

THE EVOLUTION OF A COMMUNITY OF PRACTICE FOR KNOWLEDGE MANAGEMENT.

Micky P. Kerr and Alastair B.D. Stewart

Abstract

This paper describes research into an aerospace engineering Community of Practice (CoP), dedicated to Knowledge Management (KM). The study addresses the shortage of empirical research by describing the CoP's activities, mapping out problems and successes, and examining functionality and value. A multi-method approach, using member interviews and surveys, and through participating in CoP meetings, workshops and other informal activities, allowed a rich depiction of the CoP. Participation rates in CoP activities are promising, while focusing meetings on specific KM aspects from a variety of viewpoints has been favourably received. The CoP successfully facilitated knowledge sharing across different functional and business units, and created links beyond the company boundaries. Value is seen at individual and community level, with the on-going development of health-check and benchmarking tools. This CoP is recognised as a well-designed, "trailblazing" model of working for the company, in cultivating innovative KM practices and thinking.

Key words: Knowledge Management; Aerospace Engineering; Best Practice.

1. Introduction

This paper focuses on Communities of Practice (CoPs) as one vehicle for managing knowledge in the increasingly distributed and complex workplace. The research investigated the first year of existence of a CoP on Knowledge Management (KM) located within the aerospace engineering domain. A brief review of the literature on CoPs is used to provide the rationale and objectives of this study, before describing the methodology used. The findings to date are presented and preliminary conclusions briefly discussed.

1.1 Literature review

The CoPs concept can be traced back to the work of Etienne Wenger, Jean Lave and their colleagues at Xerox PARC [1, 2]. Since then many definitions have been forwarded, but CoPs are typically described as groups that can emerge around a work-related process/function or that are focused on a discipline, topic or problem. A traditional CoP is defined by its subject of engagement, setting its own goals and deciding on its own membership. What holds it together is a common sense of purpose, manifested in the pursuit of common solutions, goals and interests, using a shared language and espoused through similar beliefs and values [3].

CoPs have been contrasted with project teams, formal work groups and informal networks [4]. Others have further characterised types of CoPs according to issues such as their nature of organisation, degree of formality, level of management control and stage of development [5, 6]. For example, labels such as unrecognised, legitimised, strategic CoP have been used [7], while others refer to self-organising or sponsored to categorise CoPs [3].

1.2 Rationale for the current study

CoPs have increasingly been promoted as useful for solving problems, facilitating learning and sharing knowledge. This has fostered an interest in formalising and managing CoPs for the benefit of an organisation. In particular, there have been explicit attempts to assimilate and exploit CoPs into KM thinking and practice. However, the emphasis has been on modelling and describing their ideal development across a lifecycle [5, 8] without testing or evaluating these models and frameworks. Likewise, there is a shortage of empirical research on issues of functionality (objectives and purposes) and value (at the individual, community and organisational level).

1.3 Objectives

The study aims to fill the gap described above by describing the activities of the CoP, mapping out problem and success factors, and examining the functions and the critical issue of value. Longer-term objectives are to understand good CoP practice, to develop specific assessment and guidance tools, to capture general lessons and principles, and to promote CoPs as one useful KM activity.

2. Methodology

2.1 Research context

The research has focused on an emergent Knowledge Management Community of Practice (KM CoP), within the UK domain of a leading international aerospace organisation.

2.2 Methods of data collection and analysis

A multi-method, case study approach was adopted in order to provide a comprehensive account of the KM CoP, from a range of perspectives (e.g. the facilitator, the members and the researcher) and to strengthen the findings through data triangulation. Both planned and opportunistic methods of data collection were used within this approach, with each technique offering a particular insight into the CoP.

Data collection methods have included interviews with key KM CoP stakeholders (n=6) and surveys asking members (n=25) to comment on issues such as why they joined, what KM content and activities the community should include and what future directions it could take. The researcher also gained insights at KM CoP meetings, through making presentations, participating in workshops and other informal discussions.

For the most part analysis has been qualitative and thematic, drawing on all gathered data to characterise the KM CoP in terms of the following issues: (i) origins, (ii) objectives, (iii) membership, (iv) activities, (v) problems and (vi) successes.

3. Results

The findings are presented as answers to the six issues suggested above. Where appropriate, these results are supported with evidence from the CoP in the form of quotes from interviews and information from data sources such as surveys and analyses of communication mechanisms.

3.1 What are the origins?

The origins of the KM CoP can be traced from informal discussions between engineers and vendors during 2000/2001, which highlighted the possibilities for improvements in how knowledge was captured, shared and reused within the organisation. Essentially, a range of individuals and groups were expressing a common interest in the area of KM and had a similar need to understand more about what KM was and what activities were currently going on within the organisation.

It was agreed that the formation of a forum to share ideas and knowledge on KM would be worthwhile to start exploring the applicability of KM and the complexity of the KM situation within the company. The forum grew as a set of informal connections across the organisation, primarily using word of mouth viral marketing techniques, and its activities to date have been recognised as beneficial.

3.2 What are the objectives?

Towards the end of 2001 the forum was recognised as a Community of Practice (CoP), with the objective of knowledge sharing within the organisation, to bring as many people as possible up to speed about what was happening in terms of KM. The initial focus was on taking advantage of the most up-to-date technologies and techniques for KM and how they could be applied to specific contexts. This is typified in the following response to a survey question about the reasons for joining the CoP:

“Want to find out (a) what technology is available for KM and (b) what the company is doing in the area.”

However as the CoP has developed, the complex nature of KM and the need for a more holistic approach have been recognised. This understanding of KM has become generally accepted within the CoP and has served to direct its interests to a range of KM topic areas. So far these have included demonstrations of potential KM solutions, how to accommodate informal and formal KM activities, how to make person-to-person communications more effective, and how to measure the value of KM implementations.

3.3 Who are the members?

In the early days of the KM CoP, membership was limited to people working for the company with 24 members at the time of the first meeting (see Table 3). Since then, the number of members has grown through word of mouth and suggestion to reach a total of 103. This sharing of knowledge about the CoP among colleagues and peers demonstrates the importance of informal networks and the human side of KM. Such exploitation of existing social systems of networks and contacts is advocated as a sound principle to follow in the foundation and early building stages of any CoP. Another positive feature, consistent with current recommendations on CoP cultivation, is that membership is voluntary, relying on an expression of interest or suggestion from others. So far, few people approached on a suggestion have rejected the approach, but it should be noted that this has resulted in some of the most and the least active members of the CoP. This technique is therefore seen as a less reliable, but still useful method of building CoP membership.

3.3.1 Membership profiles

Currently, the KM CoP includes a wide range of interested parties from both inside and outside the organisation and across various disciplines (see Table 1).

Table 1: KM CoP membership

Current area of work	External	Internal	Members
Engineering / Engineering Support	1	57	58
IT	0	8	8
KM Professional	8	0	8
Management	0	16	16
Research	6	7	13
Total	15	88	103

As Table 1 reveals, most members are internal engineering employees, perhaps reflecting the starting place of the CoP. There are also representatives from customers and other organisations working with the company, as well as a reasonable number of external research partners and KM professionals. This balance may assist the KM CoP in taking advantage of any exploitation possibilities, as well as offering good support for research. Such boundary flexibility and extension is a very important characteristic of this CoP.

3.3.2 Member participation and objectives

The fact that members are permitted a range of involvement levels is another positive feature in cultivating a robust CoP. Members can choose to participate at the periphery of activities, right through to making it core to their job. One end of this emergent continuum emphasises the complementary and enhancing facilities of this CoP, which *“provides ideas, [used] in 50% of [the] day job”*. Another type of job-fit highlights a less central role for CoP, but one which recognises the potential and actual additional benefits for other contexts of work, for example *“to explore relationships between KM and lean manufacture elements”*.

3.4 What are the activities?

The nature of the KM CoP activities were in place from the outset, being a function of the need to accommodate the range of objectives and members already described. The main activities of the CoP can be separated into face-to-face meetings and other electronic and technologically assisted forums for communication.

3.4.1 Face-to-face meetings

In early 2002, a first face-to-face gathering began the process of bringing interested parties up to speed with what was going on in KM within the organisation. Table 2 provides an indicator of participation and interest levels among the members, showing that 46 % of members have attended at least one meeting (16% have attended 2 or more meetings), with a further 27 % having communicated some interest. These figures are promising when compared with much of the previously reported participation levels for CoPs, and perhaps validate the predominantly viral marketing techniques used to build this CoP’s membership.

Table 2: KM CoP membership and participation levels

Nature of participation	Internal members	External members
Attended at least one meeting	35	12
Expressed interest but not yet attended a meeting	25	3
Suggested by others and not rejected the approach	28	0
Sub totals	88	15
Total	103	

As the KM CoP has grown organically, meetings have been held approximately every 3 months. The regularity of these events can be presented as another good general practice for any CoP. Greater detail about specific KM CoP meetings since its birth and formation is shown in Table 3.

Table 3: Overview of KM CoP meetings

Location	Date	Attendees (n)	Members (n)	Main topic / theme
Site A	17/01/02	16	24	<ul style="list-style-type: none"> • KM within the organisation and how to proceed with the KM CoP.
Site B	12/04/02	18	38	<ul style="list-style-type: none"> • Using the CoP as a way forward for KM in the organisation.
Site C	19/07/02	15	60	<ul style="list-style-type: none"> • Example KM initiatives and technologies and the benefits of KM.
Site D	02/10/02	22	97	<ul style="list-style-type: none"> • External speakers and development of internal strategies for KM.
Site E	28/01/03	33	103	<ul style="list-style-type: none"> • Connectivity: External speakers sharing KM experiences and activities within their organisations. • 1st proposal for CoP action.

Attendance level has remained very reasonable, averaging just below 39% of total members. The low in July can be explained by trying to hold the meeting in the holiday season. The jumps in CoP membership at the third and fourth forums are at least partially due to the chairs of those meetings who were particularly active in persuading people to become members. As has been reported earlier, nearly half of the KM CoP members have attended at least one meeting and undoubtedly the touring, road-show nature of the meetings rotating between company sites around the UK has helped in this respect.

Typical CoP meetings start with everyone arriving informally, a formal welcome to the day and an icebreaker. The icebreaker brings everyone to the same level and provides a common topic of conversation in order to encourage attendees to talk to each other, even if it is just to complain at how daft the icebreaker is. The icebreakers either help people to share KM knowledge or experience, or get to know each other.

This is followed by items such as presentations, led discussions, workshops or proposals, depending on what people have volunteered to prepare. A key point is that after each item (each is usually given about three quarter of an hour) there is a question / answer session and then a break of a few minutes so that people have time to discuss the ideas more privately or take a comfort break. Teas, coffees, etc are always on hand, and lunch is provided so that there are communal areas where everyone must go at some point.

To date minutes have deliberately not been taken, as the CoP does not take decisions at its meetings. Rather, it is left to people to get together outside the meeting to decide to work together on some action. This may change as the CoP begins to take a more active role in the company.

The content is deliberately eclectic reflecting the main objectives of the CoP. Initial meetings had items from all across the KM spectrum, but this format was altered in the light of feedback to bring more focus to each meeting. Essentially, the shotgun approach of the first meeting (i.e. presentations on XML, a KM society, research programmes and a software tool) has been modified to a jigsaw style session where a particular aspect of KM is looked at from a variety of viewpoints (e.g. external speakers on their company’s connectivity activities, a proposal for a connectivity tool, a discussion on that tool and the way forward for the CoP). This kind of workshop approach was strongly supported by the early survey responses and has allowed people to pick and choose which meetings to attend. As the meetings show, feedback is an essential element in shaping the development of the CoP.

3.4.2 Technologically assisted communication mechanisms

A website allows access to meeting presentations and reports. Although this resource is currently limited to internal company personnel, it fulfils an important role in keeping those unable to attend meetings up-to-date and forms part of capturing the legacy (or memory) of KM CoP. When examining the electronic participation levels among the internal members of the CoP, in particular postings to the website and discussion group (see Table 4), it should be remembered that the discussion group is a relatively recent addition to the KM CoP’s communications channels.

Table 4: CoP technologically assisted participation (internal members only)

CoP technologically assisted participation	Number of participants
Submissions to Website	13
Postings to Discussion Group	5
Both	3

Unpacking the website submissions (articles or items in which other members may be interested) further, analysis shows a range of participation, from 8 people having posted one article to 2 people who have posted five. In total, 13 people have posted 25 articles. Taken together, both these sets of figures do not paint a particularly impressive picture, reflecting the expectation (from research into online newsgroups) that only 14% of the KM CoP members would participate in online activity. Improvements to this situation are being sought. For example, the recent addition of the interactive discussion group hopes to encourage more two-way knowledge sharing and re-use among CoP members.

At this time, no figures on visits to the website, reading of newsletters or reading of website / discussion group, are available. Given that there has been no publicity and there are no links to the website, visit numbers are not expected to be high. The bi-monthly email newsletter, to which all members can contribute, provides updates on future meetings and events to all members on the KM CoP distribution list, and is the final mode of electronic communication.

3.4.3 Consequential KM activities within the company

Other face-to-face meetings involving members of the CoP have been facilitated as a result of the regular CoPs meetings and may also be counted as part of the KM CoP’s activities. Some of these might be thought of as follow-up activities, making use of contacts made during the regular meetings. This type of consequential work has begun to fulfil the CoP’s potential as a place where ideas are usefully interchanged.

One form this has taken is in internal consultancy work being undertaken where someone who has a problem has found someone with the answer through the CoP. An example of this is the

wider application of Learning from Experience techniques developed in one business unit, which were advertised partially via the CoP and picked up by other CoP members to be used in other business units.

Other work has been started by a group of employees including CoP members to assist connectivity across the company, which will eventually require the CoP membership's assistance to implement fully. Thus, although the CoP is not creating the activity, it will be used to bring the activity to fruition.

3.5 What are the problems?

Initially, the main problem has centred on a lack of member contribution, for example attending meetings, responding to surveys, proposing activities, submitting material to the website, volunteering to run meetings.

On the plus side, there is a willingness to give presentations at the meetings, and as the data presented earlier show, nearly 75% of members have had some interaction with other CoP members. The recent introduction of the interactive discussion group to the website is hoped to make these communications more fruitful. In addition, it is hoped that as KM activities grow within the company, the CoP will increasingly be seen as a place to gain ideas to assist work and share experiences. It is recognised that this is unlikely to happen spontaneously, and that an active co-ordination role is required to achieve the best results.

However, several concerns have been voiced about the KM CoP as it moves towards a critical development stage. Now that the founding stage seems complete, the direction and function of the CoP is under debate – how can it deliver value to the company while still effectively sharing knowledge about KM? The answer to the former point seems to be rooted in the latter – if the CoP can show it can deliver either on projects it itself determines or into other projects then it will be delivering value to the company. If it cannot point to what it delivers, then it will rightly be closed down. But the best course it should steer to deliver value is not, at present, clear.

3.6 What are the successes?

Despite the fact that the KM CoP is relatively 'young' in terms of development, examples of sound CoP practice (e.g. regular meetings and flexible participation) have already been outlined. Most members report that the CoP is a valuable entity that is meeting its core objective of sharing knowledge about KM. It is possible to unpack several inter-related issues, which can be claimed as indicative of successfulness.

3.6.1 Community awareness and identity

One successful outcome has been broader community awareness and a sense of shared identity, camaraderie and "*a unified purpose and feeling that 'you are not alone'*". This is also tied into a promotional role that the CoP could adopt and exploit in the future, as one survey respondent states:

"It [the CoP] has provided useful information and contacts to those who are in a position to promote Knowledge Management."

3.6.2 Cross-boundary connections and collaboration

The CoP has also served to bring "*people from different parts of the company together to share experiences*" in a non-judgmental arena in which to discuss ideas on KM. It has been particularly successful in sharing knowledge on potential KM practices, applications and

plans across representatives from different functional areas and business units, as well as creating and supporting links beyond the company boundaries. Similarly, one member relates how the CoP has “*opened up new lines of inquiry for research activities*”.

It can be argued that the structures and processes demonstrated by the CoP might be a blueprint for one future KM strategy for the organisation in “*creating systems and climates that encourage the free exchange of knowledge*”.

3.6.3 Changing views of KM

The initially techno-centric approach to KM of the CoP has adapted to include more activity in the softer, human aspects of managing knowledge. This awareness of a more holistic approach seems now to be a core tenet for the CoP, influencing much of its interests, activities and operation. The co-ordinator’s responses illustrate how the experience of being involved in the CoP has helped him to expand his “*appreciation of what’s involved in KM to cover the human aspects as well*”.

3.6.4 Value Provided

For the most part, value has had an individual and community level connotation. For example, the on-going development of tools such as health-check, benchmarking and lessons learned, are based on what the community deems useful to record and form part of the CoP’s legacy creation (i.e. re-usable knowledge). Table 5 provides an initial set of health-check questions based on these recommendations and guidelines.

Table 5: Health-check questions for CoPs

<p><u>1. Membership</u></p> <ul style="list-style-type: none"> • Who knows about the CoP? • How have members joined / been selected / been made aware? • What do members and others know about the CoP? • What mentoring / training is in place for new members?
<p><u>2. Objectives</u></p> <ul style="list-style-type: none"> • What does the CoP hope to achieve? • Has the function / goal / objective / purpose been made clear and agreed?
<p><u>3. Practices</u></p> <ul style="list-style-type: none"> • Are different forms of participation permitted? • What roles are there within the CoP • Have these roles been agreed? • What is recorded and documented for legacy purposes? • What guidelines have been developed?
<p><u>4. Value</u></p> <ul style="list-style-type: none"> • Has the potential value of the CoP been articulated? For who? • What measures of success and performance indicators are used?

To date some value to the company has also been demonstrated through the facilitation of knowledge exchange between business units. It is hoped to build on this good start, and to combine it with direct CoP activities.

4. Concluding comments

Overall, the evolution of this CoP shows some success in applying several espoused principles for community building, such as: clearly specifying objectives, allowing different levels of participation and creating a rhythm to the activities (Wenger et al, 2002). The findings outlined in this study also indicate progress on a number of related fronts, most notably in cultivating innovative KM practices and thinking. For instance, the CoP tackles several challenges for managing knowledge including:

- promoting both formal and informal practices (i.e. taking an holistic approach to KM)
- reducing duplication
- increasing focus (e.g. driving research)
- widening access (i.e. providing a first port of call for KM related questions, offering a repository of knowledge on KM in general and KM activity and people in the company).

Other key attributes of the KM CoP are summarised in Table 6.

Table 6: Overview of the KM CoP

Objectives	<ul style="list-style-type: none"> • Share latest ideas on KM – strategy, practices, techniques, technology etc. • Assist internal activities in the KM field.
Functions	<ul style="list-style-type: none"> • Link people with KM interests. • Point to new collaboration opportunities.
Activities	<ul style="list-style-type: none"> • Themed and focused meetings rotating around company locations. • Assist communications between like-minded people. • Work on identified activities.
Value	<ul style="list-style-type: none"> • Shift from focus on technology to holistic view of KM. • Assist with (internally) innovative applications of KM ideas.

The KM CoP is currently recognised as a well-designed, “*trailblazing*” model of working. It brings together people with common interests in an environment conducive to knowledge sharing, and has the potential to transfer intra-CoP learning to other contexts. Work to assist other interested parties in developing their own CoPs has already begun. It appears to have now reached a critical phase of development in which its future, in terms of objectives, functions, management role and value, is being negotiated within the community.

The key stakeholders appreciate that continued proactive management, encouragement, recognition and support is crucial to achieving the CoP’s potential. But it is also recognised that the CoP can continue in its current form and activities only as long as it can prove it is delivering some value to the company.

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Author for correspondence:

Dr Micky Kerr,
Institute of Work Psychology,
University of Sheffield, S10 2TN, UK.
Tel: +44 (0) 114 222 3269, Fax: +44 (0) 114 272 7206,
E-mail: m.p.kerr@sheffield.ac.uk , URL: <http://www.shef.ac.uk/~iwp>