

”It’s the Conversation, Stupid!” Social Media Systems Design for Open Innovation Communities¹

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Abstract

Open innovation is about crossing boundaries to create networked synergies in/across collaborative communities. Conversations are the lifeblood of communities, building the common ground of shared meanings, beliefs, interests, norms, goals, trust and social capital. A fundamental challenge for open innovation lies in the successful *crafting* of the social media *systems* supporting the community conversations. Innovation communities (which are not limited to business interests but also include public and civic organizations and communities) therefore need to continuously make sense of the conversation context of the tools they use. We provide a conceptual lens with which to examine this socio-technical conversation context. We illustrate the use of this lens with a plausible scenario of open innovation in the societal stakeholder networks around climate change research.

1. Introduction

Open innovation is about crossing boundaries to create networked synergies in/across collaborative communities. Such communities are no longer small, informal groups of individuals sharing an interest. Instead, they are collaborative communities comprising complex, interconnected webs of interacting individuals and organizations focused on producing knowledge-intensive innovative outputs (West & Lakhani, 2008).

Conversations are the lifeblood of communities, building the common ground of shared meanings, beliefs, interests, norms, goals, trust and social capital, which are all essential for successful communities. This “grounding” consists of many conversations over time, determined by both the purpose and the medium of the communication. In doing so, the costs of using various communications media need to be carefully balanced with the way they contribute to accomplishing the goals of the community (Clark & Brennan, 1991)

Popular collaborative innovation approaches like “Wikinomics” and “We-Think” (Leadbeater, 2009; Tapscott & Williams, 2008) propose smart combinations of Web-mediated content, social media, context, and conversations to drive and scale such mass collaboration forms of open innovation communities. For instance, We-Think argues that each open innovation community should have a core of good ideas around which to start creative conversations in which people can contribute, connect, collaborate and create. Wikinomics argues that by being open, peering, sharing, and “acting global”, new conversation-based Enterprise 2.0 business models, such as “peer pioneers”, “Ideagoras”, and “Open Platforms” can emerge.

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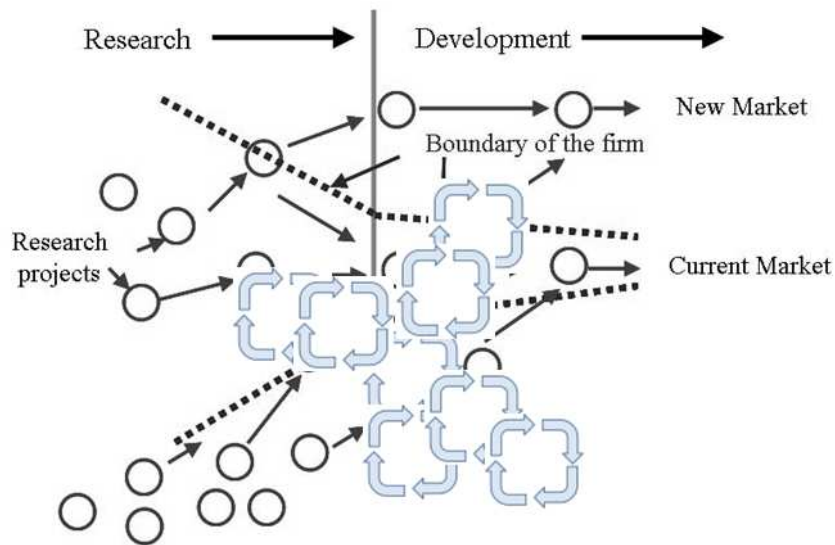


Fig. 1. Open Innovation through Webs of Conversations (adapted from Chesbrough, 2003).

So, how should social media-supported conversations in open innovation processes be positioned exactly? Central to the open innovation paradigm, as introduced by Chesbrough (2003), is the understanding that the boundaries of the firm are semi-permeable. Indeed, Chesbrough & Appelyard (2007) argue that the successful open innovation firms in the technology environment have figured out solutions to four key issues for changing from the classic closed innovation approach to an open innovation approach: (1) attracting the participation of a broad community of contributors and sustaining it over time; (2) successfully competing for contributors because potential contributors have many choices about where to exercise their talents; (3) leading and coordinating the open innovation project and the evolution of its agenda; (4) generating outcomes that sustain the open innovation initiative over time.

Implementing such an open-innovation philosophy in practice is very communication-intensive. Emerging, multi-layered webs of conversations by stakeholders both within and outside the firm generate, connect, and coordinate the required ideas, processes, and outputs (Fig.1). Social media can be a major enabler of the transformative change needed in and around these emerging knowledge-intensive organizations and networks (Manlow et al. 2010). Often, however, the focus is on single tools (“The 10 best ways to use Twitter for your corporate marketing”; “How to expand your business network with LinkedIn”, and so on). Furthermore, the attitude is one of “let’s just talk and connect and then things will change.” Talk, however, has to be organized into action and the supporting media carefully tailored to business needs. Although useful, laissez-faire, insular social media approaches are often insufficient to support stratified, purposeful collaborative communities, with their many interdependent stakeholders, objectives, and tools. An irony is that even though open innovation communities are ‘open’ they are still governed by implicit (and explicit) rules and the actions are afforded and constrained by technology. One underlying tension is the wish between communities being naturally emergent around the organic desires and values of the community, and the community being directed to address some specific goal such as a business or policy outcome, which often leads to conflicts between community and organization (West & Lakhani, 2008).

We contend that a fundamental challenge for open innovation lies in the successful *crafting* of the social media *systems* supporting the conversations. Innovation communities (which are not limited to business interests but also include public and civic organizations and communities) need to continuously make sense of the conversation context of the tools they use (de Moor and Aakhus, 2006). It is the properties and design of these socio-technical conversation webs that we explore and elaborate on in this chapter with the aim of a more expansive concept of open innovation and the role of conversation. Our goal in this chapter is not to conduct an empirical analysis of a particular case and come up with a practical set of

do's and don'ts for open innovation, nor to come up with the theoretical critical success factors for open innovation. Rather, we hope to provide a lens with which to see more clearly an understudied, but key enabler of open innovation: webs of focused conversation supported by tailored systems of social media that provide the substrate within which open innovation can flourish. By illustrating the use of this lens with a concrete, plausible scenario of open innovation in societal stakeholder networks, we hope to inspire open innovation researchers and practitioners to take up the challenge of applying this framework to their concrete cases.

Section 2 introduces our social media systems design perspective. This perspective is illustrated by a hypothetical but plausible scenario of the design of such social media systems in Section 3. We then offer practical design recommendations and implications for research in Section 4 before concluding the chapter.

2. Enabling Open Innovation Conversations: A Social Media Systems Design Perspective

Information systems are no longer the static, monolithic behemoths. Instead, organizations, networks, and communities increasingly make use of tools (including parts of those information systems) that compete, evolve, are mashed up, and are continuously replaced. In order to make sense of what tools they need, and even more important, how to effectively use them, the members of collaborative communities themselves need to continuously capture and reflect upon their way of working in a collaborative sensemaking process.

This sensemaking process is often triggered by breakdowns in collaboration (“why is nobody contributing any ideas to this forum?”) and can result in context specifications of different degrees of formality – ranging from informal stories to formal software design patterns. This captured context information can be used to design (select, link, and configure) social media and the information systems they make accessible. The aim of this sensemaking exercise is not so much the detailed specification of the content, but to understand and design what interconnected conversations between stakeholders are needed and which combinations of tools can best support these conversation webs (de Moor and Aakhus, 2006).

2.1 Toward Social Media Systems Design

Design is typically understood as creating artifacts like buildings, software, and appliances. Within this conventional understanding, communication is typically seen as part of the design process – that is, through communication designers, design teams, and clients discover how to build what is needed for the purposes at hand. Communication, however, must also be understood as an object of design – that is, through the arrangement of features of interactivity (e.g., turns, roles, sequences of turns, topics) that particular forms of communication, such as conversation, can be constructed or articulated in particular circumstances (e.g., where quarrels can be turned into negotiations; chat into problem-solving) (Aakhus, 2007). A central issue for understanding the nature of conversation facilitated through social media for the purpose of accomplishing a large-scale goal, is to understand how conversation is an object of design. First, taking a design stance toward conversation requires attending to the *features of interactivity* and *norms for interaction* evident in the way members of groups, organizations, and communities interact with each other (or could interact with each other). Features of interactivity, such as mentioned above, are organized in patterned, normative ways relative to the demands of communication the community faces. For instance, many online communities exist to provide social support to people with illnesses and their caregivers. Each community develops its unique patterns and norms of interacting with each other to provide support. This includes the roles taken up, the preferred speech acts offered and preferred ways of responding to others. The features of interactivity and norms for interaction that these communities develop are the basis for what the members come to know about their disease and to understand how to cope with it. These aspects of interaction are fundamental to the sustainability of a community as Aakhus and Rumsey (2010) revealed in an analysis of a cancer support group. The community's ability to offer

mutual support to each other broke down because of differing interpretations and beliefs about the norms of interaction and the preferred features of interactivity necessary to communicating social support. The community broke down and rebuilt itself over preferences for acts, sequences of acts, and the epistemic aims of interaction. The design of conversation is a dynamic, evolving aspect of community sustainability and the form of the conversation is consequential for what content is developed.

Second, taking a design stance toward conversation requires attending to the *web of interactivity*. The particular focal conversations that constitute a community also presuppose and contribute to other conversations within and at the boundaries of the community. For instance, group decision-making can often be broken down into key conversations and the flow of these conversations into each other. Brainstorming conversation that seeks the development of many ideas at some point turns into a convergent conversation where arguments are made to choose one idea over another (de Moor and Aakhus, 2006). It is in the development and sequencing of differing kinds of conversations that intellectual and imaginative labor can be successfully organized and through which stakeholders can be effectively and legitimately involved. Aakhus' (1999) analysis of Science Court provides an illuminating example of how the arrangement and sequencing of conversations had consequences for how stakeholders participate in science policy formation. The formation of a court-like proceeding to resolve questions of scientific fact required preparatory conversations to define the question, select case managers, and to select judges. The adversarial logic of the web of interactivity affected the very way parties could argue about and make sense of the science for the purposes of policy formation. Alternative ways of coordinating conversations could lead to a different kind of sensemaking about scientific information in policy making. The content of interactions is influenced by the way some content becomes input for subsequent conversations.

Third, taking a design stance toward conversation requires attending to the material affordances for interacting, which includes the circumstances and technologies. Groups, organizations, and communities evolve socially and in their capacity for communication among, and between, their members. In some cases, as members work together over time, they can expand their capacity for more sophisticated, nuanced communication which, in turn, enables the group, organization, or community to deal with increasingly complicated circumstances and matters. This is best exemplified in the emergence of scientific communities where the capacity to engage and improve scientific argumentation co-evolves with the technologies for conducting their scientific work. But this can also be seen in other domains of practice. For instance, de Moor and Aakhus (2006) illustrate how a grass roots policy community co-evolves with its technologies for communication. As the community persisted, it not only incorporated more stakeholders and developed greater sophistication in arguing about the complexities of the environmental and political circumstances, it also incorporated increasingly sophisticated information and communication technology to support its conversational activity. As communities evolve so too can their capacities for new conversational practices.

These key points of a design stance thus provide perspective for understanding the role of conversation and its support through social media in achieving large-scale goals. Realizing these broader points about design in the context of social media has been taken up in de Moor (2010) and is explained in the next section.

2.2 Analyzing Conversation Practices & Purposes

For communities to better understand, design, and reuse the socio-technical building blocks of such communities, we have adopted a socio-technical conversation context framework (de Moor, 2010). This framework (Fig 2) can be used by communities as an instrument for reflection on which socio-technical design decisions to make. The framework matches the collaborative requirements of the community with the support affordances and constraints provided by the system of tools available to the community. The starting point is the goals that determine the roles community members play as well as the results that need to be accomplished to realize the goals. The system of tools consists of both (legacy) information systems which form the backbone of most organizations and networks, as well as the constellation of social media that the community members use to create, discover, and share content in these information systems and other social media. The way this content is created is by community members who play

particular roles by getting involved in a series of interlinked conversations, supported by specific functionalities of the tool system.

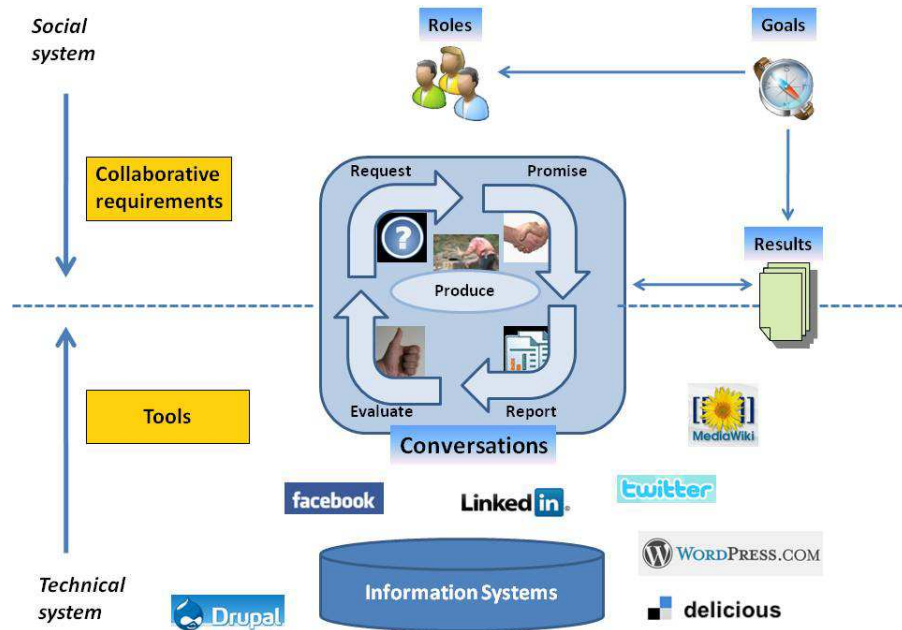


Fig. 2. The Socio-Technical Conversation Context Framework

These conversations are not just held for their own sake, but are conversations for action, in which collaboration to produce certain results are coordinated. One of the most basic forms of conversation is a *communicative workflow loop*. In such a loop, some community member typically requests another member to produce something, say a document. This member then promises to create this document. After having written the document, she reports to the requester that it has been completed, who can then inspect it and evaluate its quality. If satisfied, the requester closes the loop. Of course, in real life, much more complex communicative workflow situations occur: instead of two participants, many people can be involved, some of them unknown. Each workflow loop can spawn new loops, leading to misunderstandings and problematic delegation of responsibilities. Conflicts and breakdowns can happen, where multiple, partially overlapping tools support the conversations, and so on.

Each community has a unique, continuously evolving socio-technical system. To understand which tools to select, how to link and configure them in a particular conversation context, communities should understand more about them than their technical functionalities. They should also understand, by trial-and-error and careful case analysis, which are the conversational practices they naturally support. Often, similar functions (e.g. posting a reply) may have totally different effects in how they can be effectively used in supporting collaboration. For instance, a reply to a post on somebody's (closed) Facebook Wall enables very different behaviors than the reply made by somebody to a Tweet on an organization's public Twitter timeline.

There are many ways to analyze such tool-mediated conversation practices. In de Moor, (2010), we showed how to compare functionalities and conversation practices of social media like blogs and Twitter. Choosing the right set of tools is especially important for mediating and generating open innovation conversations. Blogs are very useful as distributed knowledge bases, but also have their weaknesses in terms of supporting conversations: they are fragmented, lack the bi-directional link, and lack tracking technologies (Efimova & de Moor, 2005). Twitter, however, creates less conversation fragmentation than blogs, because it is run on a single server as compared to hard-to-trace conversations that can spread to the vast blogosphere. It is also strong in generating tangential conversations, in which new topics are

spawned with very little effort through follow-up tweets. In an open innovation conversation, blogs would typically be used to work out and link the ideas in detail, whereas Twitter can be used to generate the buzz and attention around these ideas. This is a good example of a tool system where the whole is more than the sum of its parts.

To match the practices social media enable with the collaborative requirements, we need to map them to the main conversation purposes they can satisfy through these practices. Four important *conversation purposes* particularly useful in growing collaborative communities include: information exchange, coordination of (inter)actions, collaborative sensemaking, and relationship building (de Moor, 2010). Twitter, for instance, is particularly good for information exchange and relationship building purposes, but weak in supporting the coordination of interactions over time and many participants. Through the socio-technical conversation context framework, community managers can map the available tools to the collaborative conversation requirements of a particular community, then use these mappings to set community governance policies, configure tools, create documentation, and so on.

To illustrate what social media systems design means in practice, we expand on a scenario of a hypothetical but plausible scenario on climate change research assessment.

3. Scenario: Open Innovation in Societal Stakeholder Networks

Climate change is one of the greatest challenges facing humanity. Addressing it requires the concerted effort of scientists, governments, businesses, non-governmental organizations, and citizens from all across the globe. The Intergovernmental Panel on Climate Change (IPCC) has as its mission to provide the world with a clear scientific view on the current state of climate change and its potential environmental and socio-economic consequences. Thus, IPCC provides a case for reflecting on social media systems design.

One of the main results of the IPCC is its assessment reports. Producing these reports is a massive undertaking. To get an idea for the fifth report (AR5), 831 highly qualified researchers have been selected to contribute². Given the complexity of the theme and the numerous, often opposing points of view, the production process of these reports is extremely difficult and the results are often controversial, as is illustrated by the InterAcademy Council, a multinational organization of the world's science academies having been requested to conduct an independent review of the IPCC processes and procedures³.

The goal is clear: to conduct an independent review of the procedures. For the review to be trusted it is essential to get enough and timely input from stakeholders from all over the world. However, how to do this, given the very limited resources available? In this section, we illustrate how our conversation-based social media systems design approach could be used to help the InterAcademy make sense of their requirements and design their tool system. The following scenario sketches a practical way the InterAcademy Council could reorganize its review procedures with a well-designed social media system, to increase participation by the larger community, the quality of the reviews, and ultimately trust in the IPCC reports.

To draft the review, the review committee decides to use a wiki and a mailing list (Fig.3). To write the review, each review topic gets a separate page on the wiki. Each topic (page) has at least one "topic steward" assigned to it i.e. somebody responsible for documenting all knowledge related to that topic. Each page also gets its own, unique tag, like "IPCC_T11" designating topic #11 of the list of review topics, say about the impacts of climate change on the Arctic regions. The topic pages are visible to the whole world, but can only be edited by the review committee members. Unlike in Wikipedia, it is decided that wiki editing rights cannot be given to the general public, given the strict report focus, the quality required, and fear of vandalism.

² <http://www.ipcc.ch>, accessed June 29, 2010.

³ <http://www.interacademycouncil.net/?id=12852>

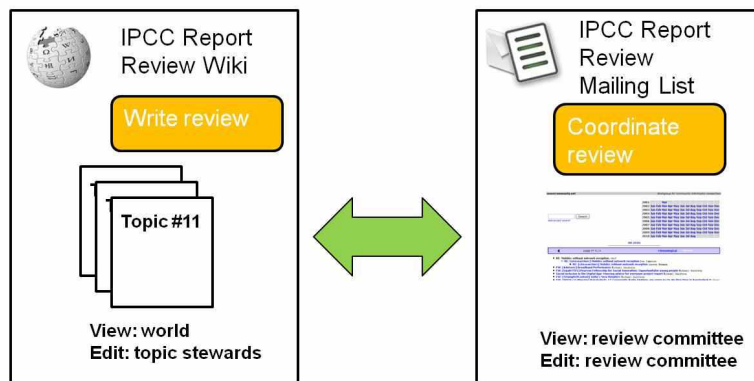


Fig. 3 IPCC social media subsystem for drafting the review

The review report is written in several rounds. For overall coordination of the review, including making sense of how to organize the review process, the review committee uses a private, archived mailing list. At the micro- level, the wiki is also used to support coordination of topic page editing, since wiki revision histories ensure that no separate meta-communication is needed about who changed what and changes can always be rolled back.

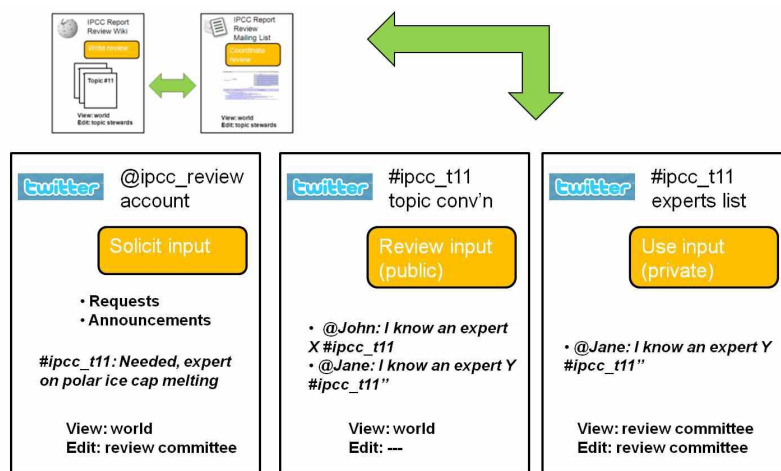


Fig. 4 IPCC social media subsystem for soliciting input and handling input

Now, how to open up this process? How to scale the web of conversation in order to check the review and get creative suggestions for improvement? A mailing list is not suitable for soliciting input from the world, as such communication does not scale because participation by more than a limited number of members would flood subscribers' inboxes. The committee is considering the use of Twitter as a tool for scaling up the conversation (Fig.4). To communicate with the world, an '@ipcc_review' Twitter account is created. Any topic steward can use this account to request comments, find relevant experts, announce new updates of the wiki page etc. To ensure that interested people get only the Twitter updates of the pages they are interested in, each tweet includes a hashtag with the proper topic. Such a tweet could be

about the review committee looking for an expert on polar ice cap melting to review topic #11. Such a tweet could look like this:

“**ipcc_review** #ipcc_t11 Needed: expert on polar ice cap melting.”

Now, anybody interested in this topic may reply. For instance, somebody called John working for an environmental organization (or perhaps an oil company) may reply:

“**John** I know an expert X #ipcc_t11”

Whereas well-known climate change researcher Jane answers with

“**Jane** I know an expert Y #ipcc_t11”

Some topics may attract thousands of replies. Each of these replies can spawn new conversations, many of them outside the view of the IPCC review committee. These invisible ripple effects are key to grounding the work of the IPCC in society, however, as each conversation web involves different stakeholders, with different conversation needs and impacts. For example, a few “replies down the line”, a network of environmental organizations might be triggered to launch an Arctic exploratory mission, while a totally different conversation web is centered on high school kids discussing a science assignment.

There is no need for the topic steward to get involved in a discussion of each reply or tweet containing the topic hashtag #ipcc_t11 (let alone of the spawned conversations), as this may simply not be feasible timewise and plenty of followers will discuss amongst themselves. To ensure that the topic steward sees all the replies of those people most relevant to her, she can create an *ipcc_t11 Twitter list* (a list of Twitter users that shows their combined tweets) with a selection of Twitter users the @ipcc_review account follows who are most into this topic. This list could consist of, for example, the Twitter users who are her official collaborators plus those users whose replies over time she finds most insightful. The created list contains Jane, but not John, as he is somebody not known to, or trusted by, the review committee and hence not being followed on Twitter. By just monitoring this list, she sees the tweet by Jane, and decides to contact the suggested expert Y.

To summarize, what has happened here in terms of social media systems design? Collaborative communities these days make use of an ever growing palette of online tools: social networking sites like Facebook and LinkedIn, Twitter, wikis, blogs, and so on. However, typically the adoption of these tools happens ad hoc and without much reflection. This results in undesired effects like collaborative fragmentation, unclear responsibilities, privacy losses⁴, and so on. The systematic systems design approach we propose can help think through these issues systematically. The focus is on conversation, since this defines and fosters communities. *Whereas in traditional information systems development methodologies, the focus was on information analysis, in the 21st century, communication analysis should be primary.* Conversations as purposeful, interrelated acts of communication are about making sense of what a community is about, building its relations, sharing information among possibly numerous stakeholders and coordinating their actions.

⁴ Many cases of this continue to be reported on sites like Facebook, e.g. <http://mashable.com/2010/05/04/facebook-privacy-report/> Given the impact on, for instance, trust of users, carefully considering such settings in social media systems design is essential.

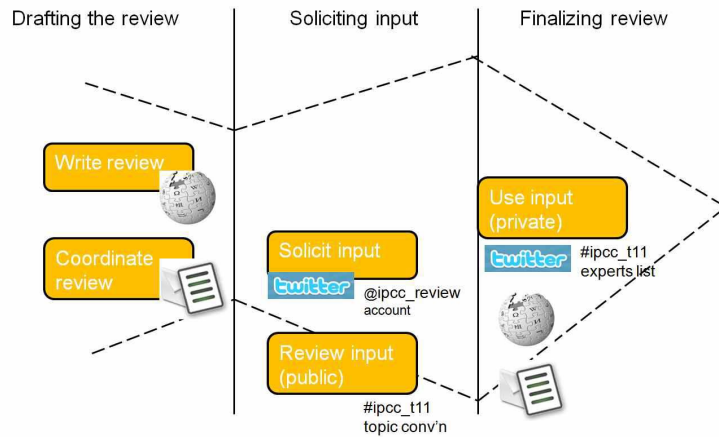


Fig. 5 The IPCC social media system from an open innovation perspective

Finally, how to frame the social media system just designed in open innovation terms? Whereas Chesbrough's (2003) paradigm for open innovation R&D has a funnel shape (from many unspecified ideas to the selected, refined outcome), the flow in our case at least follows a different pattern (Fig. 5): the initial drafting of the core ideas (what Leadbeater (2009) would call creating "the core") is followed by a massive influx of ideas from contributors from all over the world, which are finally narrowed down by means of the Twitter list, revisions by the topic stewards on their wiki pages, and concluding discussions by the review committee on their mailing list.

In open innovation communities, there needs to be a continuous balancing of social, professional, political, and technological interests. Our socio-technical conversation context provides a practical framework for a collaborative community to make informed design decisions that go beyond merely taking into account technical functionalities. It also illustrates an analysis guided by a design stance with an interest in designing conversations to support mass collaboration.

4. Practical Design Recommendations and Implications for Research

Engaging stakeholders creates risks and has transaction costs, but it can also bring innovation and sustainability to solve large-scale and tricky problems. So, then, there is a natural interest in doing open innovation well and for community managers and leaders, in particular, to attend to the emergent communication systems design and to engage in explicit conversational design in order to foster goal oriented communities. In this chapter, we have only outlined the scaffolding of social media systems design but in so doing we highlight a simple yet central point about open innovation: conversations are key. That central point was a basis for articulating a design stance and highlighting aspects of conversational design. Several implications for practice and research follow from the idea that conversations are key.

In terms of practice, awareness that conversations can be designed suggests that communities, especially community managers and leaders, should endeavor to:

- Develop a focus on stakeholders that includes close attention to the conversations that involve stakeholders and how those conversations should be interconnected. This includes determining how stakeholders will need to be involved in shaping and supporting the purpose and form of the conversations. The stakeholders should be determined by their relationship to the problem to be solved more than their relation to the central organization or sponsor, otherwise the collaborative enterprise will lose sight of producing common goods such as knowledge, support, and practices needed to address the problem. These are most centrally problems of crafting conversations that generate joint action.

o **Practical tip:** make a thematic *topic map* to break down problems in main deliverables to address the problem and process steps to realize deliverables. E.g. coordinate research review, solicit inputs from research community.

o **Practical tip:** use this mindmap to make a *stakeholder interaction matrix* for each of these process steps. To do so, outline all possible combinations of stakeholders who ought to be involved in that step and the nature of their specific interactions. E.g. soliciting input for the research review requires addressing the international scientific subcommunities working on climate change subtopics.

- Pay continuous attention to the analysis of conversation practices as afforded by (combinations of) tools. The purpose is to inform socio-technical systems design for the community or inter-community collaboration. This could be enhanced through: the development of library/knowledge bases that illustrate genres of conversation for various purposes; assessment and evaluation geared toward understanding the effectiveness and legitimacy of various genres of conversation available in the community; and provision of access to knowledge about various formats. The aim is to reuse socio-technical lessons learnt for social media systems design.

o **Practical tip:** build up a *conversation support pattern base* of best/good/bad conversation practices combined with practical design/configurations of the social media systems supporting these practices. Make this pattern base as customized as possible for the open innovation community targeted. E.g. the pattern “*address an open-ended research subcommunity*” could be to (1) identify the report topic(s) most relevant for that subcommunity, (2) write a blog post outlining the review questions the subcommunity could help out with, (3) send a regular stream of tweets including both the specific report topic hashtag and the link to the blog post, (4) find Twitter hashtags for current subcommunity conferences and retweet the call-for-participation tweets with the hashtag of those conferences to increase exposure⁵.

o **Practical tip:** for each cell in the stakeholder interaction matrix, *select the most relevant patterns* from the conversation support patterns base and act on them. Do this at key milestones in the project, but preferably on a regular basis, so that a conversation rhythm can emerge. It may be useful to assign a specific “conversation manager” role for this purpose.⁶

- Learn how to balance implementing ready-made tools from “the cloud” versus customizing tools for specific purposes. These different interests should be a key factor in any community design decision. Implementing complex tool systems becomes, on the one hand, easier to do in “the cloud,” since implementation details of the tool system are taken care of by hosting companies. On the other hand, customizing the tool system to the particular needs of communities becomes more difficult since the communities have less control over the configuration parameters of their tools. In other words, the *generativity* of these hosted tools tends to become less (Zittrain, 2009), increasing the constraints and reducing the affordances of social interactivity.

o **Practical tip:** Make a *conversation tool inventory* outlining all tools currently or potentially available to the community. Include not only online tools, but also those supporting all forms of physical interaction. A face-to-face meeting is also a conversation tool: a powerful, yet expensive one!

o **Practical tip:** Define a set of *quality aspects*, including their metrics, on which to assess the fit of the conversation tools in the inventory with the conversation purposes of the community. Include not only conversation tool requirements (e.g. *ease-of-interaction, control over conversation processes and content, user-familiarity*), but also conversation tool costs (e.g. *in-house expertise required, hosting costs, development costs*). Assign weights to these aspects indicating their relative importance to the community.

o **Practical tip:** Assess the value of each (existing or proposed) tool in the conversation tool inventory by *assigning scores* on each quality aspect. Use the resulting ranking, combined with an assessment of in-

⁵ It is customary nowadays that research conferences announce a unique hashtag at the start of the event, so that participants can easily exchange conference tweets. Since many conference participants (and persons interested in the theme) intensively monitor this stream, injecting related tweets (such as on a research review) with the same hashtag generates many extra potentially interested “eyeballs” for the cause.

⁶ <http://www.theconversationmanager.com/>

house development and hosting capacity to make decisions on which tools to self-develop and host and which ones to use from the cloud⁷.

In terms of research, there is considerable need for understanding the pragmatics of web-based communication that could facilitate socio-technical conversation design. Researchers should endeavor to:

- Develop typologies of mediated conversations that illustrate the context of use and what the conversational format enabled the community to achieve. A descriptive orientation such as this would enable the development of deeper theory about the design of conversation in the social media space. It would also identify the multiple communicative demands of open innovation enterprises and how forms of conversation enabled or exacerbated the dilemmas of managing those multiple demands.
- Advance knowledge about the interactions in a complex web of conversation (e.g., numerous stakeholders, multilevel spawns of new loops, conflicts, failures, etc.). In open settings there is greater ability to move in and out of conversations. Yet, even open innovation settings will lead to the emergence of social structure that facilitates and inhibits participation. Here, then, is a need for a better understanding of the way that implicit social structures that arise in the web of conversation shape the flow of communication.
- Improve understanding of governing open innovation processes. The social media conversation context framework makes concrete the problem being addressed – how to make sense of communicative workflows and to support them. The next level of challenge is how to incorporate this analysis and support it in an organic, emergent community for which there is no central designer as there might be for a business organization's use of social media. Typically, there is an interplay between the community manager and the community. This is a continuous process, often driven by breakdowns, which needs to be supported by practical community management guidelines, conversation and tool usage practices in order to be successful. This interplay between innovation (conversation) requirements and community management principles is still a wide open area of research.

5. Conclusions

Open innovation is about crossing boundaries to create networked synergies in/across collaborative communities. Open innovation communities need smart combinations of Web-mediated content, context, and conversations to drive and scale the mass collaboration required. Just providing access to social media and information systems is not sufficient for successful communities and collaboration to emerge, however. The engine of innovation stems from well-connected and supported webs of conversations. These conversation webs do not appear spontaneously. Instead, innovation communities need to continuously make sense of their evolving requirements, relevant tool functionalities, and how to design these into customized socio-technical systems needed so that collaboration can flourish.

In this chapter, we outlined an approach for using a socio-technical conversation context model as a lens for focusing emerging systems design efforts in collaborative communities. We illustrated our approach with a scenario showing how it could help in designing the tool systems enabling focused mass collaboration on climate change research. Our main point is that, although necessary, it is not sufficient to develop ever more powerful collaboration tools, such as social media. Equally needed for collaborative communities, such as open innovation communities, to become successful, is for them to continuously reflect in a focused way on how to effectively match their collaborative needs with the functionalities to which they have access – that is, how to craft conversation.

⁷ See (De Moor, 2007) for a related, practical approach.

6. References

- Aakhus, M. (1999). Science Court: A case study in designing discourse to manage policy controversy. *Knowledge, Technology & Society*, 12(2), 20-37.
- Aakhus, M. (2007). Communication as design. *Communication Monographs*, 74(1), 112-117.
- Aakhus, M. & Rumsey, E. (2010). Crafting supportive communication online A communication design analysis of conflict in an online support group. *Journal of Applied Communication Research*, 38(1), 65-84.
- Chesbrough, H. W. (2003). *Open innovation: the new imperative for creating and profiting from technology*. Harvard Business Press.
- Chesbrough, H. W., & Appleyard, M. M. (2007). Open innovation and strategy. *California management review*, 50(1), 57-76
- Clark, H. H., & Brennan, S. E. (1991). Grounding in communication. *Perspectives on socially shared cognition*, 13, 127-149.
- Efimova, L., & de Moor, A. (2005). Beyond Personal Webpublishing: An Exploratory Study of Conversational Blogging Practices. *Proc. of the 38th Hawaii International Conference on System Sciences (HICSS-38)*, Hawaii, January 2005. IEEE.
- Leadbeater, C. (2009). *We-Think: Mass Innovation, Not Mass Production*. London: Profile Books.
- Manlow, V., Friedman, H. & Friedman, L. (2010). Inventing the Future: Using Social Media to Transform a University from a Teaching Organization to a Learning Organization. *Journal of Interactive Learning Research*, 21(1):47-64.
- A. de Moor (2007). A Practical Method for Courseware Evaluation. In *Proc. of the 2nd International Conference on the Pragmatic Web (PragWeb 2007)*, Tilburg, the Netherlands, October 22-23, 2007. ACM International Conference Proceedings Series, Vol. 280, pp.57-63
- de Moor, A. (2010). Conversations in Context: A Twitter Case for Social Media Systems Design. *Proc. of I-SEMANTICS 2010*, September 1-3, Graz, Austria. ACM.
- de Moor, A. & Aakhus, M. (2006). Argument support: From technologies to tools. *Communications of the ACM* 49(3), 93-98.
- Tapscott, D., & Williams, A. D. (2008). *Wikinomics: How Mass Collaboration Changes Everything*. London: Atlantic Books.
- West, J., & Lakhani, K. R. (2008). Getting Clear About Communities in Open Innovation. *Industry & Innovation*, 15(2), 223-231.
- Zittrain, J. (2009). *The Future of the Internet--And How to Stop It*. Jonathan Zittrain.

7. Further reading

- Aakhus, M. & Jackson, S. (2005). Technology, interaction, and design. In K. Fitch & R. Sanders (Eds.), *Handbook of language and social interaction* (pp. 411-437). Mahwah, NJ: Lawrence Erlbaum.
- Dixon, D. 2009. Pattern Languages for CMC Design. *Handbook of Research on Socio-Technical Design and Social Networking Systems*. Whitworth, B. and De Moor, A. Hershey, PA: IGI, pp. 402-415.
- Fraser, M. & Dutta, S. (2008). *Throwing sheep in the boardroom: How online social networking will transform your life, work and world*. West Sussex: John Wiley & Sons, Ltd.
- Hunter, M., Menestril, M., & Bettignies (2008). Beyond Control: Crisis Strategies and Stakeholder Media in the Danone Boycott of 2001 *Corporate Reputation Review*, 11(4), 335-350.
- Li, C., & Bernoff, J. (2008). *Groundswell: Winning in a world transformed by social technologies*. Boston: Harvard Business Press.
- Shum, B. 2006. Sensemaking on the Pragmatic Web: a Hypermedia Discourse Perspective. *Proc. of the 1st International Conference on the Pragmatic Web*, Stuttgart. Germany, 21-23 September, 2006 (2006), 22-37.
- Taylor, J., Groleau, C., Heaton, L., & Every, E. van. (2001). *The computerization of work: A communication perspective*. Newbury Park, CA: Sage.
- Winograd, T. and Flores, F. 1986. *Understanding Computers and Cognition : a New Foundation for Design*. Ablex Pub. Corp.