“A Critique of the Strategic Competitive Intelligence Process within a Global Energy Multinational”

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A Critique of the Strategic Competitive Intelligence Process within a Global Energy Multinational

Kurt April, Julian Bessa

Abstract

Two competitive intelligence processes within a Global Energy Multinational are critically analyzed – Competitive Strategic Business Intelligence (CIAD) and Competitive Technical Intelligence (CTI). It has been found that the CIAD process is linear and carried out by small team of analysts from which intelligence moves upward to be actioned at the highest levels of a layered organization. There is limited feedback and knowledge sharing. In contrast the CTI approach follows a networked model, with competitive intelligence viewed as individual line responsibility. Intelligence information passes laterally, upward and downward through a flat organizational structure. Consequently these models can be viewed as a response to a variance of styles of management and organizational structure within the organization. A key stumbling block is found to be an organizational culture that prevents open knowledge sharing. The use of technology is identified to be a key enabler allowing transparency and rapid transfer of intelligence across the organization, and thereby facilitating a knowledge-sharing culture. Knowledge management and competitive intelligence are therefore viewed as intimately related. A successful competitive intelligence process requires attention to cultural issues, facilitated by technology to ease knowledge sharing.

Introduction

For some three decades now, there have been some advocates of competitive intelligence (CI) working tirelessly to get business to recognize the existence and utility of externally-oriented intelligence gathering, for furthering the competitive advantage of their organizations. According to McGonagle and Vella (2002: 36), competitive intelligence consists of two core facets: (1) the use of legally and ethically identified-, located- and accessed sources (not necessarily only published) to develop data on competition, competitors, environmental conditions, trends and scenarios, and (2) the transformation, by analysis, of that data into useable information that can support better business decisions. The competitive intelligence process is usually developed into seven basic phases (or parts thereof), each linked to the others by a feedback loop: (a) recognizing and establishing CI needs for the organization, (b) overcoming constraints, identifying sources and then proceeding to collect the raw data, (c) transforming raw data into user-valued CI through specialized evaluation-, analyses- and value-adding techniques, (d) preparing, presenting and communicating the finished intelligence in a timely manner, (e) securitization of the intelligence and intended-paths of dissemination, (f) using the CI in decision-making and taking action, and (g) auditing of the intelligence and its associated databases, to establish continued relevancy and linked-sustainability of the stored intelligence. Businesses tend to practice the use of CI through various types, recently identified in the discipline, i.e., the strategy-oriented CI type, the information-oriented CI type, the operational/tactics-oriented CI type, the technologically-oriented type, and the intentional-target/competitor-intent CI type. More recently, strategists and strategy academics have focused their attention on CI as a means for further engendering sustained competitive advantage for businesses.

Porter & Millar (1985) highlighted the significance of utilizing 'information' for competitive advantage and argued that new information flows greatly enhance an organization's ability to exploit both internal and external linkages. Subsequent authors (*e.g.*, Prokesch 1997; Cerney, 2000; Hamel & Prahalad, 1989; Hansen *et al.*, 1999; Hildreth, 2000) have reinforced the importance of information and knowledge sharing to competitive strategy, although the term 'competitive intelligence' (CI) was not employed. Kahaner (1996) has attributed the increased focus placed upon competitive intelligence as a management discipline to be a result of both increased data availability, and an increase in macro-level change and external uncertainty.

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Rouach & Santi (2001) defined 'competitive intelligence' as "the art of locating, collecting, processing and storing information to be made available at all levels in the firm, with a view to shaping its future, but also protecting against competitive threat". Wright *et al.* (2002) made a further distinction between *competitor* and *competitive* intelligence. Typically CI has been viewed as a linear process characterized by discrete steps, i.e., planning and direction, collection of data, analyses, dissemination and securitisation (Fuld, 1995; Ashton & Stacey, 1995, Kahaner 1996). However, there is increasing understanding that CI should be viewed in terms of network-type processes (Bertacchini & Dou, 2001; April, 2002).

Firm's Competitive Intelligence Process

Since 1998, renewed focus has been placed upon CI within the global energy multinational, due to dramatic merger-acquisition activity within the industry, which took the firm by surprise. In 1992 the firm was recognized as standing in a league of its own, producing a third more hydrocarbons than its nearest rival. However by 1999, the firm was relegated to a group of three supermajors, with the other two having similar production bases and global impact. Internally within the firm, CI was therefore seen as an important cornerstone to regaining competitive advantage. A corporate level workshop in 1998 recognized that previously within the firm CI was undertaken from 'islands of intelligence', which worked together on an adhoc basis and often duplicated efforts[1]. The workshop also concluded that (1) CI was not supported by senior decision-makers, (2) the purpose of CI was not well understood within the firm, (3) there was no dedicated core CI team, and (4) the sharing of intelligence did not occur.

Within the Exploration & Production division (EP), these findings directly led to the formation of a strategic intelligence unit (CIAD) and a competitive technical intelligence unit (CTI) with top-down support – this can be viewed as a reactive attitude (Rouach & Santi, 2001). It was also the intent that 'CI and strategy' would become a defined skill set within the firm similar to the technical disciplines, thereby enabling career development within a commercial skill pool (this is consistent with Walle, 1999, who identified CI as a distinct field from other management disciples).

Strategic and Business Competitive Intelligence (CIAD)

Strategic and Business Competitive Intelligence (CIAD) is carried out by team of analysts that support the Regional Business Directorates and the EP CEO. These analysts identify both macro- and micro trends within the external environment, and each analyst specializes in one or more competitor activities or aspects of the global environment. Essentially the team acts as an EP "think tank", covering the three of the four intelligence pyramids – market intelligence, competitor intelligence, and strategic intelligence (Rouach & Santi, 2001).

This intelligence is viewed as critical to EP's competitive advantage, as it:

1. Enables identification of acquisition candidates with a strategic fit with the firm;
2. Identifies new business opportunities that may have a high business impact, regardless of likelihood of fruition; and
3. Highlights industry trends and cross-regional understanding.

The CIAD Group acts as a funnel for information flow, from which intelligence is distilled and turned into strategic updates and distributed in paper format. These updates follow established procedures and reach top management on a regular basis providing actionable intelligence, which influences thinking at the highest level within EP. The unidirectional process in turning data into actionable intelligence is shown in Figure 1.

[1] Source: Internal Company Presentation "The Role of Competitive Intelligence and CIAD", Dec. 2001.

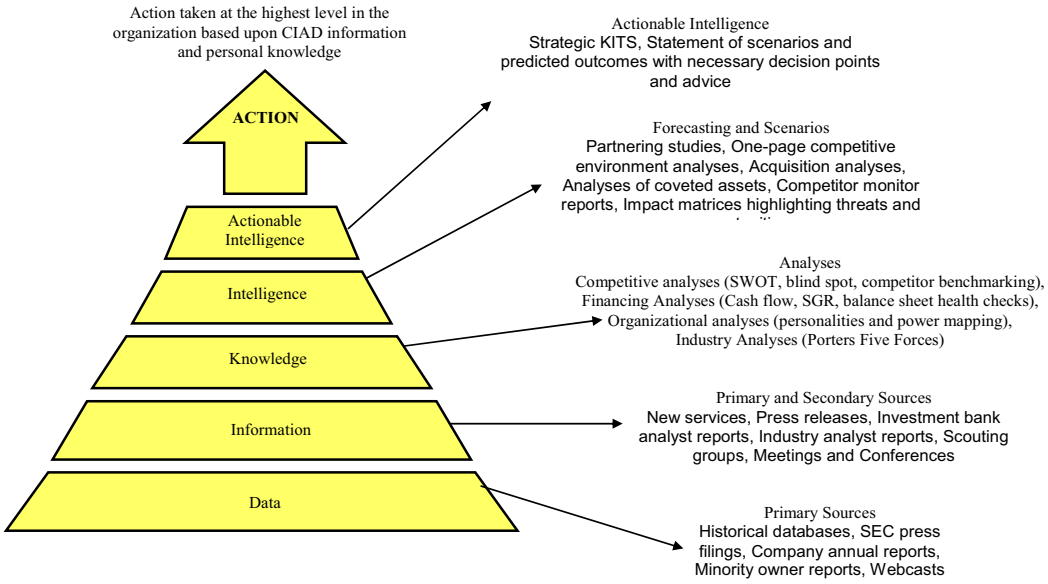


Fig. 1. The Firm's Strategy and Business Intelligence Process

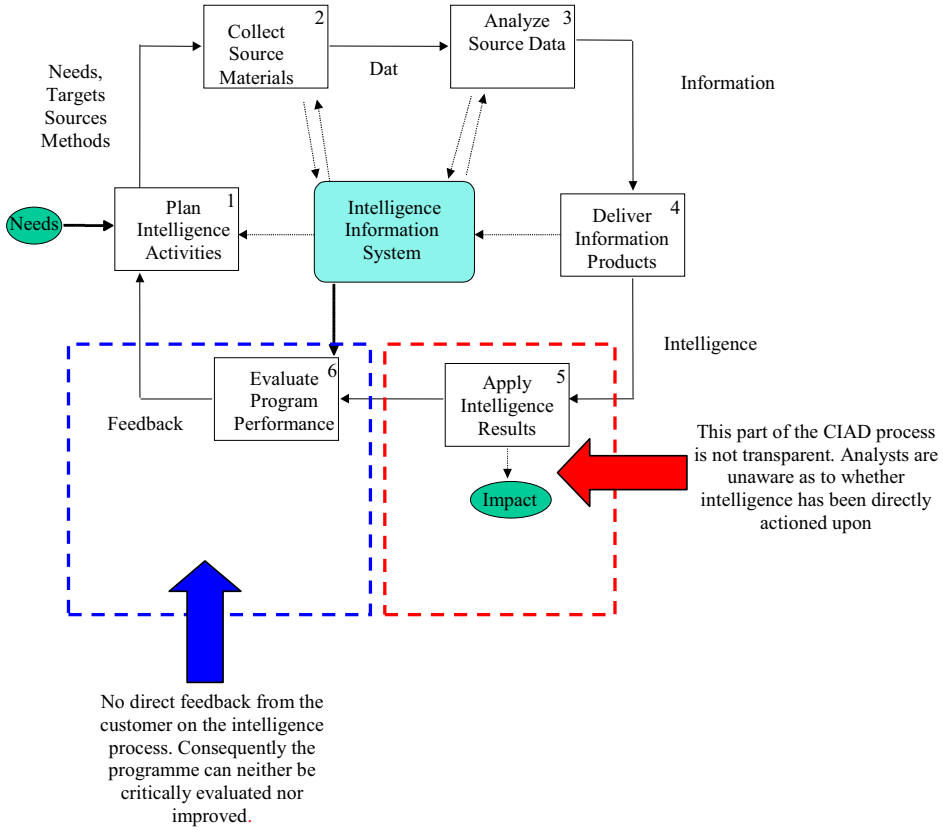
Strategic analyses focuse upon SWOT, Blind Spot, Four Corner and Scenario techniques. Established procedures have developed from proven experience in what works and what does not work in providing actionable intelligence to top management in the layered organization (Table 1). There is a danger, though, that using pre-set analytical tools, forces understanding into simplified pre-existing mental models.

Table 1

Devising Established CI Procedures from Proven Experience

What Works	What Does Not Work
Direct demand from top management	Attempts to provide a service to all (CI is not an information desk)
Physical proximity to top management	Unfocused wide distribution of CI products to top management
Top management provides focus on key intelligence topics	Long CI reports (> 4 pages)
War games to get inside the competitors' minds	Production of historical knowledge documents

However, there is little feedback from the customer (internal; and external), which reinforces the linear character to the CIAD intelligence process. This process is typified by the Kahaner (1996) intelligence model, rather than the Ashton & Stacey (1995) intelligence cycle. The latter model (Figure 2) highlights a feedback stage for evaluation of CI performance, enabling improvements in identified intelligence activities. The absence of this stage is an important deficiency, which may lead to unfocused intelligence gathering (see further).



Source: Science and Technology Intelligence Process of Ashton & Stacey, 1995

Fig. 2. Deficiencies in the CIAD Intelligence Process

Non-critical intelligence information is maintained within an Intranet-based system, accessible to all staff (*e.g.*, competitor reports and industry analyses). Intelligence concerning ongoing- and potential merger-acquisition activities is held in a network drive, with restricted access. The team has implemented a mandatory CI requirement in all commercial project approvals, which is reviewed with internal audits – thereby enabling CI to organically become a standard way of thinking across the EP commercial organization.

Competitive Technical Intelligence (CTI)

Technological intelligence (the fourth intelligence pyramid, Rouach & Santi, 2001) is viewed as being critical for EP strategy, as the firm's technological- and innovation base is viewed as a competitive advantage. The advantage arises from:

1. Using in-house technology to identify opportunities that competitors do not see; and
2. Stressing technical competence to major resource-holder governments.

Consequently, it is important to identify and understand the technology position of competitors to assess the cost/benefit of potential- and existing technologies, and to forecast future developments. Within technology teams, therefore, CTI is viewed as a line responsibility, and CI statements are mandatory in all team project proposals. In addition, three internal online courses on CI are available at no direct cost for EP technology staff, and each takes approximately two hours to complete. These courses focus on organizing and conducting CI at conferences, and understanding information within a strategic framework.

CTI is carried out around a four-process knowledge management (KM) cycle (Figure 3) – capturing core knowledge, sharing between communities, consolidating knowledge for use, and innovation and learning.

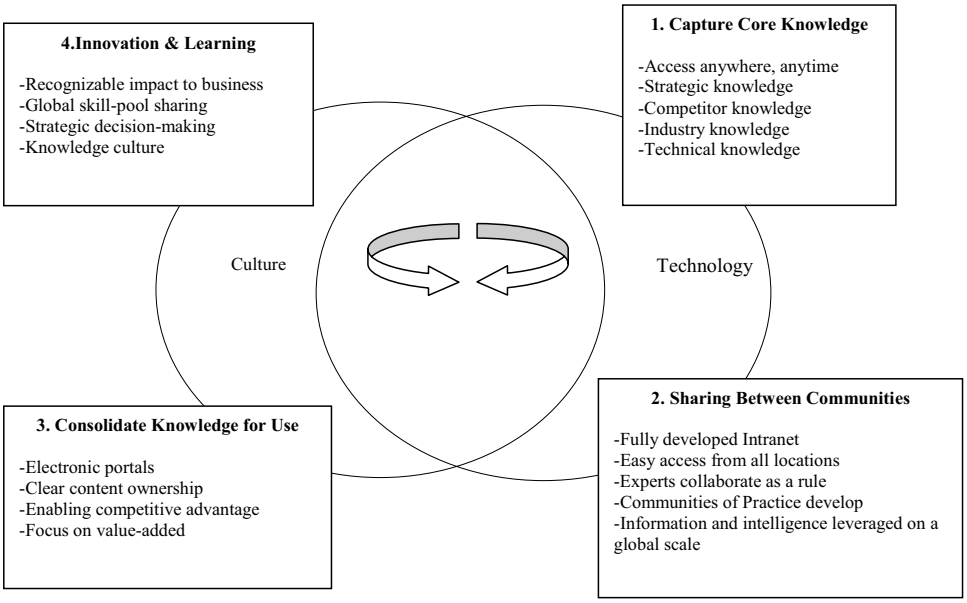


Fig. 3. The CTI Intelligence Cycle (Process-Based)

The framework emphasizes the interplay between culture, and the use of technology (through human practices and technological tools) to facilitate operational processes (and subsequently, business processes). Both CTI and KM are viewed as similar in nature, with KM facilitating the present and CI focusing upon the future emphasising patterns and trends (Figure 4). External conferences are viewed as key opportunities to capture core knowledge, facilitated by third party research publications and technology benchmarking. However, published information is viewed as less valuable as it is information that has *already happened*, whilst the function of CTI is to provide an early-warning system within the technology organization.

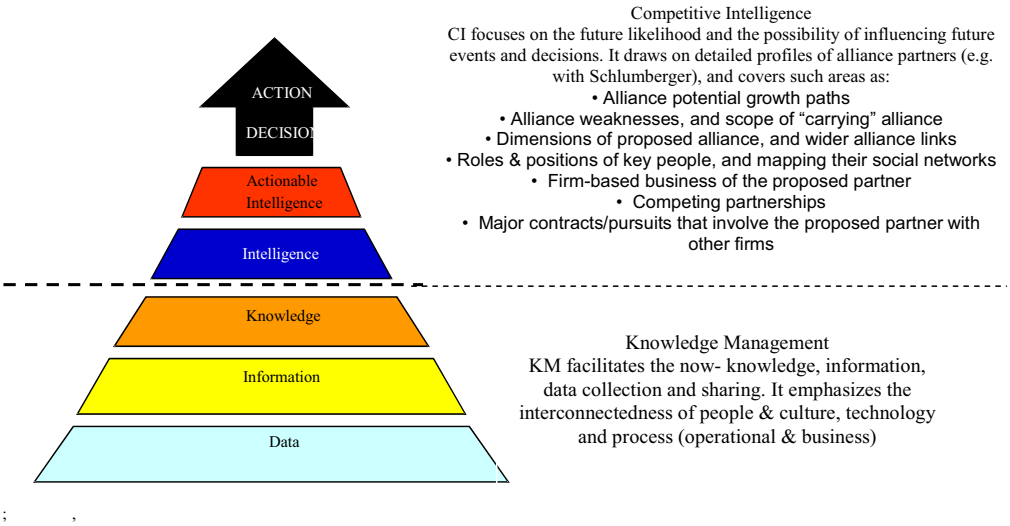


Fig. 4. The Interplay Between Knowledge Management and Competitive Intelligence

Integral to the first part of the KM-cycle is the use of a Competitive Intelligence Global Network (CIGN) constructed using HTML technology that provides rapid knowledge capture, and which can be accessed anywhere in the world, at anytime. The content-based framework (Figure 5) divides the CIGN knowledge-space into three areas – collaboration space, content space and best practices spaces. The density of the information *increases* from the collaboration- to the best practice space, while the immediacy of the information *decreases*. Staff can pose intelligence questions in a main discussion area ('high traffic area'), which are usually answered by a member of the global community by the next business day.

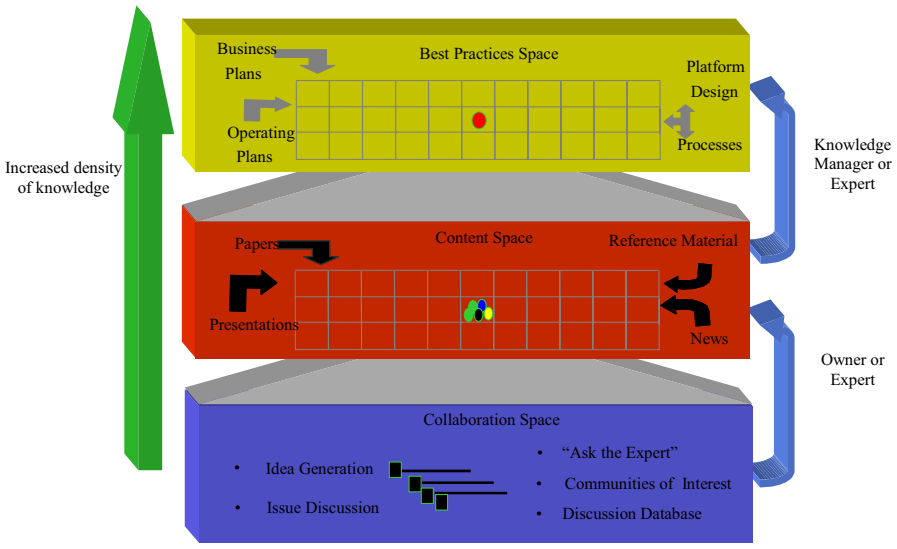


Fig. 5. The CTI Intelligence Cycle (Content-Based)

US export controls and EU data privacy laws apply to the network, and users have to sign an additional confidentiality clause on registration to the community. Discussion focuses around core- and critical technological capabilities (April, 2002), from which the EP organization derives competitive advantage.

The CIGN (Figure 6) is a key enabler to the dissemination of information and data within the wider firm community (Stage 2 of Figure 3). The network allows information to be distilled into intelligence where it is immediately relevant. For example, prior to a conference, key intelligence topics are discussed amongst the technical community, and these form the focus of the attending team. After the end of each day, the conference team posts Key Intelligence Topics (KITS) on the network, which allows subject matter experts (who may be sitting across the globe) to offer a critique, and provide feedback analyses prior to the next day's proceedings. Key experts and people-with-potential for adding value to the firm in the future are identified at these conferences, and their names are also captured onto a relevant part of the network.

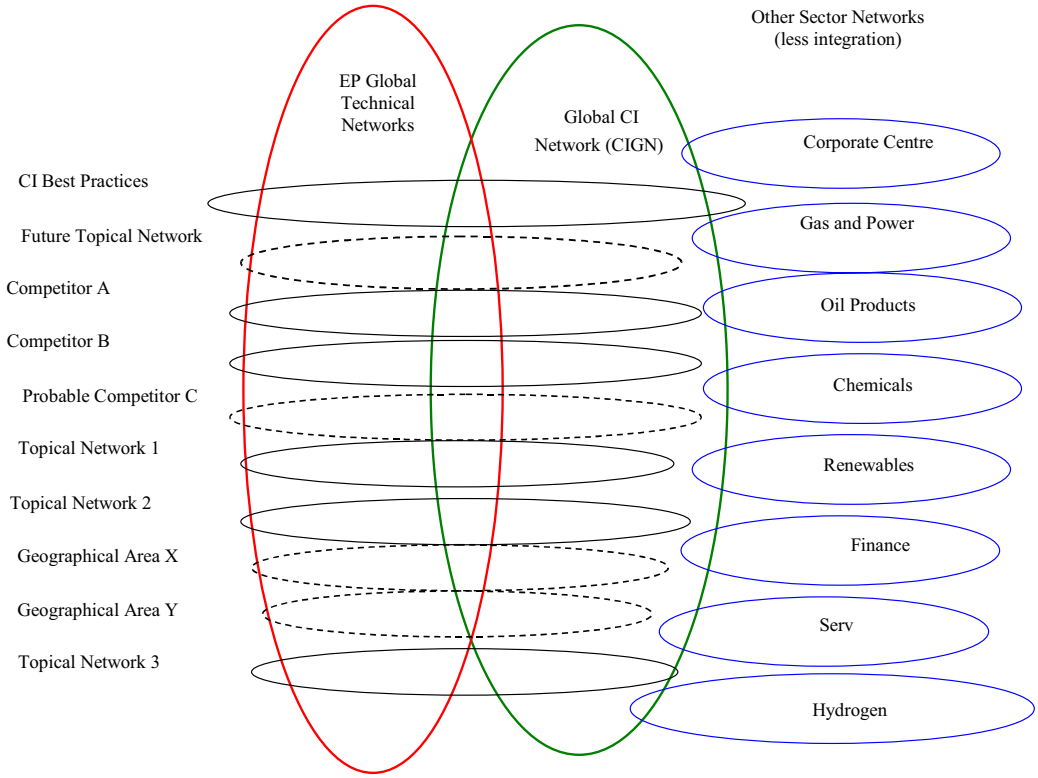


Fig. 6. Integration of the EP Global Intelligence Network with the Technical Networks – Essential for the CTI Process

The use of the network in this way can be viewed as a 'socially complex resource combination' (April, 2002) as it leverages the human capital of the EP organization. The sharing and dissemination of intelligence in this way "… depends upon large numbers of people or teams engaged in co-coordinated action …" (April, 2002: 451). Leverage arises from the diversity (network heterogeneity) and size of the community (network density), and at present there are over 1200 members of the CIGN Community of Practice in over 80 of the firm's organizations. The CTI network enables technology development to be considered in terms of a broader competitive landscape, as commercial issues and external strategic alliances impact R&D. This is consistent with the findings of Reagans & Zuckerman (2001), who concluded that a high degree of network density and heterogeneity is critical for R&D teams.

Rouach & Santi (2001) indicated that 80% of the information required to create intelligence is already present within a firm, and that this information is not shared with the people who immediately require it due to geographic-, organizational- or communication barriers. A global network structure supports a pro-active CTI system and, without such a network, building up an efficient and effective technical CTI capability would be slow and intensive. It also embeds CI capability at the lowest structural level of the firm, i.e., at the team level, whilst enabling a global scalability in intelligence collaboration. The network has three full-time moderators, whose job is to consolidate intelligence for later use (Stage 3 of Figure 3), by storing the content in an e-bookshelf on the network and, both engendering and ensuring cross-sharing with the technical networks. In addition, the information is stored within an HTML knowledge base (Figure 7), which can be accessed directly from the CIGN network.

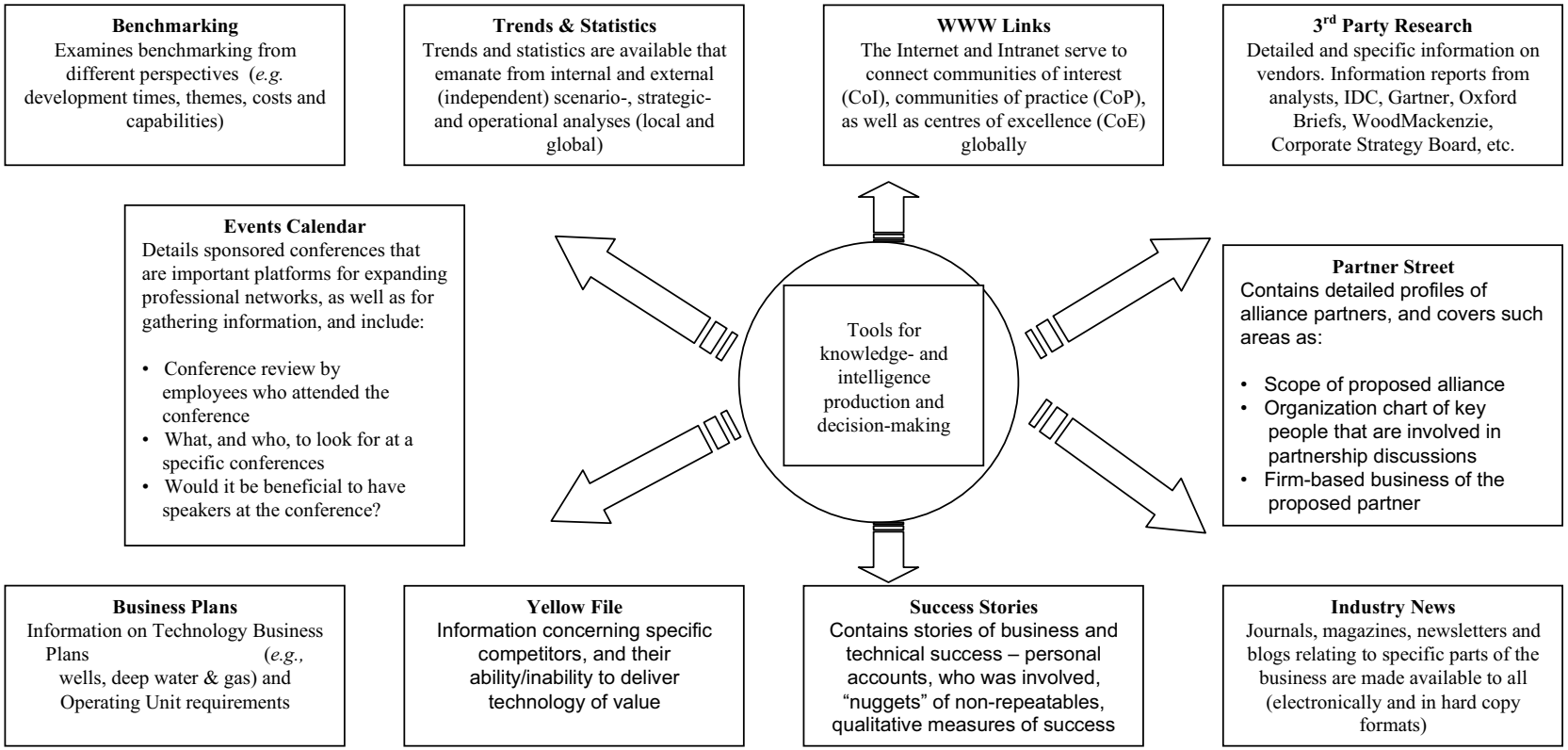


Fig. 7. Storage of CTI Intelligence

The final stage of the CTI process requires technology teams to distill the information obtained from the network into actionable intelligence to drive strategic decision-making. Equally important is a requirement to disseminate the learnings back into the network, foster best practice and enhance the knowledge culture. An example of how the CTI process can be used for competitive advantage can be shown with reference to the firm's deep-water technology team (Appendix 1). By understanding the path taken by competitors, the team was able to change direction, and become more focused on technology development by identifying weaknesses in the competitor approach to the firm's advantage. The final developed technology has been instrumental in recent discoveries in the Gulf of Mexico, enabling the firm's EP division to maintain its strategic competitive advantage in the region. In terms of the cost of technology development, the use of CTI is considered to have saved US$10 million per development year.

The April (2002) model of complementary resource combinations (Figure 8) is considered to be more applicable to the CTI process, rather than the linear model of Kahaner (1996), typical of the CIAD process.

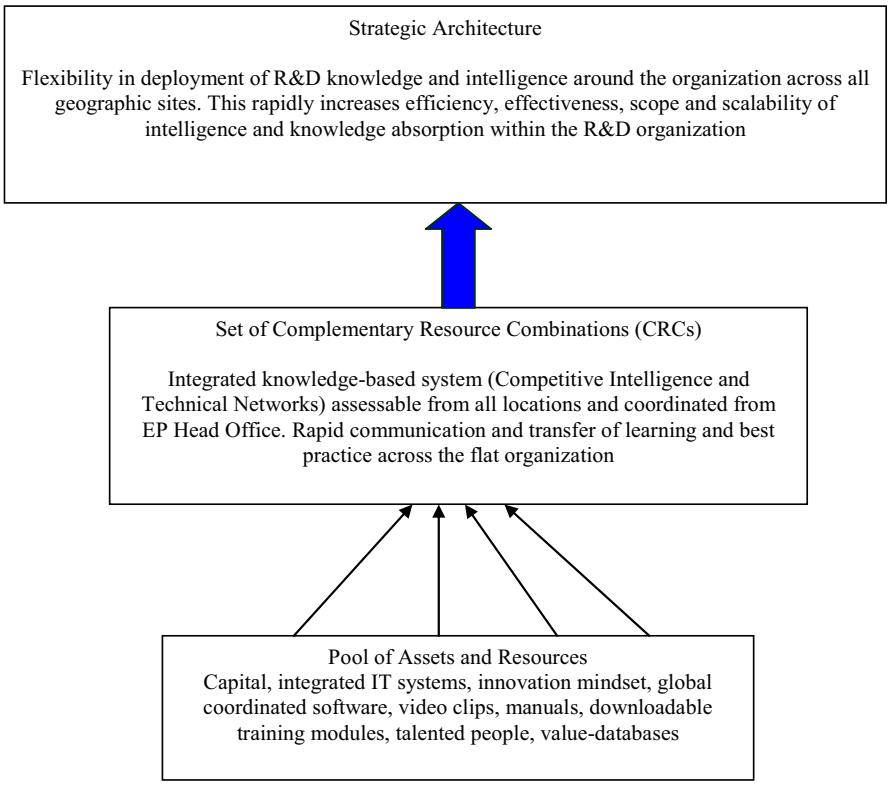


Fig. 8. The April 2002 Model applied to the Firm's EP Technology Organization

Comparing the Firm's EP Competitive Intelligence Processes

The technical intelligence process (CITI) employed within EP can be viewed as a warrior attitude (Rouach & Santi, 2001) in which R&D teams are proactive, and are actively managing the processes enhanced by a continuous feedback-loop provided by the global network. In contrast, the strategic and business intelligence process (CIAD) is less offensive, and can be described as a militaristic assault attitude (Rouach & Santi, 2001). Both processes do not utilize external consultants (*e.g.,* Fuld & Company), and regard technology as being an enabler of the process (albeit to a differing degree) rather than driving the intelligence process. Vendor business intelligence applications are not used, and the dissemination and storing of information rely on simple web-based

HTML technologies. These are organically developed in-house at relatively low cost (*e.g.,* US$5 million per year).

A comparison between the two CI processes is given in Table 2. Interestingly both can be viewed as end-members of a spectrum of CI models, and that these very different end-member models *are utilized within the same organization*. These different approaches can be viewed as a structural response to the ultimate customers of the intelligence (*e.g.,* those who action it) and consequent management style.

Table 2

Comparison of Competitive Intelligence Processes within EP

	CIAD	CTI
Competitive Intelligence Style	Militaristic with established linear standard operating and monitoring procedures	Networked, with continuous feedback and learning by all members in the R&D Community of Practice
Accountability	Undertaken by a single team of Competitive Intelligence Analysts	Line Accountability ('Everyone's Business)
Applicable Model	Kahaner (1996) with four steps: planning and direction, collection of data, analysis and dissemination	Knowledge management (April, 2002) centred upon complementary resource combinations (KM, social complexity, communication, diversity and learning processes)
Customer	Regional Business Directors and EP CEO	Team in which individual is a member
Key Enablers	Direct contact with those at the highest levels of the organization. Intelligence passes directly to CEO and the CIAD organization can meet the CEO at any time	Diversity and density of CIGN network, leading to scalability of intelligence sharing and absorption
Key Stumbling Blocks	Limited feedback from customer, and limited understanding whether the intelligence has been actioned upon. Limits learning and improvement of CI capability	Culture: (1) tendency of technology professionals to view knowledge as 'power', and hence reluctant to share information, (2) lack of time for professionals to spend time on the CIGN, limiting intelligence sharing
Use of CI Consultants	Not utilized	Not utilized
Impact of Technology	Limited facilitation role. Products typically distributed in paper format, but maintained in an HTML system. Sensitive material maintained on secure, local network drives only	Extensive facilitation role in intelligence sharing. Knowledge and information maintained and accessed via an HTML system

Wright *et al.* (2002) concluded, after analysing competitive intelligence in UK firms, that different management styles had a direct influence on the attitude and use of CI. In the case of CIAD, intelligence passes directly upward to be actioned upon by those at the highest levels of the hierarchy, within a layered pyramidal organizational structure. In the case of CTI, the ultimate customers are the R&D teams and the technology professionals themselves. Consequently intelligence information passes laterally, upward and downward through a flat organizational structure. Thus CI processes employed within an organization can be viewed as a function of organizational structure.

Stumbling Blocks & Enablers to the CI Process

A comparison between the two competitive intelligence processes used in the EP division allows the identification of key stumbling blocks and enablers (Appendix 2). A key stumbling block is found to be an *organizational culture* preventing open knowledge sharing and feedback.

Likewise, the use of technology is identified as a key enabler, allowing transparency and rapid transfer of intelligence across the organization thereby facilitating a knowledge-sharing culture. In the following sections the stumbling blocks and enablers of each of the intelligence processes will be examined in further detail.

The CIAD Intelligence Process – Blockers & Enablers

The strategy and commercial intelligence process is similar to military style intelligence with established standard and operating processes, resulting from a hierarchical organizational style. This *culture* prevents direct continuous feedback to lower levels in the organization, and therefore the intelligence process cannot be rigorously evaluated (without evaluation the CI process cannot be improved or refocused, Figure 2). Analysts have indicated that there is a "tell me something that I don't already know" attitude, particularly among highly qualified knowledge workers, i.e., the opposite of what is needed in an effective knowledge-based organization. This culture represents a significant stumbling block, as the linear CI flow reduces the efficiency and effectiveness of knowledge transfer. This is particularly divisive when the external environment is undergoing significant change, as has been the case with the recent merger and acquisition activity within the EP sector. There is limited flow of information and intelligence from the operating units (*e.g.,* the firms operating units in Venezuela) to the CIAD team at the corporate centre, with a real danger that a significant amount of intelligence material is lost as strategic information and data are typically not shared on the CIGN (key improvements are suggested in Appendix 2).

Furthermore, with limited feedback, analysts are unaware as to whether the intelligence has been actioned upon, and whether the intelligence was sufficiently focused, of sufficient depth, arrived in sufficient time, and tackled the right issues. Feedback is very important as intelligence that is not visually actioned upon (either positively or negatively) increases the likelihood of strategic errors or missed opportunities. Wright *et al.* (2002: 356) indicate that feedback is important because "the most common problem faced by respondents in the dissemination phase was making the information and structure relevant to the audience, whilst being brief yet useful".

In addition, the use of rigid and established procedures reduces flexibility in knowledge transfer, and reinforces an inward-looking view of the external competitive environment (Powell & Bradford, 2000). Indeed the competitive intelligence units were originally set up to prevent such a scenario occurring. Furthermore, in absence of feedback, the subjectivity of the analyst becomes of heightened importance. With a small-dedicated CI team, there is a risk that competitors will be viewed through the eyes of the 'firm culture' and 'firm dominant consciousness', thereby reducing the effectiveness of the intelligence. With the CI team rotating out every two to three years to take up positions within operating units, the central knowledge bank is periodically disassembled, although it could alternatively be argued that this knowledge is then disseminated to the wider organization.

An enabler to the CIAD process is that the team does have easy access to top decision-makers in the organizational hierarchy, although, as indicated previously, the power of this access is diminished with the limited nature of cross-communication and feedback.

The CTI Intelligence Process – Blockers & Enablers

The CTI process is characterized by a significantly more open style of knowledge transfer and feedback across a flat organization. However, organizational *culture* can again be recognized as a key stumbling block, although for very different reasons to those discussed previously for CIAD. Within the R&D organization there is a tendency for knowledge to be viewed as a source of power, and individual intellectual capital is left undiffused since there is a belief that it is essential for progression upward through the organization. Consequently there is a reluctance to share and disseminate knowledge amongst R&D professionals, borne out of traditional industrial organizational mindsets. Powerful incentives are required to break these individually- and internally-focused mindsets in order to grow the competitive intelligence knowledge base. The most important incentive is peer recognition across the global community of practice, and this is becoming essential to secure sought-after positions. In essence, overcoming this stumbling block is similar in nature to an organizational transformational exercise. A further blocker is a lack of time (real or

perceived) for technology staff to access the global intelligence network. Wright *et al.* (2002: 356) recognized this phenomenon of a "lack of time/too many projects" as well. Technology has proved to be a key enabler to the CTI process, allowing a common intelligence-based agenda to develop and the adoption of best practice across the CTI community. Technology facilitates the development of relationships, and the rapid deployment of technology intelligence across the organization. Key improvements are suggested in Appendix 2.

Conclusions & Synthesis

Two different models of CI are employed within the firm's EP division, which represent end-members in a framework of CI processes and are related to the degree of structural hierarchy within the organization. Significant deficiencies have been identified in the CIAD model, increasing the likelihood of strategic errors or missed opportunities. It is recommended that the CIAD intelligence process increases communication flow with the wider firm community and move towards a CTI model of intelligence-gathering, whilst recognizing the sensitive strategic nature at the corporate level (*e.g.,* mergers and acquisitions or strategic JVs). Indeed a substantial contribution to strategic competitive advantage has been demonstrated by the CTI model in increasing exploration success within the strategic growth area of the Gulf of Mexico. However, the contribution of the CIAD process to strategic competitive advantage is less transparent, and is in part due to the inability of the analysts to directly ascertain whether the intelligence has been acted upon, and to determine underlying reasons. The CIGN should be used considerably more extensively for the dissemination and feedback of strategic intelligence, building on the model developed in the technology side of the division. This would enable strategic information to be gained from the operating units, with which communication is presently poor. Such information could be used as a 'reality check' of the mental models and scenarios developed by the CIAD think tank.

The CTI model harnesses KM tools for competitive intelligence: (1) both KM and CI focus upon intangible values, (2) both KM and CI rely on larger, socially complex communities to make a strong business impact, and (3) both KM and CI implementation are only initially dominated by informational technology issues, and thereafter by cultural issues. For CIAD to move to the CTI model, a change in organizational behaviour from a *knowledge retaining* to a *knowledge sharing* culture is required, which should be viewed as a transformational process. In this respect, coaching and mentoring may be of enormous value in the change process.

References

1. Ashton, W.B. & Stacey, G.S. (1985), 'Technical Intelligence in Business: Understanding Technology Threats and Opportunity', *International Journal of Technology Management, Special Issue on the Management of Technological Flows Across Boundaries*, Vol. 10, No. 1, pp. 79-104.
2. April, K. (2002), 'Guidelines for Developing a K-Strategy', *Journal of Knowledge Management*, Vol. 6, No. 5, pp. 445-456.
3. Bertacchini, Y. & Dou, H. (2001), 'The Territorial Competitive Intelligence: A Network Concept', *Actes du Colloque VSST 2001:* Barcelona, Universite Politecnica de Catalunya, pp. 101-111.
4. Cerny, K. (1996), 'Making Local Knowledge Global', *Harvard Business Review*, Vol. 74, No. 3, pp. 1-15.
5. Fuld, L.M. (1995), *The New Competitor Intelligence*, New York: John Wiley.
6. Hamel, G. & Prahalad, C.K. (1989), 'Strategic Intent', *Harvard Business Review*, Vol. 67, No. 3, pp. 63-76.
7. Hansen, M.T., Nohria, N. & Tierney, T. (1999), 'What's Your Strategy For Managing Knowledge', *Harvard Business Review*, Vol. 77, No. 2, pp. 106-116.
8. Hildreth, P. (2000), 'Communities of Practice in the Distributed International Environment', *Journal of Knowledge Management*, Vol. 4, No. 1, pp. 27-38.

9. Kahaner, L. (1996), *Competitive Intelligence: From Black Ops to Boardrooms – How Businesses Gather, Analyze, and Use Information to Succeed in the Global Marketplace*, New York: Simon & Schuster.
10. McGonagle, J.J. & Vella, C.M. (2002), 'A Case for Competitive Intelligence', *The Information Management Journal*, July/August Edition, pp. 35-40.
11. Porter, M.E. & Millar, V.E. (1985), 'How Information Gives You Competitive Advantage', *Harvard Business Review*, Vol. 63, No. 4, pp. 149-160.
12. Powell, J.H. & Bradford, J.P. (2000), 'Targeting Intelligence Gathering in a Dynamic Competitive Environment', *International Journal of Information Management*, No. 20, pp. 183-186.
13. Prokesch, S.E. (1997), 'Unleashing the Power of Learning: An Interview with British Petroleum's John Browne', *Harvard Business Review*, Vol. 75, No. 5, pp. 147-168.
14. Reagans, R. & Zuckerman, E.W. (2001), 'Networks, Diversity and Productivity: The Social Capital of R&D Teams', *Organizational Science*, Vol. 12, No. 4, pp. 502-517.
15. Rouach, D. & Santi, P. (2001), 'Competitive Intelligence Adds Value: Five Intelligence Attitudes', *European Management Journal*, Vol. 19, No. 5, pp. 552-559.
16. Walle, A.G. (1999), 'From Marketing Research to Competitive Intelligence: Useful Generalization or Loss of Focus?', *Management Decision*, Vol. 37, No. 6, pp. 519-525.
17. Wright, S., Pickton, D.W. & Callow, J. (2002), 'Competitive Intelligence in UK Firms: A Typology', *Marketing Intelligence & Planning*, Vol. 20, No. 6, pp. 349-360.

Appendix 1

An Example of the Impact of CTI in Attaining Strategic Competitive AdvantageDeep Water R&D Group

The perception of the team was that they were developing leading-edge seismic technology (rock property prediction), and as part of an annual technology play-mapping exercise decided to understand the path taken by competitors. Questions were placed on the CIGN, which were answered by staff elsewhere in the organization (working in Joint Ventures with partners), and additional data were supplied on the network by staff whilst attending technical conferences. Having analyzed the information, the deep-water team realized the industry was moving in the opposite direction and that their initial technical assumptions were invalid. This 'early warning system' enabled the team to change direction, and become more focused on technology development by identifying weaknesses in the competitor approach and thereby rectifying these. The final developed product has been instrumental in recent discoveries in the Gulf of Mexico, enabling the firm's EP division to maintain its strategic competitive advantage in the region. In terms of the cost of technology development, the use of CTI is considered to have saved US$10 million per development year.

Appendix 2

Key Stumbling Blocks, Enablers and Improvements in the EP Intelligence Processes

	CIAD Intelligence Process	CTI Intelligence Process
Key Stumbling Blocks	Organizational Culture: Limited feedback and communication within a layered hierachical structure. No first hand feedback that the intelligence had been acted upon. Reduces efficiency and effectiveness of intelligence transfer. Inability to understand whether the intelligence was sufficiently focused, of sufficient depth, and arrived in sufficient time. Inward-looking analyses using a pre-defined toolkit. There is a danger that these may result in oversimpflied mental models. Limited use of global networks. Potential for a significant amount of strategic intelligence to be lost. Limited feedb	Organizational Culture: Tendency for knowledge to be viewed as a source of power and individual intellectual capital that is essential for upward progression. Lack of time (real or perceived) for technology staff to access the global intelligence network, due to a focus on short-term immediate issues and targets. Potential for the intelligence-sharing to become unfocused and misaligned with the technical strategy of the R&D organization. Experienced staff may feel that they lose face by posing questions and providing feedback on intelligence. "What is In it for Me" (WIITFM) attitude.
Key Enablers	Easy access to top decision-makers in the organization. Access to wealth of external information (white & grey).	Use of Simple HTML Technology: Permits a common intelligence-based agenda to develop with the adoption of best practice. Facilitates the development of networked relationships, and rapid deployment of intelligence.
Key Improvements	Utilise the CIGN to obtain strategic information from throughout the firm, which can be used as a test of mental models. Move completely to an HTML system for intelligence retrieval, which can be password protected. Cease of use of paper-based memos in favour of an Intranet distribution system that can be accessed by decision-makers whilst on the move.	Encourage the use of the CIGN to become fully embedded within the organization, by aligning usage and feedback with annual appraisal metrics.