Learning 3.0: collaborating for impact in large development organizations

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This paper builds on the body of research and practice about technology stewardship originally explored in Digital Habitats (Wenger, White, Smith 2009) and on the findings from an initial probe into the experiences of five development agencies using collaboration platform technologies. The probe was conducted from September 2013 to February 2014. The paper proposes a framework for looking at productive practices in selecting, configuring and supporting use of collaboration technologies in international development organizations by focusing on the opportunities that exist in the boundaries between different parts of a development organization and different kinds of interactions that lead to learning and development impact. There is a very useful opportunity to expand this initial probe using a collaboration pattern language and a complexity lens to develop a useful repertoire of technology stewarding practices for collaboration in international development with the goal of supporting greater impact of development work.

Keywords: technology stewardship; development organizations; collaboration; online platforms; learning; non-governmental organizations

Introduction

Upon being asked to evaluate an online collaboration platform at an international non-governmental organization (NGO), one of the authors asked 'What specifically about the platform do you want to evaluate? What are your indicators of success?' When it was clear that these questions were difficult for the client to answer, the inquiry changed to include more broad questions about how large international development organizations design, implement and evaluate collaboration and collaboration platforms. How do they maximize results for their investments? What could this particular platform evaluation learn from the field? This prompted a broad action research project that worked together with the individual collaboration platform review.

International organizations are increasingly building multi-party, technology-based 'collaboration platforms' where diverse sets of partners can work, share experiences and content and learn from each other in a typically privately shared space. This trend reflects the continuing promise of the Internet to enable connectivity across time and space. The dominant approach among larger, well-established international development groups is to emulate corporate business practices, and to buy or build a comprehensive software-based solution (including customization) that requires significant upfront and ongoing investment. What we have observed is that the organization does little to create community with this technology beyond what is 'pushed' by the host. This mismatch between expectations, levels of investment and practice – and particularly the individual and organizational behaviors behind these experiences – is not well documented in evaluation literature, nor is it reflected in organizational learning which suggests that it is a ripe area for learning.

In their white paper *Transforming collaboration through strategy and architecture,* Cisco (n.d) described a relevant success indicator:

> *User adoption is the primary indicator of collaboration success. Successful collaboration relies on the 'network effect,' which states that a product or service's value increases as more people use it. Before a collaboration tool can deliver value, it must have active participants. However, without a clear alignment to business imperatives and objectives, collaborative technologies risk becoming isolated silos of functionality. Moreover, if only individual employees or departments adopt the deployed capabilities, anticipated benefits fall short of business expectations, and operational complexity and overhead increase for IT organizations.*

If this is true for all organizational structures, including multi-party collaborations in the international development context, how can user adoption be defined and assessed to inform improvement? What or who facilitates alignment to 'business' (developmental) imperatives and objectives? What facilitates adoption and participation? How is this accounted for?

The failures, the questions and the lack of learning around them became the basis for our action research. Our goal was to understand how to improve resource allocation (human, technical and financial), practices, and the monitoring and evaluation used by development agencies for collaboration to support learning and to deepen the effect of development goals at local, national and international levels. This initial study was designed to get a sense of the scope and nature of collaboration platform development in the international development arena, and to determine if qualitative socio-technical 'proto-patterns'[1] of lessons learnt could be identified for further research.

While our research focused on development agencies, we believe these ideas can apply to any multi-faceted institution or project. We note that there are different dynamics in large, bureaucratic organizations than in small, social enterprises. We also note that there are differences between large development organizations and global businesses. While both are highly complex entities, few businesses deal with the level of complexity inherent in the work of international development. Development agencies work with diverse partners, including public sector agencies that have their own requirements and limitations, incentives and contexts (e.g. less access to technology and bandwidth), they have higher expectations of voluntary cooperation, and there are power dynamics between and among funders and grantees.

This paper reviews the key findings of our initial exploration and discusses ideas and options that emerged through the research process. We hope to produce additional papers to explore other aspects in greater depth. We recommend continuing action research in this area to develop tools and methods for organizations to inform more cost-effective and better selection, deployment, and monitoring and evaluation of collaboration technologies and practices.

Approach

In an effort to explore social (individual and organizational) and technical dynamics around the use of collaboration technology platforms, we conducted exploratory action research to identify perceptions about existing platforms and their use. We worked with key staff from the International Fund for Agricultural Development (IFAD), Oxfam International, German Federal Enterprise for International Cooperation (GIZ), the World Bank Institute, the UN Development Programme (UNDP), and the Bill and Melinda Gates Foundation (BMGF). Our objective was to determine if common patterns or dynamics exist across international development organizations that could suggest models, approaches or methods organizations could use to increase value for money when making investment decisions in support of collaboration. We drew on the collective experience of our action research partners, and our own experiences working to establish, advise and manage collaboration technology platforms. Through a series of discussions, we developed an analysis of the contextual factors relevant to the international development sector. Three deeper case stories were drafted and reviewed for the World Bank Institute, UNDP and Oxfam International (subjects for a future working paper). We shaped these with ongoing feedback from these organizations and presented them back to the action research partners in late February 2014. We used more information from our partner interviews to apply to our emerging framework to test our ideas.

Research methodology

In late 2013, we began the research with a scan of literature about the use of collaboration technology platforms, and we scanned the information about established and start-up companies that focus on improving collaboration in the private, public and non-profit sectors. We solicited and reviewed documents (TORs, policies, etc.) submitted by participating agencies. A written literature review was not developed as part of this initial exploratory research, given resource constraints.

We then conducted an initial exploratory probe with a few willing, large, multinational organizations – IFAD, Oxfam International, GIZ, the World Bank Institute, UNDP and the Bill and Melinda Gates Foundation – to identify and to start to understand how, when and why people collaborate using IT tools, as well as in what context. Our goal was to see if we could discern any collaboration patterns of use that would yield insight on where, when and how multinational development organizations could invest more cost-effectively in platform technologies to support effective collaboration. Collaboration patterns capture reusable lessons learned on how to best use specific functionalities for particular collaborative purposes. Obtaining validated collaboration patterns that would be reusable in many different situations would require a careful, in-depth research design, so we treated this as an initial experiment. We also understood from the start that we must take into account factors like individual motivation, organizational culture, available technologies and how individuals and teams interact with available technologies.

The initial probe consisted of one-on-one interviews with key staff. Information and data from the interviews was analyzed using socio-technical pattern analysis approach[2] building upon the relevant concepts developed by Wenger, White and Smith (9 Activity Orientations) and we considered the data through the lens of the Cynefin[3] framework. We realized that while these concepts and lenses were helpful in analyzing the interviews, we lacked sufficient data to develop conclusive findings.

For that reason, we pulled back in order to consider how the findings from the interviews, together with our own experiences, could inform a framework that could be used in further testing. Some potential generic pattern analysis insights we managed to draw from these initial cases on which to build that framework were:

- *A common language exists*: We identified the beginnings of a common language being used across organizations – including at a headquarters level, and between headquarters and field level. This language may be useful in future pattern analysis[4].

- *Patterning is possible*: Some collaboration proto-patterning is possible to support identification of individual and organizational behavioral dynamics that support to hinder collaboration. Ideally, information from the proto-patterning exercise could be taken to the field level for further research.
- *More data is needed to confirm patterns*: Our interviews presented useful but incomplete information about perceptions, experiences, and behaviors of institutional and field-based project staff, in part because our respondents represented institutional levels. More diverse perspectives – especially from the field – are essential to take this research forward. Furthermore, to have truly validated patterns, patterns identified should ideally be re-applied in new contexts to see to what extent they may be generic or "only" organization-specific patterns.

Contextual factors
After an initial scan of the data and interviews with the research partners, the following contextual factors were identified and validated by the partners:

1. Development partnerships are complex. Collaborating with a range of professionally, culturally, politically, technologically and organizationally diverse partners is challenging. This complexity affects individual, organizational, and joint goals and intentions for collaboration, and often results in ineffective individual and organizational practice.

2. Lack of shared understanding of the goal and purpose of a collaboration. There is no sophisticated or shared understanding of the strategic goals of collaboration and the type of collaboration needed to achieve them. Short and mid-term goals may not be clear, strategic or shared. There are sometimes internal contexts where collaboration is discouraged in practice, even while it is endorsed in concept. It is difficult to achieve a clear 'socio-technical lens' for execution if the collaborative context is not well understood.

3. Over-reliance on centralized solutions. Complex contexts can limit the value of centrally designed, technology-based 'solutions,' particularly given their investment requirements. Centralized solutions typically require large investments and assume long-term use to achieve long-term goals, which are often mismatched to the shifting requirements for effective collaboration in real time.

4. Ignoring internal and external power dynamics. Large development organizations headquarters often sit in a position of power complicating how, when and why collaboration with staff, partners and partner organizations happens. Local field offices also have power, in that they

are closest to the work on the ground, although it is often less explicit. The larger organization typically funds the platform, reinforcing their power over collaborating 'partners.'

5. *Lack of technology stewardship.* Technology platforms are designed based on generic ideas of collaboration and, in many cases, are designed by program staff who lack IT experience. These are then scoped and procured by IT staff who have little understanding of the dynamics of the program that will use the technology. There are few IT staff who can act as 'technology stewards.' (Wenger, White, Smith 2009) Despite the importance of this bridging role, it is often turned over to external consultants specializing in knowledge management, who may lack the experience to design for the specific needs of the organization. Furthermore, IT departments are rarely prepared, nor are they designed, to support multi-partner collaboration platforms. Rather, they have a narrower focus on assuring compliance and the security of organizational assets with a focus first on clients in headquarters. They are rarely positioned to interact with other partners.

6. *What little monitoring is done does not relate to a learning objective.* There appear to be very few monitoring and evaluation approaches that go beyond measuring page views, which has limited value for continuous improvement within the collaboration process, particularly given the potential learning that is possible from early adopters and successful 'positive deviants[5].' If a technology platform is a tool to strengthen collaborative efforts to achieve impact, indicators like 'collaboration efficiency' or 'sense of community' could be more useful for management and investment, but are rarely used.

These factors are part of the reason why collaboration technology platforms are so often underused and even abandoned before collaboration is completed, draining valuable human and financial resources. Yet we see little evidence of inquiry and reflection into why they fail, and what could be done better in the future. There is no shared practice nor is there a literature about technology stewardship in international development, even though organizations spend millions of dollars each year on solutions that are known elsewhere to be sub-optimal.

Our conclusion from the contextual issues is that investment in centralized technology is viewed as easier and more solution-oriented by organizational decision makers, rather than investing in the 'messy' individual and organizational behavior changes to support the collaboration necessary to achieve the organization's goals. Building on this insight, we sought to identify whether or not patterns of reusable socio-technical lessons learned could be discerned across an initial, diverse set of organizations. Our aim was to inform future research, with a goal to identifying cost-effective ways to incorporate social behavior change into decision making about collaboration platform technology.

From pattern-seeking to an analytical framework

Our first step, after interviewing key staff, was to go over the transcripts of the interviews to find commonalities that could be considered 'proto-patterns' in socio-technical behavior. We quickly realized that our subjects were not the front line users of collaboration platforms themselves and thus not the appropriate source for these very concrete examples of the work. We found it promising to see that a common language exists across organizations to describe socio-technical behavior associated with collaboration, suggesting that creating a pattern language is possible (See Appendix 1.) More data, particularly at the field level as well as at headquarters, is needed to discern whether a stable set of patterns could be identified and validated to improve collaboration and inform decision making around where and when to allocate financial, human and technical resources.

Beyond the patterns, our interviews, data review and analysis revealed other points where the design, provision and monitoring and evaluation could be changed, such as in the range of opportunities found at various boundaries between and among participants (individual and organizational) within collaboration.

Figure 1: Tensions between organizational processes and headquarters/filed offices

Figure 1
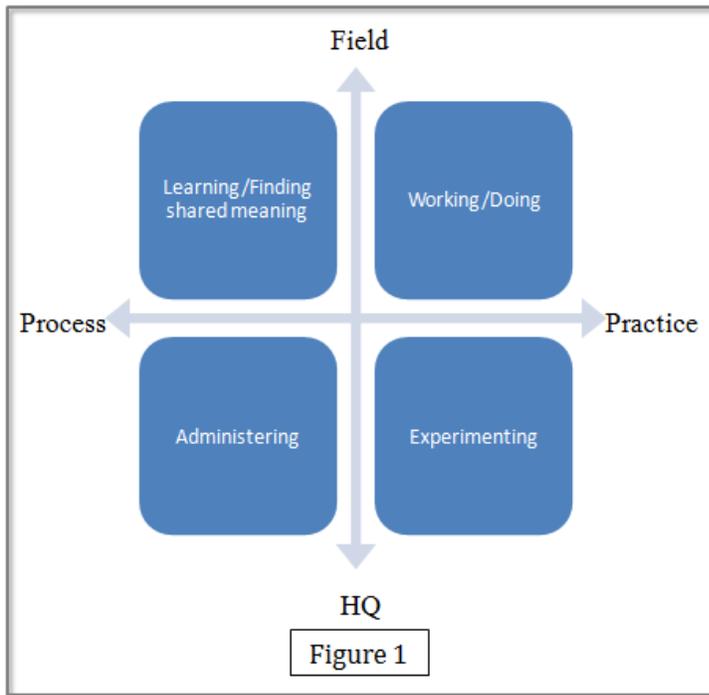
Source: Authors

We spent considerable time deliberating over ideas, which resulted in a first generation framework to support a strategic approach to designing and investing in collaboration technology platforms, and structuring collaborations more generally. The first attempt was built on the dynamics between formalized organizational processes and the informal realities of getting work done, and on the tension between the organizational differences between headquarters and the field. We positioned these two tensions as two axes, and began to map the stories from the interviews into the quadrants (Figure 1).

While the axis framework is useful – and particularly powerful when considering the narratives reflecting power dynamics – the framework also revealed other dynamics, particularly at the intersections, or boundaries, between the four quadrants. We began to think more carefully about the framework and how, upon mapping experiences with collaboration onto the framework, it could assist in thinking through opportunities to make collaboration more effective (Figure 2.)

We mapped more stories from the interviews into the quadrants and began to see potential patterns of socio-technical behavior, and in particular, how the framework could help to guide decision making around resource allocation to improve collaboration. We labelled these boundary patterns: commons, lab, convening and fieldwork. While more data, analysis and refinement are needed, we have found it resonates with colleagues and clients, encouraging us to take the thinking and research forward.

Figure 2: Opportunities to make collaboration more effective

This image improves upon a simple 2x2 diagram, showing more diverse interactions between the field, commons, lab and convening. Typically there are multiple instances of the lab (the purple petals of the "flower") and field work. The commons, as outlined in green, encompasses or intersects with all of them. In some instances, the commons may not encompass everything, so the line is wavy representing variability and fluidity. The convening sits at the middle, but could occur at any intersection.
Figure 2

Source: Authors

The first two boundary patterns emerged from the idea of 'headquarters' and 'field,' and became 'the commons' and 'project work.' These represent the most familiar organizational structures for carrying out day-to-day work. We define a **commons** as the most stable, shared practices of an organizational structure, where the resourcing of the larger ecosystem of work is made possible. This is where formalized processes support ongoing operational institutional stability. It is where content can be collected, curated and redirected for use in the field, and it's where organizational decision-making typically happens. We most often think of the commons at the institutional level, but there can be fractals of commons at other levels, such as regionally or even within a large project. These types of commons then serve the field that most directly connects to their own level. The socio-technological configuration provisioned at and by a commons serves two main purposes: the first is to support the ongoing business processes of the organization including provisioning of a range of - possibly ad-hoc - collaboration tools and support to use them; and the second is to aggregate, curate and make available data, information and knowledge products, and enable them to flow to and from the field.

Examples of a commons include established business processes for accomplishing work, as well as an institutional intranet driven by a headquarters to facilitate those business processes. Another example is a regional office that creates a physical space for multiple stakeholders to engage and even to co-work. Each organization has its own commons. Some networks and projects may have a cross-organizational commons, though it may be virtual.

By contrast, **field work** describes the place where the structures of various projects translate into activities, experimentation, improvisation, adaptation and innovation. It is where the day-to-day work of projects happens, where communities of people work together and mark off the set of tasks they are assigned. This is also where collaboration is expected to yield the greatest results. It reflects the diversity of many different field contexts.

Typically a wide range of daily experimentation, improvisations, adaptations and innovations go unreported to headquarters, and are often invisible in formal reporting structures. The improvisation may even be unconscious as staff go about their day, 'getting things done.' There is rarely time, space or structure for regular reflection, sharing of ongoing results and learning, and there is little opportunity for sharing across projects. It becomes challenging to contribute to the commons because all energy is focused on the immediate field work tasks.

Collaboration technology sharing platforms are often inserted into project work to address a perceived need to share and learn, but with little uptake and integration into workers' daily work practices. There is an implicit assumption that reflection, learning and sharing are 'easy to do,' but within the development context, most people skip past it in favor of moving on to the next

item on the task list. Those working within a project context may have the most tangible experiences of the complexity of development work, but they have little opportunity to convey their understanding of that complexity in a way that could inform the institutional processes and decision making.

Opportunities at the boundary between the commons and project work

Often, the day-to-day activities of staff who focus on the commons do not intersect with those who focus on field work, creating a disconnect in socio-technical behavior. Staff in both areas face challenges when trying to create space for reflection, learning, and any collaboration outside their core job functions. Still, the interviews with key staff suggests there are opportunities to create better, more effective collaboration between the commons and project work, which we believe will be beneficial for the whole organization.

The two main modes of interaction we considered in response to the initial set of interviews were a **lab**, and a **convening**. These reflect the opportunities that exist at the boundaries between the institution and field work for innovation, and the opportunities for learning where there are intersections.

 A **laboratory** is a place for intentional experimentation, for rapid prototyping, and a place where lessons learned from both success and failure are valued and used. A lab can be a source of ideas that can then be further prototyped and used in project work. The concept of a **lab** for experimentation and learning is popular today, drawing heavily from the methods of Agile and Lean for software and enterprise development (Hassan 2014) and from social science research on innovation. (Hargadon 2003).

We recommend labs as a possible mechanism for use by a commons and in project work, to help clarify complex questions, and as additional tools to support collaboration. Rapid prototyping and learning labs present a useful approach to test ideas and identify solutions to challenges because the short cycle allows learning to happen through failure.

By contrast, a **convening** creates a space in time for people to pause during their day-to-day work, to step outside their day-to-day pressures, and to reflect on results, strategic direction and learning. Convenings offer a learning opportunity for collaborations to invite in 'useful strangers' as thought partners, to share in the reflection, bringing their different experiences to support learning for everyone.

In the dominant practice of development, convenings happen as side events to sector conferences (or more informally, in the corridors of those events), or as part of annual planning processes (for reporting, planning and budgeting purposes). For a sector that operates in 3-5 year funding and project cycles, and often with very ambitious goals, time pressures create the impression that learning happens after a project (for example through a third-party monitoring and evaluation report). There is always something else that seems more urgent. People don't have time to talk to colleagues outside their project or area, let alone the people sitting next to them. Staff at headquarters and in the field don't have the chance to reflect alone and with others, and to see their own work from diverse external perspectives and to incorporate what they've learned into practice. A convening space makes room for all of this to happen.[6]

The commons, field, lab and convening space can be imagined as places where technology can be used to support these activities, and at another level, they can be seen as a form of technology themselves (a 'meta-tool') that can support collaboration in the sense from the Wikipedia definition that "technology is the making, modification, usage and knowledge of tools, machines, techniques, crafts, systems and of methods of organization in order to solve a problem, improve a pre-existing solution to a problem, achieve a goal, handle an applied input/output relation or perform a specific function."

Findings from case narratives

Our analysis suggests that the boundaries between these areas are the richest places to explore the dynamics presented by different case experiences. We saw either actual success or new possibilities when an issue was examined and activated across more than one area. A convening helps make better sense of what is learned in a lab or what is actually happening in the field or commons. More intentional interactions between commons and field could make it clear where to intervene in complex systems. A lab gives legitimacy and focuses on emergent innovation from the field. The stories below demonstrate that there are rich opportunities at the boundaries.

By examining these boundaries through cases the next opportunity is to expand the research to identify common patterns in the dynamics that consistently result in higher costs and lower impact across organizations, and to inform the creation of methods and tools that can disrupt, mitigate or convert these negative impacts into positive factors. Similarly, identifying and understanding positive patterns can enhance collaboration.

Bridge the power gap

Our first example relates to IT hardware and software selection in international organizations. The institutional process for budgeting and implementing technology is influenced by the assumption that all staff will use desktop computers as do most in headquarters, with good connectivity in the office and costly connectivity on the road. Field staff are more mobile than their headquarters counterparts, informally developing work-arounds to the desktop computer and connectivity challenges in order to do their jobs while they move among capital city offices and an array of projects around the country. This power dynamic between the field and headquarters blocks clarity on collaboration technology decisions, and contributes to unintended consequences, including lower morale at the field level, staff attrition, reputational risk to the institution and it hurts the potential to capture vital information about the institution's work at the field level. It jeopardizes collaboration. At the institutional level, there is a risk that headquarters will grow increasingly out of touch as field labs 'go rogue' with their work-arounds. The power dynamic could be broken by using the convening to develop a shared understanding, supported by the presence of external actors with relevant experiences to mediate and validate across perspectives. This might support sufficient trust and could lead to devolving some of the decisions to the field. A lab could be used to develop new innovations and approaches.

Have your cake and eat it too

Another example focuses on strategies to maximize the value of technologies. Skype (the free version) is used throughout the organization we examined. Notably, staff work remotely from a variety of locations. The organization has cut costs by having one part of the organization subscribe to a premium Enterprise account, which enables larger group video calls when necessary. This has brought tremendous value to the organization. However, Skype is underused as a collaboration tool, reducing potential impact. The organization is keen to capture and learn from the disparate activities, decisions and findings across its 90-plus country offices, to support organizational learning. Yet there is little encouragement for all staff to create a Skype profile and share their contact details. Productive practices, such as taking shared notes while chatting and then sharing them with relevant parties, are not leveraged. Keeping team chat windows open and regularly using the material from ongoing chats may provide data the teams can use for a variety of tasks, from monitoring and evaluation to process analysis. These practices are not used systematically by staff for a number of reasons (additional investigation is needed to identify them). This behavior could be changed by creating corporate guidelines in the commons, using strong adopters of Skype in the field as role models, training and other activities to make the most of the known (and well used) technologies.

Do what I say, not what I do

A third example presents another common power dynamic. Institutional processes in the commons are driven by senior staff who have long tenure with the organization, deep experience and are either uncomfortable, unfamiliar, uninterested or feel they have no time to devote to the use of social and collaboration technology. Field labs are staffed with young, enthusiastic and technology-savvy networkers who more likely see themselves working at multiple institutions in the course of their (future) careers. This is the boundary between 'generational leadership' and 'soft power,' which could result in institutional instability if left unaddressed. For example, senior leadership gives its high-level endorsement to collaboration. Workers in the field perceive this as transparency in process, time and resources to interact with peers and other related things. They are then surprised when leadership does not exhibit these same behaviors. There is both cognitive dissonance and a clash in practices. Possible options for addressing this dynamic include focusing on labs for creating cohorts of project and community staff to research actual practices and create clear options analysis for institutional staff to make informed decisions. This would help to build relationships and foster the next-generation of leadership between the headquarters and field, and make the commons more useful to all parts of the system. This also allows the kind of process formality that senior leadership is used to, to continue. Another option, in the commons, would be for the institution to create minimum processes and policies for the labs to follow, including capturing information to inform organizational learning, to understand this (and other) dynamics better, before making large-scale investment decisions. Yet another option could be "reverse mentoring", where senior managers pair up with tech-savvy juniors, creating a mutual learning trajectory (Shellenbarger, 2014).

Unexpected benefits

In our final example, we have a case where an initiative for a corporate social media platform that started in an organizational commons experienced a significant innovation when it was deployed externally. When it was deployed to support an external global event, there was a wave of early adopters but not full-scale adoption. So this is a case where 'field' extends outside the organization itself. The deployment revealed a new demand for a comprehensive set of technology and services including process and social media support for external events and consultations. (The need for social processes and facilitation of collaboration processes shows up in a number of platform evaluations and is a pattern that is definitely worth more research.) The external demand provided opportunity and revenue to continue developing the platform using 'lab-like' iterative, experimental approaches. The modifications and improvements that were developed were then integrated back into the base internal platform hosted in the organization's commons. While this can be considered an exemplary case for our proposed framework, there was still some resistance to the corporate platform and its internal use. Despite external validation, there was still some institutional friction over the control of technologies, their

development and, to a lesser extent, the stewardship from a social and process perspective. An opportunity to better understand this resistance might be addressed via a convening, bringing in internal users, non-users and external users to share what value they have found using the platform in question and other related platforms. By learning through examination of real experiences in a convening, versus responding based on one's particular beliefs, it's possible to identify new solutions to the social and technical problems. A convening can more usefully ask the question 'what is possible?' rather than 'how do we solve this problem.'

These are examples that help us uncover the dynamics that support or block collaboration. We are confident that there are others. A deeper pattern assessment could help with strategic planning and budgeting for how particular collaboration (technology platforms) can be used to achieve specific collaboration goals. Possible patterns of more usable online collaboration might be found in project management, curation and sharing emerging knowledge (and data) within and across projects and a place for reflective learning.

Identifying reusable patterns can then inform the selection of tools and configuration and even the design and execution of more effective collaborations. Tools that support diverse, ad hoc teams, based on the specific 'lab' in action offer diverse possibilities for collaboration. Once data, patterns and lessons are established, they can be transported (or simply aggregated) into a more centralized 'pattern library' and shared broadly. They can be sent out into the world for broad adaptation, adoption and even scaling.

Our initial, very small-scale probe provided useful insights into the social and technical factors and dynamics that influence the effectiveness of collaboration technology platforms. The conceptual model and initial patterns identified offer a useful first step toward creating a framework and method for developing and using a systematic pattern language for online collaboration. The framework and the pattern language would then support the development of tools, training or other products that organizations can use to improve the way that collaboration technologies and practices are created, implemented and used at the organizational and project levels. Additional research is needed to create such a method.

It is not enough to assume that identifying common goals supported by the right technology will result in new and collaborative behaviors or in situations where the whole is greater than the sum of its parts. In practice, we have found this is *not* the case. We hypothesize that instead we need an assessment framework for champions of collaboration in these organizations to be able to develop a clear business case for investment that addresses the challenges such as identifying the social, practice and the technical (socio-technical) aspects of collaboration in practice, indicators,

and then to develop an investment strategy that addresses technology and practice needs to meet collaboration goals. The framework will help champions assess, and the patterns will help them diagnose and act, combining reusable lessons learned with the particularities of every specific organization.

Acknowledgements

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[1]   A proto-pattern is something that's documented as a pattern but is not yet proven. In general, a proto-pattern needs to be validated a number of times to be considered 'proven.' (http://c2.com/cgi/wiki?ProtoPattern)

[2]   De Moor, Aldo. Pattern-Based Collaboration Platform Assessment: Towards a Practical Method See: http://bit.ly/MrZOqf.

[3]   http://en.wikipedia.org/wiki/Cynefin Retrieved March 6 2015

[4]   For an overview of the collaboration terminology and proto-patterns discovered, see http://www.mindmeister.com/359043140?t=DfRM7P8nkG

[5]   'Positive deviance is an approach to behavioral and social change based on the observation that in any community, there are people whose uncommon but successful behaviors or strategies enable them to find better solutions to a problem than their peers, despite facing similar challenges and having no extra resources or knowledge than their peers. These individuals are referred to as positive deviants.' Positive Deviance. In *Wikipedia*. Retrieved April 28, 2014 http://en.wikipedia.org/wiki/Positive_Deviance

[6]   See also the recent coverage of Etienne and Beverly Wenger-Trayner's research on systems convening at http://cpsquare.org/2014/05/reporting-on-systems-convening-and-landscapes-of-practice-conference/