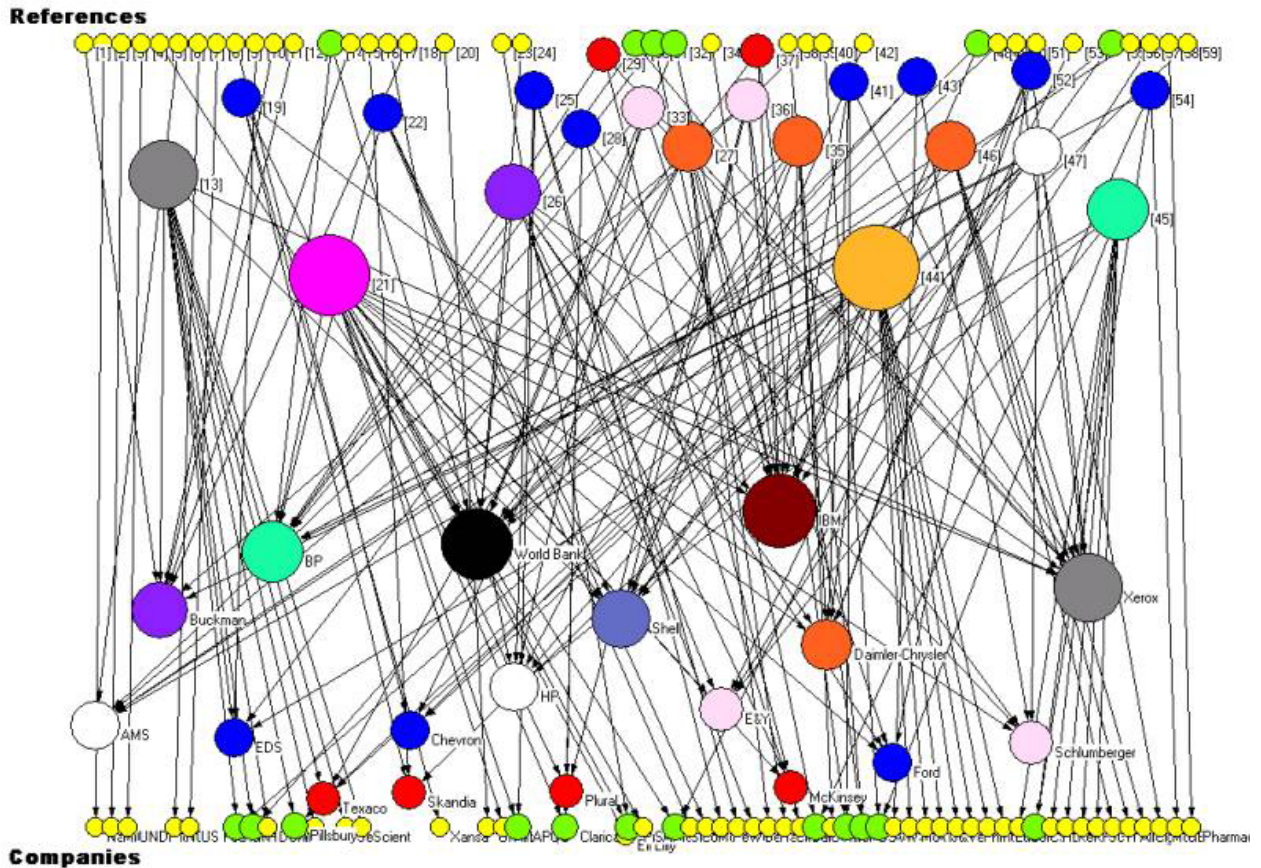


## Leading Network Development Practices in 2002: A Literature Review

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### Acknowledgement

This report was funded by BHP Billiton Operating Excellence, who have graciously given permission for this work to be shared with their colleagues in the Knowledge Management community.

## Executive Summary

Communities of Practice (CoP) is a term used to describe groups that form informally around a particular discipline or skill to enable their members to share and learn from each other. Informal CoPs have always existed in the modern organization.

“Networks” refer to a broader collection of like-minded people. They can describe a looser, more broadly scattered CoP, or a more formally supported group of people who’s job it is to facilitate and align CoP activities, which is the case at BHP Billiton. In the past five years we have seen an explosion of activity around CoPs, Networks and more generally, Knowledge Management. Most of the activity has been led by the large global organizations, with a majority of the global Fortune Top 10 companies prominent in the literature. Benefits to the business have been expressed in a variety of ways. They range from savings attributed to sharing a best practice, receiving quick advice for pressing operational problems, right through to generating innovative products or services.

Perhaps the most compelling findings are around how organizations are trying to balance the desire to more formally harness the power of these informal, cross enterprise CoPs, without destroying them or driving them further underground. Several different models were evident in the literature, with no single approach surfacing as yet as a “best practice”. For the more industrially focussed businesses, there is a clear trend to embed formal support for CoPs in the organisation’s business improvement or operational excellence programmes (e.g. Xerox, Raytheon, BP, Ford, DaimlerChrysler). For the more service oriented companies there has been greater attempts at having CoP participation embedded in personal job descriptions and goals (Ernst & Young, IBM, Schlumberger).

These models however are being continually adapted. Most of the best practice companies with CoPs have now had to withstand a significant business disruption, whether it be a major market downturn or a major merger or acquisition. Largely these Company’s CoP programmes have remained in tact and moving forward, though the level and means by which they have been formally supported have had to adapt to the business cycle at hand. In most cases the level of formal support never returns to the levels experienced at programme launch.

Overall the literature was abundant with both experiences and suggested practices for the profitable use of CoPs. A number of these have been compiled into a suite of “good practices”, organised against the BHP Billiton Way nine foundation elements.

## 1. Introduction

This study has been commissioned by BHP Billiton Operating Excellence to update an initial study conducted in 1997 on “Discovering Best Practice in Workplace Practice Networks”. The 1997 report drew from BHP’s own experiences in practice networks and from literature and discussions with some of the leading adopters of the day e.g. Dupont, IBM, Dow, McKinsey etc.. This work largely mapped out the different organisational models that had loosely been described as “networks”. It then went on to describe what best practice networks looked like using the Australian Business Excellence Framework (ABEF) as a reporting template.

This update report takes a fresh look at the literature, looking for any changes that may have occurred in the last 5 years. We have taken a more comprehensive look at a broader number of “best practice” companies making profitable use of practice networks. We have focused on companies who have, like BHP Billiton, travelled the practice network path for many years. We have tried to identify any systemic changes in how practice networks are operating today, as opposed to in 1997, when practice networks were just becoming popular. We have collected what we believe is “good practice” in practice networks. The reporting template used is BHP Billiton’s excellence framework underpinning the “BHP Billiton Way”.

## 2. Terminology

The maturing of the field has led to several attempts to standardise the terminology. The term “Communities of Practice”(CoP) has now largely been accepted as the umbrella term for describing, “informal groups bound together by shared expertise and passion for a joint enterprise” [20]. Under this umbrella exist a number of terms to describe different incarnations of a CoP. The most common sub-categorisation is to distinguish between formally supported, top-down, business aligned CoPs and the more informally established, bottom up, interest based CoPs. Different companies have adopted many different terms for formally supported CoPs. In BHP Billiton they are called “Networks”, in the World Bank “Thematic Groups” in Daimler Chrysler “Tech Clubs”, “Learning groups” in HP and “Delivery Networks” in BP.

## 3. Major Trends since 1997 Report

In 1997, reviewing the literature on the general topic of “Communities of Practice (CoP)” was not overly onerous. Ram Chatan’s 1991 Harvard Business Review article on “How Networks Re-Shape Organisations – For Results” and several articles from Dupont including Parry Norling’s paper on “Network or Not Work: Harnessing Technology Networks in Dupont” were key sources on the 1997 “state of the art”.

Since 1997 we have seen an explosion of published works on the topic of “Communities of Practice”. For the most part the “Knowledge Management” wave of

which CoPs are a central theme, could be largely responsible for this increased focus on CoPs. A simple Internet search by year using the term “Communities of Practice” yielded the following number of “hits”:

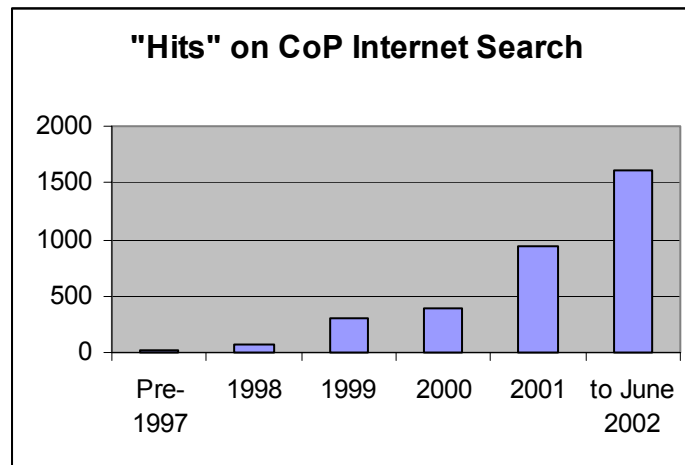


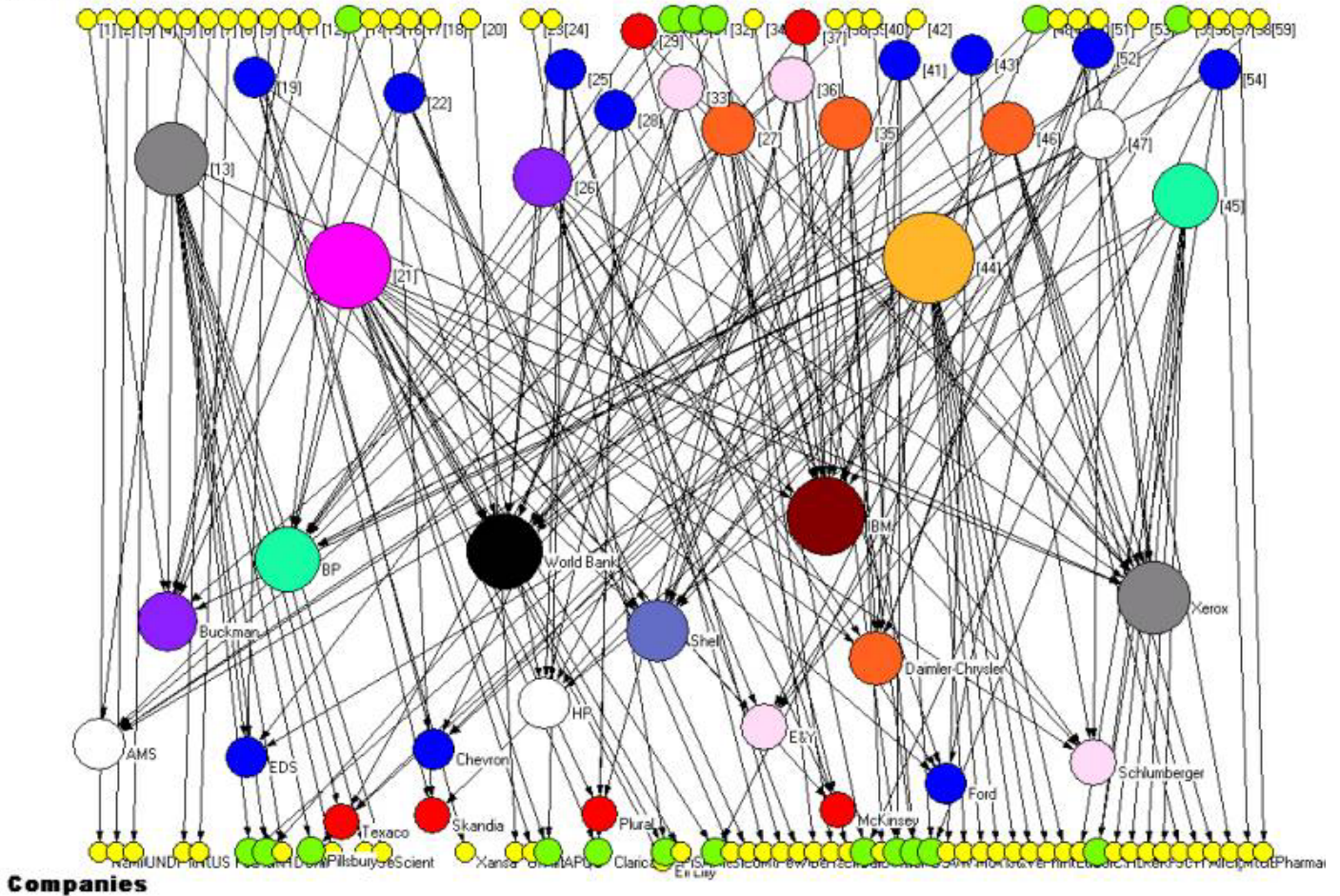
Figure 1 – Internet Search Statistics on “Communities of Practice”

Additionally there have been several books and commissioned studies e.g. APQC 2000 study, focussed on the topic. Clearly for this review it was not possible to complete a comprehensive literature review of the topic. We had therefore chosen to limit our search to those articles and papers that specifically mention company experiences and those key publications promoting a “best practice” in the formation and use of CoPs. Despite the filtering we have identified close to 60 articles referencing company experiences with CoPs and a further 25 articles describing “good practice”.

The biggest noticeable change since 1997 has been the increased adoption of Knowledge Management and CoPs by the large corporations and to a lesser extent, governments. Surveys indicate that up to 80% of global corporations have some form of knowledge management initiative in place [44], from which one could assume that CoPs play a central part. The APQC 2000 CoP study [26] identified amongst their partners that on average they had 89 actively supported communities (but ranged from 15 to 350, so “actively supported” has a broad interpretation). It also nominated manufacturing, scientific or engineering disciplines and consulting as the leading industry sectors for CoP usage.

The following graphic identifies those corporations most cited in the literature:

**References**



**Figure 1 – Company Citation from the Literature**

The size of the circles are scaled to the number of citations (for companies) or the number of citations made (references). The most regularly mentioned companies are (four or more mentions):

Company	Industry
IBM	Information Technology / Consulting
World Bank	Banking / Finance
Xerox	Information Technology / Manufacturing
BP	Oil & Gas
Buckman Laboratories	Chemicals
Shell	Oil & Gas
Daimler Chrysler	Automotive Manufacturing
HP	Information Technology / Consulting
American Management Systems	Consulting
Ernst & Young	Consulting
Schlumberger	Oil & Gas
EDS	Information Technology / Consulting
Chevron	Oil & Gas
Ford	Automotive Manufacturing

**Table 1 – Most Cited Companies**

One can see from the list that organizations involved in Engineering / Science disciplines dominate. All companies are very global in nature. The Oil and Gas

industry in particular could be singled out as an industry that relies on highly technically skilled practitioners, makes significant capital investments and have a broad geographic spread. Likewise the Information Technology / Consulting industry relies on a highly technical skill base which is challenged to keep up with the rapid rate of change.

Looking at the key reference sources / authors:

<b>Author</b>	<b>Affiliation</b>
Verna Allee	Know Inc. – KM researcher / Commentator
Etienne Wenger	Independent author – formerly Institute for Research on Learning
Richard McDermott	McDermott Consulting – formerly Shell
William Snyder	Social Capital Group
Gartner	IT Research Publication
R. Whiting	Information Week
APQC	Benchmarking Company (assisted by Richard McDermott)
Kristine Ellis	Training
Henry Edmundson	Schlumberger

**Table 2 – Most active authors**

Of the above Etienne Wenger is recognised as the person to coin the phrase “Community of Practice” and wrote most of the early articles on the topic. Verna Allee is one of the leading authors / researchers in the Knowledge Management field. Richard McDermott is also well regarded for his work around the practicalities of CoPs and acted as the subject matter leader for the APQC studies on the topic.

So are CoP’s now an accepted part of all large and global organizations? Based on the literature surveyed, it’s certainly heading that way. However there are some notably large and global organizations that do not figure in the Knowledge Management or CoP literature. Others like Dupont were a good example of a company making profitable use of CoPs in 1997 but now appeared to have backed away from at least formal networks. It does however beg the question; “are successful CoPs really a pre-condition to business success for large, global organisations?”. The following table illustrates the penetration of CoPs and KM into the Fortune Global Top 10 companies (at least as evidenced in the literature):

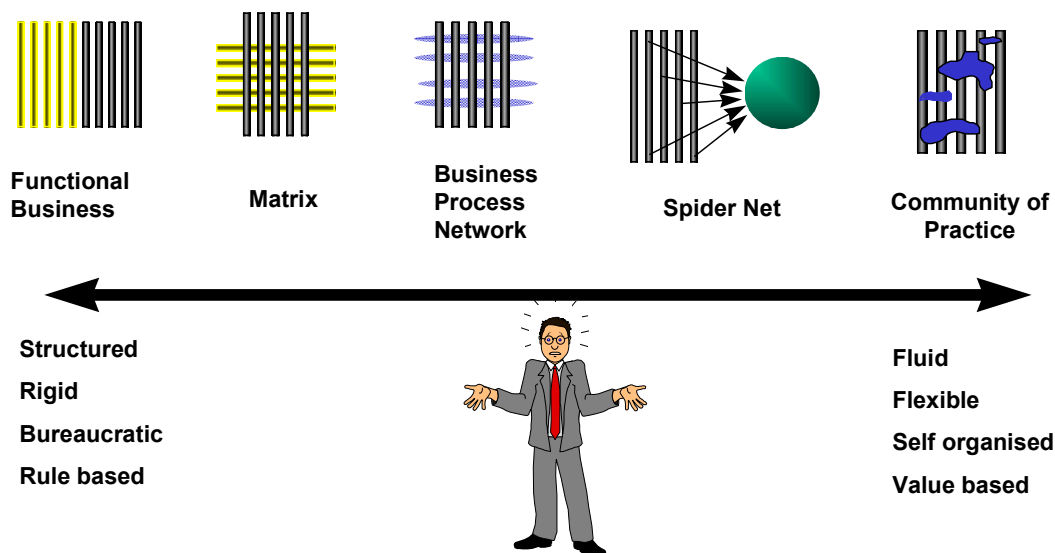
Global 500 Rank	Company	CoP Leader	KM Leader
1	Exxon Mobil		
2	Wal-Mart		
3	General Motors		
4	Ford Motor	Yes	Yes
5	DaimlerChrysler	Yes	Yes
6	Royal Dutch Shell	Yes	Yes
7	BP	Yes	Yes
8	General Electric		Yes
9	Mitsubishi		
10	Toyota Motor		Yes

**Table 3 – Fortune Global Top 10 and KM/CoP Leadership**

This table would indicate that use of CoPs may not yet be universally accepted as a pre-condition for success, but they have clearly moved beyond the experimental stage in their maturity.

#### 4. Networking Models

The 1997 study also provided a discussion around the potentially different forms of CoPs, going from the more formal and structured to the very informal and unstructured:



**Figure 2 – Networking Models**

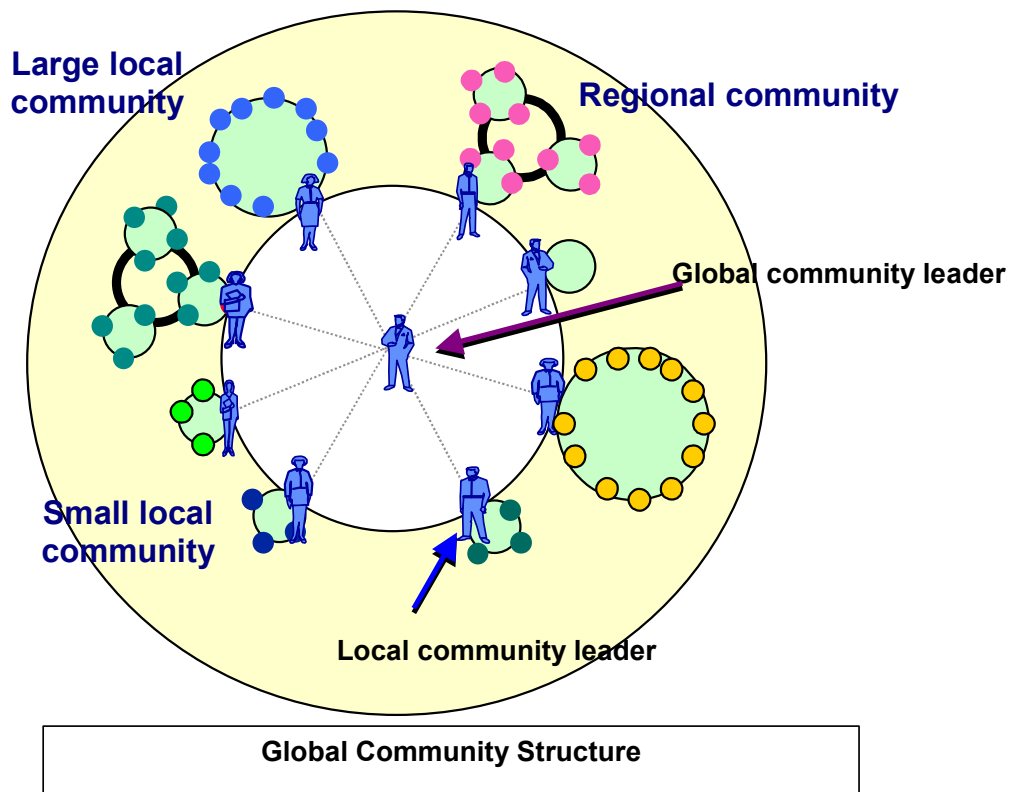
The APQC have since offered a categorisation of networks based on intent [26]:

- To provide a forum for members to help each other solving everyday work problems (like the Global Maintenance Networks Discussion Group);
- To develop and disseminate best practices, guidelines and procedures;

- c) To organise, manage and steward a “body of knowledge” e.g. deep well drilling; and
- d) To innovate and create breakthrough ideas, knowledge and practices.

The 1997 paper distinguished between business process networks and communities of practice. That distinction would seem now to be better described as a continuum of degrees of formality in the support for CoPs. Conceptually, the BHPB “Network” is best seen as a form of CoP, inheriting all of the cultural aspects and advantages of CoP’s, but also being publicly aligned to a particular business initiative or direction.

However, John Seely Brown and Paul Duguid [52] have chosen to distinguish “Knowledge Networks” from CoPs, not on the basis of degree of business alignment or formality, but on the level of potential cohesiveness. Networks are defined as geographically broader and less cohesive than CoPs, whose role is more one of information sharing than true knowledge sharing. The argument Seely Brown and Duguid make is that the levels of trust required to achieve true knowledge sharing and shared practice can only come from regular, intense and reciprocal interactions. This is largely not possible with widely distributed networks. The implications for organizations wanting to achieve true knowledge sharing through networks is how these networks can appropriately nurture and align local CoPs, where true knowledge sharing is more viable. This is illustrated in the composite picture of local communities within a wider global community (network in BHP Billiton parlance).



**Figure 3 - Global Community (Network) Structure (Source: Richard McDermott Consulting)**

A number of authors have also gone to some effort to distinguish between virtual teams (spider nets) and CoPs [72][44]. The clear differential here is that virtual teams are brought together for a particular task and then disband. CoPs exist as long as their membership gains value from interacting together. The interaction between CoPs and virtual teams is often in situations where a formal CoP (or Network in BHPB parlance) chooses to sponsor a team to conduct a particular task e.g. a process audit on a site or the development of a new policy. The team would indeed disband at the end of the task but the sponsoring CoP would then take on the responsibility for promulgating the results to its broader membership.

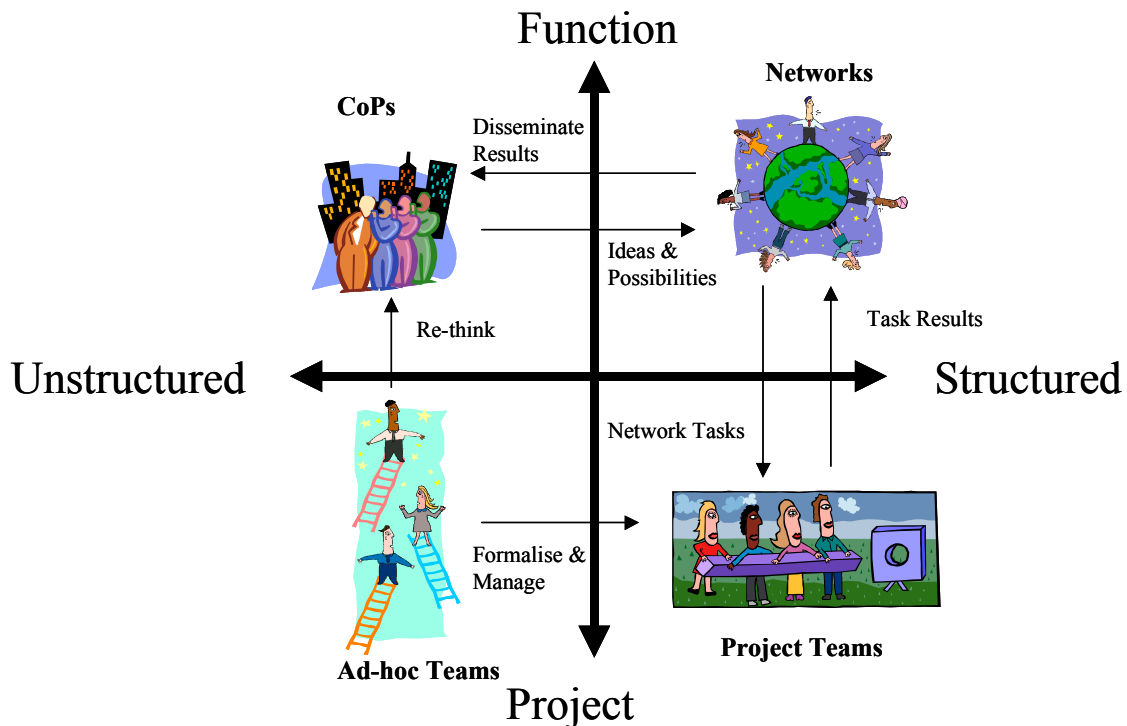
The other models described in 1997 were not heavily discussed in the literature on networking. However, one observation made is that organizations are increasingly organising themselves either around customer sectors or product sectors, effectively fragmenting the “technical” disciplines that may previously have enjoyed more formal status in the organization. Daimler Chrysler’s Tech Clubs were established as a direct response to a restructure to focus the organization on product classes. While a functional matrix exists for the traditional areas of Engineering, Marketing, Finance, Supply, HR etc., other more technical cross product disciplines like braking systems, fuel systems would have been totally fragmented if not for the establishment of the Tech Clubs.[26][51]. It is therefore not surprising that most CoPs in corporate organizations are tending to follow “technical” disciplines.

New structures and models have been raised since 1997. Hubert Saint-Onge [87] from Clarica Life Insurance talks of a new organisational structure at Clarica, with a “highly integrated accountability spine and a complementary network of communities”. Saint-Onge uses the term “Network” to describe the collection of CoPs. He also classifies CoPs within Clarica into “Informal”, “Supported” and “Structured”. Saint-Onge also reports an emerging trend to include external members into the company’s CoPs. At Clarica, Saint-Onge argues that in forming communities one should be looking from the “customer in” not from the “inside out”. While the inclusion of external members inside CoPs is not yet a strong trend we have noted that companies like Schlumberger, Hallmark and Clarica, with its Agents CoP have mentioned that they do accommodate external CoP members. The World Bank nominates the inclusion of external parties into its knowledge programme as a current challenge for them<sup>1</sup>.

In summary, there is clearly now a recognition that both informal and more formal CoPs need to exist in an organization. Clear distinctions are made between CoPs and teams. Usually the number of formal CoPs is limited. In general, the term “Network” has been used to describe a broad collection of CoPs. Where the Network is formally supported, it is seen as more of a facilitating / aligning / information sharing unit than a vehicle for true knowledge sharing and learning. The following figure attempts to characterise the potential interactions between CoPs, Networks and Teams:

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<sup>1</sup> [www.worldbank.org/ks/](http://www.worldbank.org/ks/)



**Figure 4 – CoPs, Networks and Teams**

In this framework the Network plays the part of aligning both CoPs and Project Teams. A typical scenario might be the Network supporting a maintenance evaluation. A sponsored project team would perform the evaluation. The results would be reported back to the Network who would disseminate the new knowledge and learnings through the CoPs (who may have had members involved in the project). Another might be a CoP recommending to the network a need for a common practice for reporting safety incidents. It may have already developed an 80% solution but is looking to the Network to more broadly socialise the idea amongst other communities and sites. If adopted, the Network would then facilitate a project team to complete the task.

## 5. Why are Companies Investing in CoPs / Networks?

The above analysis has indicated the rapid growth in the adoption of CoPs and the industry sectors that appear to be leading the way. If we look at the list of early adopter companies, a common theme is that industry sector rationalisation is leading to larger and more globally distributed organizations. The effects of globalisation has meant that companies are now having to design organisational structures which can deal with a highly distributed workforce with a variety of languages and cultures and a highly distributed market place, with similar geographic attributes and nuances. The traditional matrix organization is becoming multi-dimensional with organizations juggling product, customer, geography, function and discipline into their structures. With the twin drivers of either Product or Customer focus providing the dominant formal organisational structures, it has been the technical disciplines that have suffered from fragmentation. CoPs have largely been designed to re-build or sustain technical competencies as organizations re-structure to focus on products/customer sectors.

While the benefits of CoPs are often not expressed in financial terms, there is sufficient evidence that the benefits currently being obtained are growing and that CoPs are here to stay. The following table provides some testimonies to the value of CoPs from the leading adopters:

<b>Company</b>	<b>Benefit Testimonies</b>
Daimler-Chrysler	<p>“Communities are an integral part of the Daimler-Chrysler business model. They are apparent in the strategy of the organization and its structure and are a part of employees’ daily work. Direct benefits include:</p> <ul style="list-style-type: none"> <li>• A more agile product development process.</li> <li>• A synchronised production process</li> <li>• A standardised customer experience, and</li> <li>• A governance system that has enhanced co-ordination and created a cohesive culture”</li> </ul> <p>“Post merger integration identified Tech Clubs as a best practice activity among the DaimlerChrysler business units”</p>
Ford	<p>“Best practice replication process works effectively because the process started from the ground up. Everything that is shared is proven. The communities own the process and the people, and IT provides the tools. The results of best-practice replication are:</p> <ul style="list-style-type: none"> <li>• more than 5,000 replications a year,</li> <li>• \$1.25 billion of projected value and \$850 million of actual value added to the company in the first year</li> <li>• the launch of 20 CoPs with more than 750 primary focal points, and</li> <li>• a health and safety derivative of the process”</li> </ul>
Schlumberger	<p>“...communities connect the hard and soft dimensions of the career of a Schlumberger scientist or engineer...they strengthen and accelerate the evolution of things that happened before....customer savings to date are greater than \$10million. Incremental revenue for our customers exceeds \$10million. Savings of \$1million in the D&amp;M area, mainly in training costs.”</p>
Cap Gemini Ernst & Young	<p>“Communities of Practice enable CGEY to do more business with more people. Consultants are able to sell business with less effort because they are able to re-use approaches and content....other benefits include increased retention in active and animated communities”</p>
Xerox	<p>“The belief at Xerox is that the vast base of knowledge from concept to delivery is represented within its communities of practice....</p> <ul style="list-style-type: none"> <li>• The Eureka community had a 5% reduction in service hours and a 5% reduction in parts costs at a</li> </ul>

	<p>total \$11.2 million in savings.</p> <ul style="list-style-type: none"> <li>• ..one software organization achieved Level 2 (capability maturity model) in 14 months against an industry average of 25.5 months.</li> <li>• ...time to market cycles have been reduced by 75% in the past 6 years.”</li> </ul>
BP	<p>“Peer group structure and conversations set the framework for learning throughout BP...Peer groups manage BU Capital Programs...the Network’s purpose is to enable Business to deliver...”</p> <p>“284 Networks of which 25 are “delivery networks” with performance contracts with Senior Leadership...”</p> <p>“I have just finished a peer assist where we saved the site something like \$12-20million and the company a number we are still trying to calculate”</p> <p>“A retail lubricants peer assist in South Africa saved \$30million in two days”</p> <p>“..the Green operations delivery network was recently contracted to deliver a plan to reduce greenhouse gas emissions by 10% by 2007”</p>
World Bank	<p>“Communities are the heart and soul of knowledge sharing in the World Bank” – James Wolfensohn, President</p>
Shell	<p>“...pilot communities realized a multi-million dollar savings in the first 6 months. Most of this came from community members helping each other solve everyday work problems”</p> <p>“...the network saved me 3 months of work, minimised risk, and maybe increased the chances of success by 10%”</p> <p>“these communities help us see that Shell could be less centralised and still be a global company by using the communities to share ideas”</p>
Chevron	<p>“Chevron also attributes much of its gains in energy-use management to knowledge sharing. The company has saved more than \$650 million in energy efficiency since 1993 — thanks largely to the efforts of a network of people that evaluates company-wide energy costs. Moreover, best practice initiatives have indirectly helped the company realize a \$1.4 billion reduction in annual operating expenses in the last five years”</p>

**Table 4 – CoP Testimonies**

## 6. Networks – Good Practices Summary

Good practices could be interpreted or mapped into the BHP Billiton Way foundations is a number of ways. The following examples of “Good Practice” have been identified in the literature and codified according to the BHP Billiton Way nine foundation elements:

### Values, Mission and Vision

#### Interpretation:

- Is there explicit support for CoPs and networks in the corporate mission and vision?
- Do CoPs and networks develop their own particular mission and vision?
- Does the corporate values statement or behaviour code support collaboration, knowledge sharing, etc
- Is the corporation focused on development of social capital?

A growing number of companies are incorporating the support for knowledge sharing into their formal vision, mission statements (World Bank[26], Siemens[26], BP[31], Buckman[1]) and then in related statements, have nominated “Communities of Practice” as the heart and soul of their Knowledge Programme (World Bank, Siemens, Clarica).

Could we say that any company has achieved a total embedding of CoPs into the core values of the organization? A measure of this may be how sustainable CoPs have been through severe business downturns. The answer is that despite the suggestions from Wenger et al that CoPs may be the preferred core organisational structure of the future, there is not a lot of evidence at this stage. Strong networks will survive severe business downturns but Networks and CoPs supported by structural mechanisms like corporate funding and resources appear susceptible to budget cuts destroying them. Virtually all of the benchmark companies like the World Bank, BP, Schlumberger, DaimlerChrysler, IBM etc..in CoPs provide these sorts of mechanisms to support their CoPs/Networks.

Are organizations promoting the “Social Capital” aspects of effective CoPs? Implicitly all adopters of CoPs talk about the relationship and trust building benefits of CoPs. IBM’s Institute for Knowledge Management Director, Larry Prusak, selected CoPs as a key theme for research by the institute. A key result from this work was a determination that organizations will gain explicit value from building social capital through CoPs both internally and externally [88]. That said, most organizations, including IBM, would not be justifying an investment in CoPs on social capital alone as yet.

***With most of the benchmark organizations, CoPs / Networks would be formally recognised as part of their organisational structure. Knowledge sharing behaviours would also be mentioned at the vision/mission statement level. We suggest this is “good practice” level for this foundation element.***

## Summary of Good Practices Criteria Mapped to Foundation Elements

<p><b>VALUES, MISSION AND VISION</b></p> <ul style="list-style-type: none"> <li>• Is there explicit support for CoPs and networks in the corporate mission and vision?</li> <li>• Do CoPs and networks develop their own particular mission and vision?</li> <li>• Does the corporate values statement or behaviour code support collaboration, knowledge sharing, etc</li> <li>• Is the corporation focused on development of social capital?</li> </ul>	<p><b>EVALUATION PROCESS</b></p> <ul style="list-style-type: none"> <li>• Is there a health check of the CoPs?</li> <li>• Do CoPs use evaluation processes formally or informally?</li> <li>• Do CoPs support benchmarking?</li> </ul>	<p><b>PLANNING AND ORGANISATION</b></p> <ul style="list-style-type: none"> <li>• Does the corporation formally plan for CoPs?</li> <li>• Do CoPs engage in formal planning of their own roles?</li> <li>• Do CoPs participate in business planning?</li> </ul>
<p><b>PERFORMANCE MANAGEMENT</b></p> <ul style="list-style-type: none"> <li>• Are individual performance management systems used to create support for CoPs?</li> <li>• Is the corporation “performance managing” the CoPs?</li> <li>• Are networks referred to in performance reviews and succession planning?</li> <li>• Are there rewards and recognition associated with network activity / achievements?</li> </ul>	<p><b>MARKET FOCUS</b></p> <ul style="list-style-type: none"> <li>• Do networks play a role in the company’s relationships with customer?</li> <li>• Is there external participation in internal networks?</li> <li>• Do networks have “customers” in the organization?</li> <li>• Do networks practice customer relationship management?</li> </ul>	<p><b>METRICS AND REPORTING</b></p> <ul style="list-style-type: none"> <li>• Does the corporation measure the performance of networks as networks?</li> <li>• Does the corporation measure the contribution of networks to the business?</li> </ul>
<p><b>LEADERSHIP AND ALIGNMENT</b></p> <ul style="list-style-type: none"> <li>• How is organizational leadership engaged with / by CoPs?</li> <li>• How do CoPs establish internal leadership and alignment?</li> <li>• Do CoPs contribute to leadership development?</li> <li>• How are networks funded; corporate; distributed? Would activity stop if funding stopped?</li> </ul>	<p><b>KNOWLEDGE SHARING AND INNOVATION</b></p> <ul style="list-style-type: none"> <li>• Are CoPs inherent in your knowledge management strategy?</li> <li>• What tools and systems are used by CoPs to share information?</li> <li>• Are CoPs specifically focused on innovation?</li> </ul>	<p><b>IMPROVEMENT METHODOLOGY</b></p> <ul style="list-style-type: none"> <li>• Do the CoPs connect to the organizations improvement methodology?</li> <li>• How do CoPs contribute to best practice replication?</li> <li>• Do CoPs hold conferences and fairs or create learning programs?</li> <li>• How is the art of creating CoPs improved?</li> </ul>

## **Performance Management**

### Interpretation:

- Are individual performance management systems used to create support for CoPs?
- Is the corporation “performance managing” the CoPs?
- Are networks referred to in performance reviews and succession planning?
- Are there rewards and recognition associated with network activity / achievements?

Largely participation in CoPs and Networks is seen as a voluntary activity. The rewards therefore are more implicit than explicit. Formal “performance management” could even be seen as inappropriate for staff members participating in CoPs. That said, rewards and recognition do play a part in successful CoPs and Networks. For example Xerox holds a major awards function to recognise the accomplishments of their CoPs. Ford has written participation in CoPs into job descriptions and therefore contributions become part of the standard performance review. Xerox, Ford, Siemens and Schlumberger have formal “best practice” repositories. Individuals and teams are recognised for contributing an “accepted” best practice, tip or hint.

It is perhaps the consulting companies like McKinsey, E&Y and AMS who tend to talk about introducing knowledge sharing measures (which includes CoP participation) in their performance assessment processes for all staff. Others like BP and Schlumberger suggest that this is not really required as participation should be largely voluntary and is a reward and motivation in itself. Xerox also reported on their copier repair members rejecting “pay for tips” in favour of peer recognition.

***“Good practice” could be summarised by a quote from CGEY “Employees are not asked to volunteer to be members of a community, they are expected to do so as part of their job requirement” [26]. In other words, “performance management” around CoPs is not about measuring CoP performance or performances of individuals within CoPs. It’s more about knowledge sharing behaviours being assessed as a core performance assessment factor and CoP participation being a useful vehicle for demonstrating such behaviours.***

## **Leadership and Alignment**

### Interpretation:

- How is organizational leadership engaged with / by CoPs?
- How do CoPs establish internal leadership and alignment?
- Do CoPs contribute to leadership development?
- How are networks funded; corporate? distributed? Would activity stop if funding stopped?

There are now several examples of CEO’s making explicit announcements with respect to knowledge sharing and Networking (John Browne, BP [31]; James Wolfendun – World Bank [11], Siemens [1998 Annual Report]). The true test however is when the broader leadership base unquestionably accepts and supports the

role of CoPs / Networks into the business and actively engages them in the needs of the business.

The benchmark is probably the World Bank, who explicitly re-directed a major part of the budget to the formation of their thematic groups. The remaining benchmark companies like Xerox, IBM, BP, Schlumberger, Shell have all articulated ways that they encourage the alignment of their CoP activity to the needs of the business. This is largely achieved through “management structures” devised around company wide CoP programmes. The APQC Report on CoPs [26] characterises the different support structures seen as:

- Board Support Model (World Bank)
- Community of Leaders Support Model (DaimlerChrysler)
- Central Staff Support Model (Ford)
- Functional Level Support Model (Xerox)

All organizations emphasised the importance of CoP leadership and the professional development benefits from becoming a CoP leader. A number of themes are common across each model:

- *CoPs are supported with training and facilitation services as a minimum*
- *CoP leaders form their own CoP as an overseeing group*
- *Executive engagement is through a formal board or the use of executive sponsors*

*The existence of each of the above themes in a Corporate CoP / Network programme is considered “good practice”.*

With respect to funding models, there existed a variety of models that mix and match centralised versus decentralised funding mechanisms. *A “good practice” funding model would see a high level of centralised funding to help establish a CoP programme and support CoPs with training and IT infrastructure. However as the programme matures there is evidence that the benchmark CoP companies are using higher levels of decentralised funding (DaimlerCrysler, Ford, Schlumberger, World Bank and Xerox) though in all cases other than Xerox, a degree of centralised funding is maintained.*

### **Evaluation Processes**

Interpretation:

- Is there a health check of the CoPs?
- Do CoPs use evaluation processes formally or informally?
- Do CoPs support benchmarking?

Most best practice companies measure CoP health on at least an annual basis, but often more frequently. For DaimlerChrysler, community health is measured quarterly for all communities. CoPs are normally given a minimum of 6 months to get established before formal metrics are applied.

From the literature it would appear that Siemens has progressed the most in coming up with reportable metrics for CoP health [26]. For some, like CGEY, the internal health measure is a proxy for business value generated (CGEY have confirmed this with correlations between CoP health and health of the business in the areas they operate).

Many of the “manufacturing” centric companies like Ford, DaimlerChrysler, Raytheon use evaluation processes as a core activity in selecting and sharing best practices.

*Good Practice in the area of Evaluation would appear to be:*

- *The existence of a CoP health check process that is run on a six monthly basis (at least)*
- *“Evaluation” being a core activity of CoPs (whether its new practices, new ideas or new information)*

### **Market Focus – Customers/Suppliers**

Interpretation:

- Do networks play a role in the company’s relationships with customers?
- Is there external participation in internal networks?
- Do networks have “customers” in the organization?
- Do networks practice customer relationship management?

The engagement of customers into CoP activities is more evident with the service companies like CGEY, Schlumberger, Clarica, HP and IBM (services area). For example, Schlumberger engage their clients in jointly funding CoP events. They also measure the customer value added achieved by their CoPs. Clarica talk about “moving from the customer interface in, not from the inside out”.

There is less evidence of CoPs being extended to engage suppliers or alliance partners. No doubt these informal CoPs would exist, especially in the automobile sector where supply chain integration is greatest. Enabling technologies are likely to be a barrier, with company firewalls not making it easy for external parties to easily participate via electronic means.

Do CoPs see the formal organization as their customers? A number of authors have written about the interaction between the formal and the informal organization [21][44][87][72]. The relationship tends to be portrayed more as a “close collaboration” than strictly a customer-supplier relationship. In the authors’ opinion the Dupont characterisation of the relationship as provided in the 1997 paper is still the best available:

<b>Practice Network Responsibilities</b>	<b>Line Management Responsibilities</b>
Effectiveness	Efficiency
“Possibility seeking” arm	“Implementing” arm
“Doing the right thing”	“Doing it right”
To tell the line management the possibilities	To tell the network its needs
Understand operational needs, look for the right members, facilitate, be an agent for discovery	Provide direction and optimal resource allocation
Assist with paradigm shifts, systems, processes and capabilities (like a trusted consultant)	Be open to collaborative decision making with a wider group

**Table 5 – Relationship between the informal and the formal**

*Good practice in Market Focus for CoPs is the recognition that all CoPs have customers, whether they are internal or external. A key indicator for success is joint support and participation of CoP customers in CoP knowledge-sharing events.*

### **Knowledge Sharing and Innovation**

#### Interpretation:

- Are CoPs inherent in your knowledge management strategy?
- What tools and systems are used by CoPs to share information?
- Are CoPs specifically focused on innovation?

CoPs are the preferred vehicle for sharing knowledge across an organization, all of the literature on CoPs supports this premise. As for innovation, the APQC [26] characterises CoPs into a number of different types: a) helping b) best practice dissemination c) steward a body of knowledge and d) innovate and create breakthrough ideas. The APQC nominate Daimler-Chrysler’s emerging technology group, Siemens ShareNET, HP Consulting business intelligence, Shell, Motorola and 3M as having examples of “innovate and create breakthrough ideas” CoPs.

Of the four APQC defined categories of CoPs, it would be the “best practice dissemination” that makes up the majority of CoPs reported on. Typically those categorised in the innovation area, work either in R&D or marketing areas. The Siemens ShareNET and HP business intelligence CoPs are largely collecting and sharing market intelligence, looking for areas for new product development.

While not a focus in the recent literature, it could be argued that the genesis of CoPs could be found in the R&D communities. R&D communities tend to easily span organisational boundaries and knowledge-sharing events are accepted as standard practice. With respect to breakthrough innovation, it was interesting to note that there was little evidence in the literature of marketing based communities interacting with R&D based communities.

*Good practice in Knowledge Sharing and Innovation for CoPs is considered as:*

- *A CoP development and support programme being central to the Knowledge Sharing programme.*
- *A healthy number of CoPs in the R&D and Marketing areas, in support of breakthrough innovation. And better still, a CoP which integrates R&D and Marketing, for innovation.*

### **Planning and Organisation**

Interpretation:

- Does the corporation formally plan for CoPs?
- Do CoPs engage in formal planning of their own roles?
- Do CoPs participate in business planning?

In general, those organizations that have built a formal knowledge management programme have also introduced a formal planning process for CoPs, in particular for the business aligned Networks. Siemens would appear to lead the way in terms of detailed planning processes and organisational structures to support planning. All of the selected best practice organizations from the APQC study in 2000 [26] have provided organisational models for how their CoPs are “managed”. Typically this has been in the form of establishing a KM function and/or a KM board or steering team. Ownership of the CoP strategy was typically at the senior VP level.

Best Practice organizations have also gone to some lengths to plan how CoPs should operate internally, what roles should exist and what activities should be undertaken. These organizations also make some effort to plan for training of CoP leaders and other CoP roles e.g facilitators, information managers etc..

Another important element of planning is deciding which CoPs to formally support with resources. In all it appears that senior executives are involved at a steering level in the support of CoPs. In most cases, money was used as the vehicle for encouraging business aligned CoPs to form. The World Bank is the most dramatic example of this, investing some \$55million or 3% of their total budget to the formation of CoPs.

There was little evidence of CoPs being directly involved in Company strategy or business plan formulation. However indirect involvement would be achieved through either the executive sponsors or the Knowledge Management board (if it exists).

*Good Practice in Planning and Organisation for Cops would be:*

- *The existence of a formal management structure for CoPs company wide, with ownership at the senior VP level.*
- *The existence of a formal planning process for aligning particular CoPs with the business.*
- *A formal planning process for how CoPs will be supported with training, infrastructure etc..*

## **Metrics and Reporting**

### **Interpretation:**

- Does the corporation measure the performance of networks as networks?
- Does the corporation measure the contribution of networks to the business?

Several companies have designed evaluation mechanisms for their CoPs. (World Bank, Xerox, Siemens, HP, DaimlerChrysler, etc..). Typically metrics are divided into a) internal CoP health checks and b) business value generated. This second measure is acknowledged as problematical i.e. who owns the benefit? Most companies rely on acknowledgements, stories, testimonies etc., from either members or business units.

With respect to benchmarking and including CoP /Network performance in formal benchmarking exercises, companies like Siemens, Xerox, Raytheon, BP and Ford talk about metrics for CoPs and aim to include them in their overall benchmarking programmes. Typically these are either as part of a six-sigma initiative or they have “borrowed” metrics from the software industry and made adaptations to the Software Engineering Institutes 5 level capability Maturity Model (CMM).

Are there independent benchmarking data available for CoP performance? At this stage, no. Companies like Siemens, Xerox and the World Bank have collaborated on measurement techniques but this has yet to evolve to anything like an international benchmarking standard.

With respect to reporting CoP metrics, Siemens metrics are both numerous and comprehensive, with the final results feeding into the Company’s balanced scorecard.

### ***Good Practice in Metrics and Reporting include:***

- ***The existence of a metrics system for benchmarking CoP performance.***
- ***The existence of a “Business Value Achieved” process which if not totally quantitative, should collect testimonies and acknowledgements of value added.***
- ***Where possible, the integration of the summary metrics into the organization wide balanced scorecard (if it exists).***

## **Improvement Methodology**

### **Interpretation:**

- Do the CoPs connect to the organizations improvement methodology?
- How do CoPs contribute to best practice replication?
- Do CoPs hold conferences and fairs or create learning programs?
- How is the art of creating CoPs improved?

In some companies knowledge sharing is closely linked to the organization’s overall improvement methodology. Raytheon is probably the most aggressive at connecting their knowledge programme and CoPs to their six sigma programme.

At BP the KM programme has been integrated into their Operating Excellence programme. Ford has a best practice replication focus for their CoPs.

CoPs have also been talked about as vehicles for selecting, sharing, developing and replicating best practices. This is a fairly common activity for CoPs across the board, especially for those focussed on best practice sharing. Xerox, BP, Shell, IBM, Ford and Daimler Chrysler fall into this category. One would assume that CoPs would also apply the improvement methodologies to themselves, though this is not significantly reported in the literature.

Another important factor in improvement methodologies is the “learning” effect. Several authors identify learning and competency development as the core purpose of CoPs. BP’s peer assist and after action reviews are based on a fundamental learning model [31]. Hewlett Packard refer to their CoPs as “learning communities” [11]. Etienne Wenger’s defining book on Communities of Practice focuses on learning, meaning and identity [72]. Much more advice is now available in “text book” form for creating and sustaining CoPs [21][38].

***Good Practice in Improvement Methodologies for CoPs include:***

- ***CoP activities being embedded in the organization’s business improvement programme.***
- ***CoPs applying improvement methodologies to themselves.***
- ***The organization recognises a “learning model” which underpins all CoP activities.***

## **Summary and Conclusions**

There has clearly been a substantial increase in the adoption rate of CoPs as central planks of organization wide knowledge management programmes since 1997. The literature published on CoPs has grown exponentially in the past 5 years. Large, global corporations appear to be leading the way. Of the Fortune Global Top 10 companies, over half are well represented in the literature as making profitable use of CoPs as part of their formal organisational structures. Globalisation, industry sector rationalisation and more complex alliance relationships appears to be leading organizations to use CoPs to help sustain core technical or functional expertise as the more formal structures are increasingly targeted toward a customer or product focus.

Informal CoPs have always been around in organizations. What has changed in the past decade or so is the recognition of the organisational power that effective CoPs can bring to an organization. Best practice companies have devised a variety of mechanisms to try and harness and align CoPs to the needs of the business. Typically this has been in the form selectively supporting a number of CoPs to provide more funding and resources to, in return for specific business related outputs. These companies have also devised practices for “managing” CoPs for business success. A selection of “good” practices have been documented and categorised according to the BHP Billiton Way nine foundation elements.

## Summary of Good Practices Mapped to Foundation Elements

<p><b>VALUES, MISSION AND VISION</b></p> <p>Formal recognition of CoPs / Networks as part of the organisational structure.</p> <p>Vision/mission statement explicitly articulates that knowledge sharing is valued and expected of employees.</p>	<p><b>EVALUATION PROCESS</b></p> <p>CoP core activity includes evaluation of new practices or new ideas or new information.</p> <p>A CoP “health check” process on a 6 monthly (minimum) basis.</p>	<p><b>PLANNING AND ORGANISATION</b></p> <p>Formal planning process that:</p> <ul style="list-style-type: none"> <li>▪ Aligns strategic CoPs / Networks with the business, and</li> <li>▪ Articulates how CoPs will be supported with training, infrastructure etc.</li> </ul>
<p><b>PERFORMANCE MANAGEMENT</b></p> <p>Formal corporate process for management of CoPs / Networks, with ownership at the senior VP level.</p> <p>Measure individuals for their contribution to the CoPs / Networks in which they participate.</p>	<p><b>MARKET FOCUS</b></p> <p>Joint support of and participation in CoPs / Networks knowledge-sharing events by value chain members – internal and external.</p>	<p><b>METRICS AND REPORTING</b></p> <p>CoPs / Networks judged by the stories of operational value they generate.</p> <p>A system for collection of success stories</p> <p>Integration with the Company’s Balanced Scorecard (if it exists)</p>
<p><b>LEADERSHIP AND ALIGNMENT</b></p> <p>Over a 3 to 4 year period, to establish and embed CoPs / Networks within the culture – support with:</p> <ul style="list-style-type: none"> <li>▪ Corporate funding,</li> <li>▪ Planning and management process, and</li> <li>▪ Leadership education and support</li> </ul> <p>At maturity, centralised funding should decrease and decentralised (Business Unit) funding should be increased.</p>	<p><b>KNOWLEDGE SHARING AND INNOVATION</b></p> <p>CoPs / Networks development and support programme is made central to the Knowledge Sharing programme.</p> <p>Integrated R&amp;D and Marketing CoPs / Networks with a focus on innovation.</p> <p>CoPs / Networks make use of a wide variety of tools for communicating and sharing knowledge – workshops, publications, web sites, collaboration tools etc.</p>	<p><b>IMPROVEMENT METHODOLOGY</b></p> <p>Expectation that CoPs / Networks activities contribute to the organization’s business improvement programme.</p> <p>CoPs / Networks apply improvement methodologies to themselves.</p> <p>CoPs / Networks improve and mature by doing meaningful work together.</p> <p>A strong “learning model” underpins all CoP activities</p>

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