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Knowledge Interfaces: An Informal CoP faced with Formal Boundaries

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Abstract

This paper reports an intervention as part of an action research study of a Community of Practice (CoP) of tertiary educators, with a domain focus of information technology (IT), which has found the support offered by their central IT department (ITSD) inadequate to their particular work environment. An attempt to address this problem situation through a boundary spanning activity, in the form of a facilitated workshop, which sought to bring members of the CoP and a key representative of the central IT department together, to share experiences of their roles and challenges, is reported. Perceptions, boundaries and potential boundary spanning opportunities were explored in interviews with the CoP, and with the ITSD representative, immediately following the workshop, as well as a round of follow-up interviews 18 months later. The study reveals the problematic nature of boundary spanning via the establishment of formal boundary spanning roles as a means of addressing such issues involving knowledge interfaces between an informal CoP and a formally structured central department.

Keywords: Communities of Practice, Boundaries, Higher Education, Knowledge Management, Technology Support, Informal Groups, Relationship Management

Introduction

It has been recognised that knowledge resides in groups as much as with individuals (Prusak & Weiss, 2005) and that valuable knowledge work is often carried out by both formal and informal groups, such as project teams, virtual communities, and communities of practice (CoPs). In particular, CoPs have been observed to play a significant role in enhancing organisational efficiency, serving as an effective vehicle for bottom level organisational knowledge management, where they can provide an interactive forum for the creation and sharing of knowledge that otherwise may be difficult to externalise (Koeglerbiter et al., 2005).

In an organisational context the CoP literature tends to consider an idealised situation where CoPs are nurtured and are given an opportunity to play a significant role in their organisations – in some cases they have been formalised, many growing to a large size (Ward, 2000). However, in reality many CoPs exist informally, and despite developing
valuable organisational expertise, remain small and unrecognised (Eales, 2003). Instead of becoming a trigger of innovation and improved practice in the wider organisation, they can become isolated from the rest of the organisation, struggling to obtain resources or get specialised support for their activities.

Based on the premise that valuable organisational knowledge is created in groups, in this study we undertake to look at organisational knowledge work through the lens of organisational boundaries and knowledge interfaces between informal CoPs and formally structured organisational units.

Establishing knowledge interfaces between groups of knowledge workers is important for an organisation. These interfaces determine how information flows and how the activities of different organisational entities are linked in organisational action, who can access knowledge, and how it is accessed, shared and acted upon. Organisational knowledge can, therefore, be viewed in terms of clusters of knowledge workers with their collective knowledge and group boundaries, and communication with other collective knowledge through boundary interfaces, boundary objects and boundary actors.

In order to be effective, such interfaces should be developed with a focus on the most recent trends in knowledge management (KM). According to Tsui (2005) there are three main trends in KM practices. Firstly, we should expect an increasing alignment of KM technologies/solutions with process management tools. Secondly, there is the emergence of personal networks in a society. These personal networks manifest in the form of personal knowledge grids and social networks, which have become already effective tools for identifying the concentration and flow of knowledge. Thirdly, KM becomes more and more ‘on-demand’, which requires "the rapid deployment of relevant tools and systems for ad hoc, intensive and inter-organizational collaborations" (Tsui, 2005, p. 4). While the first trend deals with streamlined access to relevant information, re-useable assets and institutionalised practices, the second and the third trends require more flexible and informal approaches.

In this paper we report work towards understanding and seeking resolution to the problems that involve ‘boundary spanning’ or creating communication interfaces between the organisational entities. In particular, we focus on issues concerning the comparative effectiveness of institutionalised and informal practices aimed at spanning organisational boundaries, with a view to improving knowledge work in an organisation.

We discuss an intervention, undertaken within a broader program of an action research (AR) study, which has attempted to build a dialogue between two parties (an informal CoP and a centralised organisational provider of information technology (IT) services) by bringing them together to discuss the issues standing between them. An initial meeting and subsequent discussions and interviews have been held, where communication and technical support issues were discussed. Some eighteen months later we followed up on the apparent success of this initial intervention, to find out whether there had been lasting changes in the relationship between the CoP and the central IT department.

The paper is written as a single case study and structured as follows: The “Background” section provides an overview of the organisational setting and a brief description of the
problem situation. The “Literature Review” section explores the concepts of boundaries and boundary spanning in organisations, as addressed in the literature. The “Research Approach” then outlines methodologies applied for data collection and analysis. The “Results” section summarises the three-stage data collection process employed. In the “Discussion” section we relate findings to the initial problem situation; we diagnose problems with the developments following the initial intervention, as well as outlining essential learning from this exercise. Finally, in the “Conclusion” section we summarise and provide insights into how a selection of the remaining issues might be tackled.

Background

The CoP under study is a group of academic staff teaching systems implementation at a School of Information Systems at an Australian University, delivering programs on-campus, as well as distance education programs. Four of the CoP members are co-located. A fifth member is located on a remote campus. The group engages in frequent informal conversations about their work, about technical projects in their teaching area, and they regularly socialise. Some of the relationships within the CoP are also based on semi-formal teaching team structures. The identification process of this group as a CoP is described in an earlier publication (Koegleiter et al., 2005).

The knowledge activities of this group aim primarily at achieving a higher level of skills and effectiveness in their work – improving teaching practice. The CoP members play an important role in the teaching process, and represent the frontline of interaction with the primary University ‘customers’ – students. As a consequence, it can be argued that the University’s success depends heavily on the knowledge work of this and similar CoPs, and subsequently on the extent to which that knowledge work is supported by relevant infrastructure and services.

While the School is predominantly business information systems/applications oriented in terms of its teaching content, the CoP is technically focused. The CoP can be viewed as representing the core of technical expertise within the School and the Faculty. The group members not only teach technically focused subjects, but also have substantial technical hands-on expertise in those areas. In some cases their expertise is arguably deeper than that of faculty-based IT support staff, and members of the CoP often provide advice and help to other staff in the School and Faculty.

The central University IT department (henceforth referred to as Information Technology Services Division (ITSD)) is generally responsible for the network infrastructure maintenance, desktop support (staff, lecture theatres, computer laboratories), and the maintenance of University wide teaching and learning and administration systems. ITSD includes approximately 80 staff and is hierarchically organised into a number of management levels. Interaction with users occurs primarily via an IT Helpdesk as a first point of contact and might be extended to other support levels, depending on the complexity of the individual support situation.

Communication between the CoP and external units, such as ITSD, include negotiations regarding access to organisational IT infrastructure and knowledge resources (e.g. applications, services, servers, etc.). Given that ITSD is providing and supporting elements of teaching infrastructure, the patterns of CoP interaction with this unit in
creating knowledge and conducting knowledge work are important and deserving of close attention.

A major issue the CoP members report has to do with what might be termed the 'boundaries' that arise because of the position that their specialised teaching focus holds: within their School; and within the wider University. Issues arising at both of these boundaries have lead to frustration within the CoP.

In this paper we focus specifically on boundaries beyond the School. The CoP's specialisation in technical subjects requires that they access intensively the University's technical infrastructure, to develop and test curriculum material, including laboratory exercises and the design of student assignment materials. This includes non-routine knowledge work and experimentation involving computer-based resources and IT infrastructure. ITSD, however, arguably has at best a limited capacity to recognise the special teaching requirements of the CoP.

In response, the CoP members have sought to develop a largely 'self-sufficient' attitude towards technical support of their activities; however the extent to which this is possible is limited as ITSD has introduced a somewhat restrictive desktop system across the University, which imposes considerable limitations on testing new technology and software by individual users. This system supports a standard computer environment and caters for core administrative tasks. ITSD primarily interact with users through an IT Helpdesk and focus mainly on network infrastructure maintenance and desktop support. There is, however, limited support for experimentation with technology or independent configuration. In a sense, because of this the CoP is dependent on ITSD for providing experimentation environments, which ITSD labels as non-standard requests. Members of the CoP, however, feel these requests are addressed reluctantly at best. Indeed, there is some anecdotal evidence that escalation of these kinds of requests has given some members of the CoP the reputation of being difficult.

**Literature Review**

In this section we discuss both organisational and group boundary issues in the context of CoPs, as explored in the present literature, and as required as a basis for interpreting the outcomes of an intervention to address the above problem situation. Also discussed are the notions of information flow across boundaries and knowledge transformation.

**Organisational Boundaries**

Wenger (1998, p. 103) identifies a number of aspects of organisational boundaries, including CoP identification through creating group boundaries, the need for spanning those boundaries, and the notion of creating CoP history through articulation with the rest of the world. Wenger sees this articulation taking place through boundary spanning activities, involving boundary objects and boundary roles.

*Boundary spanning activities* can be thought of in terms of facilitating communication and information flows. Boundary spanning may occur on a formal level involving individuals on higher hierarchical levels (Aldrich & Herker, 1977) or on an informal level (Manev & Stevenson, 2001; Tushman & Scanlan, 1981) through establishing social

*Boundary objects* are objects that are shared and shareable across different problem solving contexts. Categories of boundary objects include repositories, standardised forms and methods, objects or models (simple or complex representations), and maps of boundaries that represent the dependencies and boundaries that exist between different groups (Carlile, 2002).

*Boundary spanning roles* are the link between the environment and the organisation. Individuals in boundary spanning roles must be strongly linked internally and externally to gather and disseminate information. Tushman and Scanlan (1981) identify boundary spanning individuals as people, who are frequently consulted on work related matters as internal communication stars. They further name communication stars that have substantial communication with areas outside their unit as gatekeepers (Tushman & Scanlan, 1981).

A CoP can be viewed as a vehicle for bottom-up knowledge management, in particular because of its capacity to support the effective communication of knowledge that is otherwise difficult to externalise. For work to make sense a CoP has to connect to others in an organisation and to their environment. The facilitation of such boundary spanning can involve both formal and informal activities.

Formally established organisational units normally engage in formal collaboration with other organisations, whereas the interaction of a CoP with externals seeks to obtain advice and form opinions on specific problems via an informal advice network and process. This might go as far as extending membership of the CoP to those external people (Koeglreiter et al., 2006).

The investigated CoP while operating essentially at an informal level, is also involved, as a part of an organisational unit, in formal relationships with the ITSD. Previous research has shown that the CoP under study advocates strongly informality within the group (Koeglreiter et al. 2005). In the reported study, we have found that the CoP also seeks informal links to entities outside the CoP i.e. other departments such as ITSD.

The formal mechanism for interaction with ITSD is the helpdesk. Middleton and Marcella (1997) argue, however, that standardisation of IT Helpdesk work in academic institutions is almost impossible, because of the non-standard tasks users are involved in. While the helpdesk proves to be very effective for formally established organisational knowledge processes, general user support, and for solving recurring technical problems, it has been recognised that informal interaction and social networks play an important role in organisational knowledge work. Firstly, social networks compensate for the information, which is not communicated through formal channels (Kautz, 2006). Secondly, meaningful contribution energises individuals particularly in expert-to-expert networks (Cross et al., 2003). Informal contexts are more likely to feature the values, which must be nurtured to build an energy-friendly culture: playfulness, trust and realistic optimism (Cross et al., 2006). This context is especially important at the early stages of innovation, when setting formal agendas is often seen as de-energising. Thirdly, some nodes in social networks are given a specific meaning. The analysis of personal network composition reveals that networks aligned rigidly with hierarchy
levels and organisational structures allow considerably less exposure to new concepts and information, and hence restrict innovation. For example, in information networks links to de-energisers reflect formal reporting relationships from which the information seeker could not escape (Cross et al., 2006). While the notion of boundary spanning has been based on the formal level (Brown, 1966), studies have revealed that specific nodes in social networks also act in boundary spanning roles on an informal level (Cross & Parker, 2004, p. 76).

In this study we consider formal structures highly efficient for standard procedures (i.e. reporting a computer problem to the helpdesk), but argue that where there exist no formal procedures for exceptional cases, informal links might effectively tackle these issues.

To further support discussion of the present case study it is useful also to explore the notions of group boundaries, information flows across boundaries and knowledge transformation through interaction and interpretation occurring among groups and different types of organisational (group) knowledge, as reported in the extant literature.

**Group Boundaries**

Social boundaries are created by individuals and groups through social identification. Social identification encompasses the perceived membership of individuals in distinct self-inclusive real or imagined social groups, named the ‘ingroups’, which are distinct from other groups, named ‘outgroups’ (Gefen & Ridings, 2003). Social identification theory involves two processes: categorisation, defining the ingroup-outgroup boundaries; and self-enhancement, where the group member asesses the members of the ingroup with regard to attitudes and actions more favourably than other groups (Gefen & Ridings, 2003).

For CoP members it is important to develop trust, and to feel safe even when sharing experiences of failure that might be considered embarrassing in more formal structures or exposing vulnerability (Cross & Parker, 2004). A further form of trust is related to people’s ability, expertise and competence to do a job and know what they are talking about (Cross & Parker, 2004). Gefen and Ridings (2003) have observed that user acceptance of new IT is related to perceptions of service quality, trust, and equitable social exchange and can be promoted by IT personnel responsiveness. In the present study this form of competence-based trust plays an important role in the relationship between the CoP and ITSD.

Social ties reflecting trust are distinctive for CoPs and include honesty and commitment to others, and assist in establishing a common wavelength, a shared mindset and thought world, a shared language reducing the chance of misunderstandings, essentially transforming individuals into one collective mind (Carlile, 2002). Prusak and Weiss (2005) attribute social aspects, such as trust and relationship capital to organisational culture, arguing that these might have a considerable effect on knowledge management.

Physical, social, and political aspects are constraints that cause increased knowledge transaction costs within an organisation by obstructing the process of accessing, find-
ing or talking to the right people, due to rigid hierarchy (Prusak & Weiss, 2005). Our work demonstrates an example of rigid hierarchy impeding the creation of direct links between the CoP and ITSD (see “Results”).

It is important to note that relationships not only exist between individuals in a CoP, but also with other groups, key players and stakeholders. To obtain community recognition, support and resources required for their work, they have to span boundaries with the wider organisation including their immediate working environment, management, and other departments.

In the intervention to be reported we have employed a modified boundary spanning approach, built upon the ‘re-categorisation’ approach of Gefen and Ridings (2003). Re-categorisation involves inclusion of outgroup members into an extended ingroup, where all members share an ‘obvious’ similarity. In this study we have attempted to promote re-categorisation by conducting a meeting, bringing together the CoP as the ingroup and, as the outgroup participant, a representative of ITSD sharing an ‘obvious similarity’ of technical background.

De-categorisation is described as dissolving the ingroup-outgroup boundaries, through interaction on a personal, rather than group, level (Gefen & Ridings, 2003). As will be reported, CoP members sought de-categorisation through direct contacts with particular staff within; ITSD deemed able to understand and assist in the situations where the formal process of contacting the IT Helpdesk is not seen by CoP members as being effective.

**Information flows across boundaries**

Academe is known for fostering individualism and competition, due to individual performance measurement (Rowley, 2000) creating barriers to knowledge sharing. We argue in this paper that information flows and knowledge sharing across departmental boundaries are an essential component of organisational knowledge creation. Thus the issue of inter-departmental/functional information flows deserves close attention.

Brown (1966) identifies two potential problems with the classical view of external information being directed to decision-making levels of policy, managerial, and operating according to expertise and function. Firstly, if the function is assigned a secondary mission to deal with information that doesn’t match resources or expertise available, information might never get to the appropriate channel (Brown, 1966). The present study confirms that aspects of both lack of resources and expertise in boundary spanning are obstructing information flows between the CoP and ITSD.

Secondly, in organisations, where information flows between decision-making levels and intelligence-mechanisms are highly programmed, little new information can be expected to flow across an organisational boundary (Brown, 1966). Such programmed information structures reduce the number of interfaces to external entities to a minimum and make information boundaries difficult to span. This is reflected later in the results of the present study in the appointment of formal relationship managers in ITSD, tasked with boundary spanning but with their channels of contact limited to a small number of very specific people.
Labianca et al. (1998) found that a third party may exacerbate an intergroup-conflict situation in personal or other informal relations by adding or omitting contextual or other important information for whatever reason. Consequently, in some circumstances direct links between ingroups and outgroups are crucial to ensure the whole context of information is passed to the correct channels. We have identified that the CoP perceives the third parties (in the present case the Faculty IT group and IT Helpdesk) as sometimes distorting or even blocking information and therefore members of the CoP seek direct contacts to ITSD staff.

**Knowledge transformation**

Traditionally, KM in organisations has focused on formal initiatives, building systems for collecting, storing and sharing documents and codified knowledge (Prusak & Weiss, 2005). This approach is based on a belief that organisational KM is, at its core, a managerial task and should be approached top-down. More recently knowledge workers’ perspectives have been recognised as important to knowledge management (Prusak & Weiss, 2005). This view has emphasised informal and social aspects of knowledge management, such as building trust, managing relationship capital, and establishing informal networks for expertise location.

Daft and Weick (1984) consider organisations as interpretation systems. Interpretable information may be acquired through formal (systems) or informal (personal contact) processes. Organisational interpretation is performed on a collective level and is defined as the process of translating events and developing shared understanding and conceptual schemes (Daft & Weick, 1984).

While Daft and Weick (1984) attribute the interpretation process to management levels (top-down process), we argue that interpretation can apply to individuals or groups on any organisational level (i.e. a bottom-up process) (Koegleriter et al., 2006). We argue that organisational life includes a continuous cycle of knowledge creation based upon interpretation of explicit information and human behaviour, as exposed in boundary spanning activities.

It has been acknowledged that effective externalisation and sharing of knowledge requires a common language (Burstein & Linger, 2003). ‘Common’ or ‘shared’ language not only involves syntactic aspects, but also a semantic component that gives meaning to information (Nonaka & Takeuchi, 1995). This is related to the concept of interpretation. The semantic aspect is manifested in thought worlds and (organisational) culture.

To span boundaries involving cultural differences, Carlile (2002) introduces the concept of knowledge transformation by trying to “resolve the negative consequences, by individuals from each function [being] willing to alter their own knowledge, but also [being] capable of influencing or transforming the knowledge used by the other function”. In the present study we investigate bridging the two different thought worlds of the academic culture of the CoP and the service oriented culture of ITSD.

We argue that this transformation of knowledge involves understanding each other’s practice. Pawlowski et. al. (2000) claim that it is a challenge for IT professionals to
learn practice – acquire practice-specific knowledge as well as cross-practice knowledge. If this is so, central IT professionals in tertiary institutions need to learn how to provide technical support not only for everyday activities, but also for testing the new technologies included in curriculum, educational experimentation, creativity and innovation.

In the following sections we concentrate on investigating the formal boundary spanning activities of ITSD, and the perceptions of the CoP that wishes to create direct links to ITSD staff, which they see as a more effective informal connection to an expert network.

**Research Approach**

The research reported in this paper is part of a larger Action Research (AR) project that investigates the interaction between an educational CoP and the wider organisation in a tertiary education environment. The study focuses on a group of tertiary educators who deliver undergraduate programs in the area of implementation of information systems in business. The data collected, analysed and reported in this paper, is drawn from a workshop and semi-structured interviews with the educators who form the CoP, and with those in organisational roles whose responsibilities impact members of the CoP.

We have been following the CoP over a period of time, conducting interventions and observing changes and developments of the group and its environment following a process of AR cycles consisting of problem diagnosis, action planning, action taking, reflection and learning.

Research reported in this paper focuses on a particular, intense period of intervention addressing issues of boundaries between the CoP and ITSD. We discuss the outcome in the style of a single case study in isolation to other interventions. This particular AR cycle was triggered by the learning experience of a previous AR cycle revealing a communication problem between the CoP and ITSD. To address this problem an initial workshop was conducted involving members of the CoP and a representative of ITSD, where a representative of each party semi-formally presented the typical challenges of their day-to-day work life. Following these presentations, an open forum was held, where current and ongoing issues were discussed.

The workshop was then followed by semi-structured interviews, with all participants, reflecting on their individual impressions of the workshop and their perceptions of the way forward. The enthusiasm expressed in the workshop and interviews gave a strong indication that the basis for a dialog between the CoP and ITSD had been created, and in a real sense issues had been resolved. It is worthy of note, however, that during the same period of time the CoP was facing other pressing issues which were researched in the AR mode, and will be reported elsewhere.

Approximately 18 months later, a series of follow-up interviews were held to establish whether the situation had indeed changed.
Results

We summarise results from the intervention, built upon the three data collection opportunities: the workshop that brought the parties together; the initial reflective interviews with the participating CoP members and the ITSD representative; and the follow-up interviews that were conducted 18 months after the workshop. Interviews were audio-recorded, transcribed and subjected to thematic qualitative analysis.

Workshop

An intervention in the form of a facilitated workshop was conducted, which sought to bring the CoP, other staff of the School, and a key representative of the ITSD, together. Each of these parties was given the opportunity to explain their role, and to refer to the challenges they encountered. By focusing on the theme of challenges in their day-to-day work life, the presenters took equally a vulnerable position, engaging in non-threatening dialogue.

Indicative of the nature of the discussions that took place, CoP members expressed their frustration about the rigidity of structure within ITSD, the lack of response to urgent teaching needs, lack of flexibility and poor communication.

The ITSD representative confirmed that he was aware of the ongoing communication problems and a number of initiatives to improve communication across the University that were already in progress were reported. CoP members responded that the formal communication channel to ITSD through the helpdesk had been problematic, because the focus at the IT helpdesk is upon immediate problem resolution, rather than understanding underlying systemic problems. CoP members claimed that chance meetings on an informal basis have proven to be more effective.

A CoP member made an interesting suggestion to bridge communication problems, involving ITSD employing a boundary spanning person, who would engage proactively and directly with academic staff in the University. Ideally this person should have an academic background, as a prerequisite for in-depth understanding of the academic world and its challenges.

Initial Interviews

In the course of initial interviews, the questions posed to the participants addressed workshop impressions and considerations about linkages between the CoP and ITSD. The participants were also asked about the boundary issues they encountered and discussed during the workshop, and their expectations and learning in the workshop.

The formal communication channel to ITSD is the IT Helpdesk via phone, which is perceived by CoP members to be a bureaucratic process lacking transparency. The following quote confirms a sense of insufficient competence-based trust, which might be rooted in experiences of IT Helpdesk staff demonstrating a limited understanding of the complexity of the CoP's non-standard requests. This might be interpreted as an example of a situation where, through this limited information being forwarded by the IT Helpdesk to other levels in ITSD, the nature of requirements/problems being distorted. The use of the term 'chasing' also indicates an energy-draining process of follow-up and in some cases explaining the same request over and over again:
[ITSD] told us, it’s all got to go through the helpdesk. We tend to feel that the helpdesk could still be a bottleneck. [...] They are not really concerned about your problem. [...] I mean, if you can’t contact anyone there directly, unless you go through the helpdesk and they call you back, it puts it all in their control. How do we know, that we are actually going to hear back from them? How do we know, the right person is going to call us back. We have to trust them. So, by stipulating their policy, it means we are all still chasing them and I don’t believe that that’s going to be effective communication.

To overcome the perceived limited ability of the IT Helpdesk to address complex non-standard requests, CoP members saw a compromise in written communication, which allows them to describe the issue in its full complexity. This original and undistorted information can then be passed through to other support levels in ITSD, eventually reaching someone with sufficient expertise to understand and act upon the request.

As indicated in the above quote, CoP members seek direct ‘expert-to-expert’ communication, circumventing the IT Helpdesk altogether. There is some history of occasional informal contacts with specific experts within ITSD, some of which are positive, because of the ability and willingness of the ITSD staff member to relate to the CoP’s practice. Others haven’t been as fruitful:

Certain people have got a reputation of not listening. Like [ITSD staff member1] is quite good. If he came out, he is one that I know who would be quite good. If [ITSD staff member2] came out, I don’t think it would be very good, I don’t think it would be productive.

Unfortunately the CoP is not in a position to choose individuals to talk to and so a mismatch of expectations has developed over the years. This was confirmed by the ITSD representative, who identified a need to manage expectations and is prepared to engage in a dialogue assisting clarification:

I think there has been a mismatch in expectations [...]. A [School] might have placed specific expectations on ITSD but are unable to articulate them in way that ITSD understands. So they are talking at this level and ITSD is up here or down here [...]. So it’s part of ITSD’s plan is to try to assist the organisations within the University with their future planning and being less reactive and being more pro-active.

The issue of boundary spanning was also explored extensively in the interviews. Formally, a third party, the Faculty IT group, represents the needs of staff within the Faculty to ITSD. However, the interviews have shown that there is also a lack of competence-based trust towards the Faculty IT group, who are perceived to formally have a different function and no resource capacity for extra tasks.

He [Faculty IT Manager] is there [...] to support admin. That’s the [ITSD] line, that I believe [...] is the unwritten sort of statement of what they support [...] – he has declared openly, as far as I am aware, that he doesn’t support T/L he only supports internal admin systems. [...] I believe, that [...] the Faculty rep did not adequately represent our needs to [ITSD] either.
He acted as a block of our requests going to [ITSD]. It was like he was censoring communication in a way. He was vetoing our needs. I find that particularly sensitive in an academic environment because how do any of them dare to presume that they have the right to decide what we can and can’t teach.

The ITSD representative understood the dilemma of disconnection from practice of customers and supported the idea of direct links by formally participating in the CoP’s activities:

There are probably people within ITSD who should definitely be [...] involved in that CoP because that’s their job and there are those like myself who have represented ITSD and got enough out of it to understand it from a personal perspective. It was good to be involved in something like that. So, a service level manager or a business services manager who are tasked with liaising with customers should be members of that CoP.

In summary, CoP members have indicated that while they would prefer direct personal contact with experts within ITSD, they are instructed to initiate contact through the Helpdesk, which is deemed to complicate the process. The ITSD representative confirms that ITSD had not been able to respond to the CoP’s needs in the expected way - it is suggested that ITSD staff liaise with the CoP by participation in the CoP.

Eighteen Months Follow-up Interviews

To determine whether the situation and relationships had indeed changed in the long term, as was expected at the conclusion of the period of intervention, we followed up with the CoP and the ITSD representative, through an interview program, approximately 18 months after the initial workshop.

During these 18 months significant organisational changes had taken place, both in the School the CoP is located within, as well as in ITSD. ITSD had gone through a number of iterations of restructuring, as well as the appointment of a new department head. The School had faced a declining student demand for its courses, and was experiencing budget reductions with implications concerning the capacity to employ sessional staff to assist in tutoring and exam marking in high volume subjects. In addition, the School centred its teaching more closely upon business-focussed information systems, arguably de-emphasising the teaching of technical skills.

In discussions with CoP members it became clear that they had accepted the strategic decision to emphasise business-focussed information systems studies. For example, a number had taken on roles in teaching business decision making, a foundational subject, with large student enrolments. As such there was reduced time to spend on the development and delivery of technology-focussed subject matter. Consequently, there was a reduced need for the CoP to utilise ITSD services. CoP members had even more deeply held preferences to work autonomously on technical matters, where they possessed the capability (i.e. skills).

I could have got onto [ITSD] about that, but that wasn’t a high priority for me – an annoyance really. [...] I think some of the [ITSD] issues we had in
the past have paled into nothingness compared to things to budget cuts that we are facing again for next year and dropping demand from students and all those issues.

CoP members still do not have direct contact with ITSD. Formally, contact for any exceptional, non-standard requests is assigned to the Faculty IT group, but the CoP members repeated that the Faculty IT group doesn't have the expertise or authority to assist with the CoP's specialised projects. This is the reason why they have sought to contact ITSD directly, but they have no idea where to start:

We haven't approached [ITSD], because we don't know who to go to and ask, because it's a non-standard request and we don't know their response. [...] We don't know where to start.

The ITSD representative, on the other hand, described a number of initiatives that are being introduced and improved. These initiatives include boundary spanning roles, boundary spanning activities and boundary objects.

To address the issue of boundary spanning roles according to the IT infrastructure library (ITIL) review (Berkhout et al., 2000, p. 15), relationship managers within ITSD have been appointed that contact IT representatives of the Faculties, who are expected to be fully informed on all technical teaching and learning requirements throughout the Faculty. The number of relationship managers is very limited however, and so it is not possible to contact lower levels within the Faculty. An exception may be made for CoP members, but the preference is that the first point of contact be the Faculty IT representative:

And there is only a limited number of us who are relationship managers and I think we have to focus at the faculty level in order to sustain it.

To address this resource problem ITSD intends to limit their boundary spanning efforts:

[...] Faculties and divisions are actually accountable for deciding what projects need to be done by ITSD. And we'll just be the implementers of whatever is decided. So the responsibility for defining all these requirements will probably be removed.

A new information initiative is aimed at publishing a services and product catalogue that lists all services and products available from ITSD (i.e. a boundary object). An accompanying service level agreement clarifies expectations on timeframes and the extent of services provided. Further a redesign and restructure the ITSD Web site is planned, to make it easier to use for all staff and students. Changes of technical environments will be published to the entire University a year in advance.

Boundary spanning activities include email lists and meeting forums, such as an IT representatives' group, an IT support interest group, the printer and desktop advisory group, and the computing laboratories advisory group. Membership of most of these groups is restricted, except for the IT support interest group mailing list, where everyone interested in IT can subscribe.
While it is tempting to see these initiatives as addressing the CoP's expressed needs, one might note a number of factors which reduce the effectiveness of ITSD's boundary spanning efforts. Firstly, as established through the interview program, members of the CoP have not heard of the initiatives to date. This is in accord with the CoP concern that ITSD is talking to the wrong people. Secondly, reducing the role of ITSD to implementers, removes them even further from the practice of academics, a step that might further exacerbate the isolation of ITSD from the world of the academic.

**Discussion**

In this study it has become apparent that formal pre-programmed boundary spanning activities are limited in terms of types and modes of activities conducted, audience included, and topics discussed. We argue that effective organisational KM requires informal structures and communication channels to be in place to compensate for imperfect formal communication structures. This is not to say that all communication structures should be informal. Rather, we see formal structures and activities as a fundamental component of creating transparency across the organisation. Formal structures are effective where regular flows of defined types of information are needed, such as codified knowledge embedded in procedural documents.

There has been an attempt to institutionalise and regulate interaction with parties external to ITSD by formally appointing relationship managers that are supposed to communicate with very specific people in the organisation. In this particular case knowledge flows are inhibited through this formal process.

CoPs, as an informal structure, deal with innovation and creativity, which are unstructured processes, often messy. These often take place in an iterative form of learning by doing, swimming in a sea of the 'unknown'. In short, it involves a large amount of tacit and implicit knowledge, which is fluid and ever-changing. An attempt to formalise or make explicit these types of processes results in a loss of richness, and possibly distortion of information.

To bridge these completely different thought worlds and convey requirements and their complexity it requires direct links between the two parties. The IT Helpdesk is essentially focussed on quickly solving a problem or passing it on to someone else rather than trying to analyse deeper systemic problems. The Faculty IT group acts in a similar manner. In order to address more complex technology based projects initiated by academics, direct links need to exist between academic and ITSD staff who have extensive expertise in this area, and who also have the capacity to learn about the complexity surrounding technical problems/requirements.

In this study it has become apparent that a solution of the issue of boundary spanning is resource intensive. It requires a considerable amount of time for informal conversations to take place in order to learn practice and to understand the challenges and problems of both parties. In addition, boundary spanning efforts can be ambiguous, where one party is convinced that a mechanism is in place, whilst the other party sees this completely differently. This study shows that neither sufficient resources nor an effective mechanism is in place to formally span boundaries between the support function (ITSD) and those who need the support the most (the CoP). This shortcoming might be
addressed by building direct informal links to between the CoP experts and the experts in ITSD, but currently ITSD see that information should flow via formal channels.

ITSD's intention of withdrawing further from interdepartmental interaction by reducing their function to one of an implementer and operator of technology also gives an indication that ITSD seeks to move further from the innovative practice of academe, leaving the task of requirements specification to the Faculty IT group. The effectiveness of this position is problematic however, as enormous pressure is put on the IT groups at Faculty level, initially employed as technical administrators who are now expected to acquire a skill set for academic 'business analysis' and 'requirements engineering.' There is no evidence at present that this likely to happen.

Conclusion

In this paper we have reported an Action Research intervention, bringing a CoP and a representative of the central IT department (ITSD) together, seeking to span interdepartmental boundaries. Analysis of an initial workshop, and interviews with CoP members, both immediately after the workshop and 18 months later, have indicated a competence-based distrust of ITSD's first point of contact, the IT Helpdesk, and highlighted a wish instead for direct expert-to-expert links.

The ITSD representative in this study, on the other hand, initially demonstrated understanding for these direct links, however, a follow-up interview after 18 months showed that ITSD was intending to withdraw even further from academic practice. In these 18 months ITSD had introduced a number of boundary spanning activities that would only involve communication on a Faculty level. Considering that the relationship between the CoP and Faculty IT has been problematic, it is not surprising that the CoP members hadn't heard about the boundary spanning activities by ITSD and felt that nothing had changed.

In broader terms, the study has revealed the problematic nature of boundary spanning via the establishment of formal boundary spanning roles as a means of addressing issues involving knowledge interfaces between an informal CoP and a formally structured central department.

References


