agency, described as humans, technology and processes working together in the pursuit of jointly held goals (Thraen et al., 2012), is a perspective to understand collaborative practices and how to design innovative, tailored ISs to support all of them. A challenge in IS design is the balance between structured design and allowing users to be innovative in tailoring their solutions.

IS design for disaster management needs to focus on facilitating coordinative activities rather than simply processing information (Janssen et al., 2010). An essential part of developing coordination is building relationships between different stakeholders. IS design to build relationships is challenging in that hard assets such as Wikis, Blogs and file sharing tools need to build soft assets such as empowerment, motivation and autonomy. To date there is little research that has looked at the relationship between hard and soft assets and how they lead to collaborative communities. In the context of collaborative communities ISs are not developed but rather they need to be grown within the community where they will be used (Berg, 2001).

When involving communities in consultations, such as asset-mapping or other disaster management activities, it is essential to balance power differentials and foster inclusive, truly participative engagement (Attree et al., 2010). In the context of developing and refining ISs, upstream engagement (done early in the IS design phase) is essential for aligning system requirements with end-user needs (Kuziemsky et al., 2012). The awareness that evolves from a truly collaborative, participative user-engagement process can be empowering, and can stimulate solution-oriented, creative thinking and innovation (O'Sullivan et al., 2012).

The purpose of this paper is to present a case study of upstream user engagement in IS design and the implementation of a community asset-mapping intervention to promote resilience and preparedness for high risk populations, as part of The EnRiCH Project in Canada. Specifically in this study we are looking at the process of empowering participants in IS design, factors that facilitate engagement and co-agency, and tailoring of an online collaborative IS to meet the community's needs and preferences.

METHOD

In the The EnRiCH Project we are using a community-based participatory approach. The overarching project involves 5 target communities, however in this paper one of the communities is presented as a case study. Following university ethics approval, (n=18) participants were recruited from a variety of sectors in the community (such as emergency management, health and social services, community associations) using a combination of purposeful and snowball sampling. The occupational status or roles of participants in the group included managers responsible for a region, administrators and managers for various public and private social services, coordinators of services and volunteers, and responders from various response organizations.

Recruitment notices were distributed by the community partners; to ensure relevant organizations were contacted and that local support was visible, particularly that key organizations were involved as partners in the initiative, off-setting concerns about the initiative being outsider-driven. Each participant signed a consent form prior to participating in 2 focus group sessions and 4 individual phone interviews across a 3-month time frame.

The intervention involved 2 focus groups spaced apart by an 8-week collaborative task using and refining an IS designed for asset-mapping. In the first focus group session we presented the The EnRiCH Project functional capabilities framework and demonstrated how to use google docs to share information and populate a template spreadsheet for asset-mapping. The format of this session was discussion and hands-on learning, where the participants were provided with laptops at each table so they could work together and try the various functions of google docs while starting to input information about various community assets into the online spreadsheet.

After the first session, the group was encouraged to work together (for 8 weeks) to populate the spreadsheet with information about assets in the community that could support people with functional needs. Each participant was given access to the google docs site and encouraged to work collaboratively with other group members and their own organizations. The group was encouraged to work together to determine what they would use the IS tool and resulting database for, what format of storing the information would best suit their needs, how the information would be accessed and shared, and any other protocols or organizational issues they identified.

After 8 weeks of working collaboratively, we hosted a second focus group, structured as a table top exercise, where the participants worked through a scenario where a train derailment and toxic spill had occurred in the community. The group was asked to work through the scenario and determine how their organizations might use the asset-database in future response or recovery efforts.

During each focus group, participants were asked to 'think aloud' by expressing their thoughts while using the

IS, so the process of mapping the assets and deliberating the IS specifications could be followed on the audio-recordings. The recordings were transcribed verbatim and checked for accuracy by another member of the research team. Direct coding, using the nodes 'innovation', 'empowerment', and 'tailoring the tool', was conducted by the lead author. Analysis of the coding reports revealed re-current patterns reflecting the group processes as they worked with the IS. The common patterns were grouped together, reviewed and discussed by the research team, and an overarching theme that integrated all the sub-themes was selected using a consensus approach. Further discussions led to refinement of the central theme and sub-themes and a preliminary model was created to depict how empowerment and engagement contributed to innovative IS design in this study.

RESULTS

The central emergent theme for this study is 'transformation'. This theme describes how the community moved from an initial state of capacity to respond to adverse events, and through the collaborative asset-mapping process their adaptive capacity transformed to a more resilient state. The IS tool was tailored by the participants to meet the needs and context of the community. The process of tailoring required empowerment, autonomy, collaboration, deliberation and creativity, as the innovation evolved. Throughout the process, outputs such as enhanced awareness, common ground, open communication and engagement were realized and represent transformations that contribute to the adaptive capacity of the community, facilitating a more resilient state.

Theme 1: An empowering climate helps the transformation from the initial state to more resilient state

During the sessions, the research team emphasized a desire to receive feedback from the participants, and the importance of tapping into their expertise to determine if the IS tool was useful, appropriate and feasible to maintain. The emphasis was on valuing partnerships and innovation, encouraging the participants to critically analyze the process and the IS tool, and to put forth creative solutions. The following quotation depicts how this message was conveyed to the group.

Facilitator: So, one of the things that again we want to emphasize- is we're going to be presenting some material to you, but what we really want you to do is to work with it [and] customize it to make it appropriate for this community... we're working in the other communities, [and] they've started adapting it to their reality and the kinds of things that they have in their community. So, we want you to do the same thing here.

Theme 2: Participant ownership and autonomy provide catalysts for engagement and innovation

To provide an empowering climate, the research team used principles of transformational leadership, which focused on giving participants autonomy to evaluate the utility of the IS and appropriateness of the configuration, and to develop creative solutions to adapt it to their needs and preferences. We called this 'passing the baton' and emphasized that the IS would be owned by the community, and therefore we looked forward to seeing what they would do with it; how they would adapt it to their unique context. This process was embraced by this community; they adapted the framework by changing the categories (which changed the acronym to CHAMPIONS) and tailoring the type of information they wanted in the spreadsheet. The group also embraced the autonomy and recognized the need to establish protocols for use of the tool, such as who would have access to change the information, whether home phone numbers for representatives of various organizations would be included in the database, and how access to the information would be regulated.

Theme 3: Awareness, common ground and open communication are needed to transform a community toward a more resilient state

As the participants provided feedback and collaborated in the design and refinement of the IS, it was important to exchange information and develop a shared vision, learn about existing systems in the community, and determine the potential utility of the tool. The participants become more actively involved in exchanging information as they felt more comfortable with the deliberation process. The exchange of information enhanced awareness among the group, as the sessions were structured to allow ample opportunities for the participants to share their experiences and reflect on what the various organizations do. As awareness and common ground developed and the group engaged in more deliberation about the tool and the need for protocols to manage it, the process stimulated creative thinking and innovative solutions, which built on and aligned with existing systems in the community. The following quotation provides an example of the type of deliberation which took place. In this conversation, the participants highlighted the need for a search function to help them sort through all the information about assets which would eventually be hosted in the database.

Participant 1: Is there an index of some sort ?

Participant 2: That's what I was thinking.

Participant 1: ...for search or a search mode, or something like that?

Participant 3: Key topics, key words.

Participant 1: Otherwise they have people who are just reading reams and reams and reams of material when they are looking for something very specific

Facilitator: Yes. You can, you can sort it by, by columns and, and also by filters.

Participant 2: No, no that's not going to work...

Participant 1: But sometimes.. Brain Injury might, you might be looking for.. it might be framed differently, then you say Brain Injury, but it might have an organization as brain in, but it's not necessarily a Brain Injury.

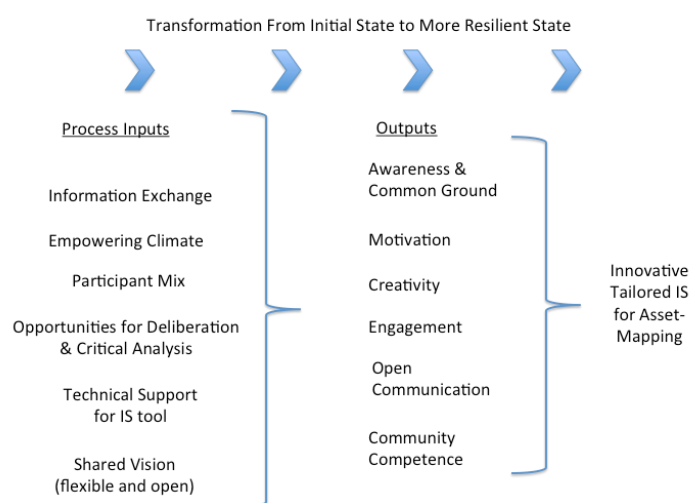


Figure 1. Preliminary Model of Innovation IS Design In Community Asset-Mapping

DISCUSSION

In this study we examined the processes of empowering participants in IS design, factors that facilitate engagement and co-agency, and tailoring of an online collaborative IS. In developing our preliminary model (Figure 1) we identified process inputs and outputs which contributed to community transformation from an initial state to a more resilient state as the collaborative group engaged in the asset-mapping task.

Our experiences align with previous studies that suggest the development of disaster management ISs requires attention to management and analytical issues (Ansell et al., 2010). Co-agency emphasizes that ISs are about connectivity at different levels – personal, organizational, regional and technical. Systems design must consider all of those levels if an IS is to be meaningful to end-users. Unfortunately requirements engineering for IS design often focuses more on what data should go into a system even though the focus should be on the different elements of connectivity, co-agency and how the tool will be used, particularly whether the IS is appropriate for the community needs and context (Kavanaugh et al., 2007). Furthermore, many of the assets, such as relationships (developed and enhanced here through the asset-mapping experience), are fundamental requirements for coordination and use of other tangible assets (O'Sullivan et al., 2012). In this study, the personal connections and an empowering climate stimulated the discussions amongst the group, and creativity to tailor the IS according to the preferences of the group and context of the community.

As innovation emerges and the system becomes more tailored to the context, the tool becomes more robust. The community in this study was empowered and took initiative to change the framework categories which guided population of the online spreadsheet, as well as protocols and policies surrounding IS usage, the requirements in the design, and linking datasets across multiple organizations. We refer to this feedback and decision making as

'innovative specifications'. Our experience in this study, which is consistent with the literature, suggests this level of innovation was facilitated through an empowering climate (Carroll et al., 2007; Si & Wei, 2012).

Within an organization or group, innovation arises from creativity fostered among group members; and creativity is determined by how people interpret the organization's support for innovation. When people perceive that innovation is valued, it fosters empowerment and self-determination, which in turn support creativity and innovation (Si & Wei, 2012). The process of 'passing the baton' to the community members was a symbolic and genuine invitation for the participants to critically analyze the template IS provided, and to tailor it to their own assets, needs, preferences and context. Passing of the baton provided the group with autonomy and shared power to provide feedback about the utility, design and requirements of the IS; actions which are essential to promote a climate of empowerment and citizen engagement (Attree et al., 2006; Si & Wei, 2012).

CONCLUSION

This study presents concepts to consider when developing ISs for community asset-mapping and working with communities to move toward a more resilient state. Provision of an empowering climate in consultation sessions fosters deliberation, critical analysis, and creativity; ultimately leading to innovative solutions in IS design. Shared power enables autonomy and demonstrates support of innovative contributions. Participatory design is based on open communication, which is supported by information exchange, awareness, and opportunities to deliberate and develop common ground. Respect and demonstration of leadership encourages open feedback and participation in IS design, and fosters empowerment and creativity, and ultimately innovative ideas.

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