

Knowledge Management in the New Business Environment

Supplementary Report: Case Studies

Knowledge Management in the New Business Environment

Supplementary Report: Case Studies

**Dr Richard Hall
Deputy Director (Operations)**

a c i r r t

u n i v e r s i t y o f s y d n e y

research, training & information services on the world of work

July 2003

Contents

CHAPTER 1: LARGE ORGANISATION CASE STUDIES.....	1
ACCENTURE.....	2
<i>The Organisation and its Business Environment</i>	<i>2</i>
<i>The ‘What’ of Knowledge: creating, harnessing and sharing knowledge.....</i>	<i>3</i>
<i>Creating and harnessing knowledge.....</i>	<i>4</i>
<i>Knowledge Sharing</i>	<i>6</i>
<i>The ‘Why’ of Knowledge: purposes and outcomes.....</i>	<i>7</i>
<i>The ‘How’ of Knowledge: practices and processes.....</i>	<i>8</i>
<i>Evaluation of KM.....</i>	<i>11</i>
WYETH AUSTRALIA	12
<i>The Organisation and its Business Environment</i>	<i>12</i>
<i>The ‘What’ of Knowledge: creating, harnessing and sharing knowledge.....</i>	<i>13</i>
<i>The ‘Why’ of Knowledge: purposes and outcome.....</i>	<i>16</i>
<i>The ‘How’ of Knowledge: practices and processes.....</i>	<i>16</i>
<i>Evaluation of KM.....</i>	<i>18</i>
KIMBERLY-CLARK AUSTRALIA	19
<i>The Organisation and its Business Environment</i>	<i>19</i>
<i>The ‘What’ of Knowledge: creating, harnessing and sharing knowledge.....</i>	<i>19</i>
<i>The ‘Why’ of Knowledge: purposes and outcomes.....</i>	<i>23</i>
<i>The ‘How’ of Knowledge: practices and processes.....</i>	<i>24</i>
<i>Evaluation of KM.....</i>	<i>27</i>
CORPORATE EXPRESS.....	28
<i>The Organisation and its Business Environment</i>	<i>28</i>
<i>The ‘What’ of Knowledge: creating, harnessing and sharing knowledge.....</i>	<i>29</i>
<i>Harnessing and Sharing Knowledge</i>	<i>30</i>
<i>The ‘Why’ of Knowledge: purposes and outcomes.....</i>	<i>32</i>
<i>The ‘How’ of Knowledge: practices and processes.....</i>	<i>33</i>
<i>Evaluation of KM.....</i>	<i>35</i>
PA CONSULTING.....	36
<i>The Organisation and its Business Environment</i>	<i>36</i>
<i>The ‘What’ of Knowledge: creating, harnessing and sharing knowledge.....</i>	<i>37</i>
<i>The ‘Why’ of Knowledge: purposes and outcomes.....</i>	<i>39</i>
<i>The ‘How’ of Knowledge: practices and processes.....</i>	<i>39</i>
<i>Evaluation of KM.....</i>	<i>41</i>
BUSINESS SERVICES GROUP - ROADS AND TRAFFIC AUTHORITY	43
<i>The Organisation and its Business Environment</i>	<i>43</i>
<i>The ‘What’ of Knowledge: creating, harnessing and sharing knowledge.....</i>	<i>45</i>
<i>The ‘Why’ of Knowledge: purposes and outcomes.....</i>	<i>46</i>
<i>The ‘How’ of Knowledge: practices and processes.....</i>	<i>47</i>
<i>Evaluation of KM.....</i>	<i>48</i>
BARYON PTY LTD AND GPC ELECTRONICS	49
<i>The Organisation and its Business Environment</i>	<i>49</i>
<i>The ‘What’ of Knowledge: creating, harnessing and sharing knowledge.....</i>	<i>50</i>
<i>Harnessing and Sharing Knowledge</i>	<i>51</i>
<i>The ‘Why’ of Knowledge: purposes and outcomes.....</i>	<i>54</i>
<i>The ‘How’ of Knowledge: practices and processes.....</i>	<i>55</i>
<i>Evaluation of KM.....</i>	<i>57</i>
AMP HENDERSON GLOBAL INVESTORS	58
<i>The Organisation and its Business Environment</i>	<i>58</i>
<i>The ‘What’ of Knowledge: creating, harnessing and sharing knowledge.....</i>	<i>59</i>
<i>The ‘Why’ of Knowledge: purposes and outcomes.....</i>	<i>61</i>
<i>The ‘How’ of Knowledge: practices and processes.....</i>	<i>63</i>
<i>Evaluation of KM.....</i>	<i>66</i>

CHAPTER 2: SMALL AND MEDIUM SIZED ENTERPRISE CASE STUDIES	68
JONES CONDON CHARTERED ACCOUNTANTS INSOLVENCY PRACTITIONERS.....	68
<i>Forms of knowledge</i>	69
<i>Knowledge Sharing</i>	70
<i>Knowledge acquisition</i>	71
<i>Why has knowledge management worked at JC?</i>	71
<i>Results of knowledge management at JC</i>	71
THE ARMS GROUP.....	72
<i>Forms of Knowledge</i>	72
<i>Knowledge Sharing</i>	74
<i>Results of Knowledge Management at The ARMS Group</i>	74
TECRA INTERNATIONAL.....	75
<i>Forms of Knowledge</i>	75
<i>Knowledge Sharing and Knowledge Flows</i>	76
<i>Results of Knowledge Management</i>	77
PLANIT	78
<i>Forms of Knowledge</i>	78
<i>Knowledge Sharing</i>	79
<i>Knowledge Acquisition</i>	79
COMLEARNCo.....	80
<i>Forms of Knowledge</i>	80
<i>Knowledge Sharing</i>	80
<i>Evaluation of Knowledge Management Arrangements</i>	81
STONEWORLD.....	82
<i>Forms of Knowledge</i>	82
<i>Knowledge Sharing</i>	82
FRONTLINE BUSINESS SERVICES.....	83
<i>Forms of Knowledge</i>	83
<i>Knowledge Sharing</i>	84
PROWESS DEVELOPMENT.....	85
<i>Forms of Knowledge</i>	85
<i>Knowledge Sharing</i>	86
<i>Evaluation of Knowledge Management</i>	86

Chapter 1: Large Organisation Case Studies

This chapter presents the case study reports on the eight large Australian organisations selected for study. The case study selection rationale and method are described in Chapter 1 of the main report. The eight case study organisations studied were:

- Accenture
- Wyeth Australia
- Kimberly-Clark Australia
- Corporate Express
- PA Consulting Group
- Business Services Group – Roads and Traffic Authority
- Baryon Pty Ltd and GPC Electronics
- AMP Henderson Global Investors

Accenture

The Organisation and its Business Environment

Accenture is one of the world's largest management consultancies employing over 75,000 people in 47 countries. The company reported global net revenues of over US\$11 billion for the financial year ending August 31 2002.

Knowledge is evidently a critical resource for Accenture:

Accenture is committed to delivering innovation and collaborates with its clients to help them realise their visions and create tangible value. With deep industry expertise, broad global resources and proven experience in consulting and outsourcing, Accenture can mobilise the right people, skills, alliances and technologies. (www.accenture.com)

The company's market-facing structure is organised into five operating groups (Communications & High Tech; Financial Services; Government; Products; and Resources). Under these are eighteen industry-focussed subgroups. Supporting the Industry and Operating Groups are eight service lines: Strategy and Business Architecture; Customer Relationship Management; Supply Chain Management; Human Performance; Finance and Performance Management; Technology, Research and Innovation; Solutions Engineering and Solutions Operations (outsourcing).

At the time of the study, Accenture Australia, a registered subsidiary company of Accenture, operated offices in Sydney, Melbourne, Brisbane and Canberra. Accenture's revenues in Australia and New Zealand exceeded AUD\$400 million for the 12 months to the end of February 2001. Accenture Australia, is the case study organisation for the purposes of this section, however it must be remembered that Accenture operates as a global entity with a matrix structure which means staff often report to managers in different countries and regions.

Accenture's Business Environment

Accenture operates in a highly competitive, global business environment. In addition to the other big global professional services firms, Accenture competes with the 'boutique' professional services firms such as McKinsey and Boston Consulting Group and, in the area of IT outsourcing in particular, competes with companies like IBM, CSC and EDS.

Clients demanding partnership arrangements

In the opinion of one manager at Accenture one of the most significant changes to the business environment for professional services companies over the past five years has been the changing demands of clients. There is now an increasing expectation amongst clients for partnering arrangements with both parties accepting more accountability and sharing in the responsibility for outcomes. As a result, the focus for Accenture has shifted from 'stand-alone strategies' to a situation where outsourcing, the use of the 'network of businesses', joint ventures and alliances are all central to the services offered by the company. This change of strategy has enabled the development of stronger, long-term relationships with both alliance and client partners.

It is apparent that part of Accenture's success in making any significant change is attributable to its corporate leadership. The global CEO of Accenture was described by management as a very collaborative, inspirational and accessible leader who had successfully driven the change in the culture of the organisation.

As a major global player, Accenture's business environment has also been transformed by contemporary shifts in the global economy. The collapse of the 'dotcoms' and the economic slowdown associated with 9/11 have created a more challenging environment for management consultancy.

This combination of increasing client sophistication, greater client expectations and the effects of a more challenging economic environment, has led to a new imperative for Accenture; to succeed the company must be able to innovate and adapt quickly to new opportunities, new client demands and new markets. Accenture has undergone major change in the past few years: in January 2001 the company changed its name from Andersen Consulting to Accenture. With the new branding came a new market orientation, image and culture. So pervasive was change in the business environment that one manager referred to the need for a capacity for 'constant reinvention' rather than 'change'.

The increasing significance of the eastern economies in the world economic order was also seen as a key feature of the changing business environment confronting Accenture. This has implications for both the way that business is done, in cultural terms, as well as for meeting the imperatives of business clients wanting to expand into new markets, such as China and India. As a result, outsourcing and 'offshoring' operations to lower cost regions in Asia and Europe have become an important objective for many of Accenture's business clients.

The 'What' of Knowledge: creating, harnessing and sharing knowledge

'Knowledge is information that you use to act'. According to respondents at Accenture the key to understanding the contemporary role of knowledge in businesses is to understand that it is information that can be used to act. This is in contrast to a more traditional understanding of knowledge as something that is 'stored' and 'protected' by information 'gatekeepers'. This implies that the key to knowledge management is the accessibility and timely availability of knowledge.

It was also recognised that:

- The need for timely knowledge was greater than at any time in the past;
- The sheer volume of data, information and knowledge meant that clients and users all faced the potential problem of being overwhelmed by knowledge;
- The 'shelf life' for knowledge was continually getting shorter;
- Users of knowledge invariably had less time to learn than was previously the case and knowledge now had to be summarised and packaged in highly accessible forms to be useful.

Diverse knowledge needs in order to respond to market demands

The forms of knowledge used by Accenture are diverse and include:

- Process and policy knowledge. This knowledge is often relatively routine information about business processes, procedures and policies.
- Subject matter expert knowledge. This is more complex information and knowledge that will have been acquired by subject matter experts in the course of their work.

- Cultural knowledge. This kind of more subtle and relatively tacit knowledge pertains to ways of doing things in the company, the organisation's core values and ethics and will often be embedded in communities of practice.
- Tools-Methods-Learning knowledge. This analytical knowledge is normally derived from the accumulated experience of professionals within the company and includes the lessons learnt from previous assignments. This knowledge might relate to methods and approaches, techniques, or subject matter in the form of learnings drawn from previous projects.
- Innovative knowledge. Innovation is sustained, developed and supported in a number of ways. Accenture Australia is able to draw on the knowledge developed at a number of specialist Accenture facilities including the technology innovation area in Palo Alto, California and the Institute for Strategic Change in Cambridge, Massachusetts. Innovation is encouraged and is 'embedded throughout the organisation'. Accenture emphasises that innovation is something 'central to the way we live'. Knowledge professionals identify innovation on a project and harness that knowledge for the organisation. Methods of encouraging innovation and the generation of new knowledge are discussed further below.

Creating and harnessing knowledge

KM professionals with strong business experience driving KM practices

Harnessing and adding value to knowledge is one of the key areas where knowledge management at Accenture has developed deep skills and capabilities. Analytical knowledge, or knowledge and intelligence that is drawn from the experiences of particular client assignments, is one of the most important forms of knowledge for Accenture. Whereas previously this kind of knowledge may simply have been collected and added to a relatively static database or library, Accenture now concentrates on more highly skilled and operationally experienced KM professionals interpreting, assessing and classifying this kind of knowledge. Typically these KM professionals will:

- Interpret the material drawn from a project;
- Assess the utility of the material for future proposals or projects (subject to client confidentiality);
- Distil the material into an executive summary;
- Catalogue the material appropriately;
- Decide to act on the knowledge by, for example, developing a training course or devising some other means of promoting, sharing or communicating the knowledge.

In order to achieve this more developed utilisation of knowledge, Accenture now employs fewer but more highly skilled and experienced KM professionals who increasingly come from a consulting and/or industry background. Accenture has been able to use fewer staff in these roles partly because technological improvements have meant that there is less need for manual intervention. Nevertheless, it was conceded that staffing this analytical knowledge management function with experienced and relatively senior staff represented a major resource commitment by the company to knowledge management.

Identifying and harnessing analytical knowledge is a critical responsibility for KM staff

Specific project intelligence of this kind is managed through Accenture's relational database system known as the Knowledge Xchange (KX), described further below.

The harnessing of analytical knowledge is a key responsibility for Accenture's KM staff. KM staff will be informed of new projects with potentially high analytical value through a number of possible avenues.

- Financial reports will indicate the commencement of new projects and relevant KM professionals scan these reports to identify new projects where analytical knowledge is likely to be needed.
- KM professionals develop close relationships with the business development professionals who are responsible for selling services and securing clients. Business development professionals are thereby able to inform KM staff of new projects coming on line.
- KM professionals participate in New Business Meetings with senior staff for the groups they support, providing them with advance notice of potential clients and types of services being offered.

Sponsorship for KM at the highest level has been important at Accenture. Particular partners designated with formal capability development responsibilities assist KM staff identify where there are opportunities for knowledge provision and assistance.

The role of knowledge champions

A number of years ago the KM Organisation at Accenture introduced a Client Team Knowledge Services Program. This program was aimed at assisting the client teams optimise the knowledge resources available to them. The program was also intended as a formal way of collecting or harnessing project knowledge while it was still current and therefore of most value. The program identified individual people on project teams (known as Knowledge Champions) to work with the KM group to define and identify the knowledge needs of the project and in turn decide what knowledge needed to be gathered. These Knowledge Champions would inform the KM group of the project team's progress on a regular basis. Information was packaged according to a timetable developed at the start of the project to ensure timely delivery of new knowledge to the organisation as a whole. Knowledge Champions acted as a conduit for the provision of information and knowledge to the project team. The Knowledge Champions also promoted the use of the Knowledge Xchange, and provided training to fellow team members on how to use the KX if appropriate. The local Knowledge Management teams managed this program and provided training, assistance, backup and feedback to the Knowledge Champions.

Through the successful use of Knowledge Champions, capability development sponsorship and the cultural reorientation towards recognising the importance of knowledge and KM practices, knowledge management within Accenture has matured to the point where it increasingly sees its role as enabling project teams and the company as a whole. This includes the provision of project starter kits, industry summaries, company profiles, project homepages, technical and content training and access to research services. Teams are also alerted to new project wins and commencements as well as new knowledge products and services through emailed 'postcards' which are sent out as soon as material comes to hand.

Knowledge Sharing

Evidently the current Accenture model relies on everybody within the organisation, especially key individuals – knowledge champions, market unit knowledge managers, partners with capability development responsibilities and project leads – being prepared to make time to discuss their findings, experiences and insights with KM staff and commit to contributing to knowledge databases and other repositories. In order for this to work successfully Accenture has instilled a ‘knowledge sharing culture’ within the organisation.

Using performance management system to reinforce knowledge sharing

One of the ways in which Accenture has reinforced this culture has been through the performance management system. The performance management system operates at a number of levels to encourage knowledge sharing. First, as noted above, certain key partners and associate partners (at least one for every service line) are nominated as ‘capability development leads’. The job descriptions for these leads mandate that a specific portion of their time be spent on capability development. Capability development includes identifying the skills required in the service line or market unit, what training is needed, how the knowledge base and expertise of staff should be built and which subject matter experts can be brought in to advise on methods and tools. Evidently this ensures significant senior level support for knowledge management processes, knowledge sharing and associated training and development activities. Second, the performance appraisal criteria for professionals include ‘developing others’ and ‘knowledge contribution’ as key measures. These criteria are also used when assessing promotion candidates. For example, a Manager seeking promotion to Associate Partner would have to demonstrate his or her own knowledge sharing behaviours as well as illustrating how he or she had encouraged or enabled others to develop knowledge sharing skills. Under these circumstances then, Managers have a vested interest in contributing to knowledge sharing. Third, designated Knowledge Champions (see above) are evaluated according to their performance in contributing to knowledge sharing.

Accenture has also supported the culture of knowledge sharing as central to everything the company does by bringing KM within the larger organisational umbrella of ‘People Enablement’ along with learning and methods and tools. In this way knowledge is seen as something that people need in order to do their job.

The Knowledge Xchange, the vehicle for global knowledge sharing

Accenture sees itself as having developed ‘global knowledge sharing’ and this is seen as a key area of strategic advantage. The unified global information and knowledge system of databases known as the Knowledge Xchange, accessed via a portal, provides the technological base for this sharing.

The Knowledge Xchange has enabled Accenture to formalise the informal knowledge sharing practices that have traditionally occurred, by making access to experts and their expertise available 24 hours a day. It has allowed the presentation of regional and geographic information in appropriate formats and provides a vehicle for all staff to share and contribute their experience and knowledge.

Supported by the performance management system, the proactive facilitation of KM professionals and the KM and Capability sponsors the KX has proved an effective tool for the capturing and sharing of knowledge at Accenture.

The 'Why' of Knowledge: purposes and outcomes

The 'need for speed'

Efficient and effective KM is central to Accenture's continuing success as a knowledge organisation. In particular, the increasingly competitive environment and the imperative of many of the company's clients to be able to adapt and capitalise on ideas and innovations quickly has made speed of provision of advice and consultancy services increasingly important.

Managing knowledge to maintain cost competitiveness

Cost competitiveness is also important for Accenture's capacity to operate in an increasingly crowded and competitive professional services market. One of the most important segments of the market for Accenture over the past decade has been in the area of Enterprise Resource Planning system (ERP) implementations. The ability of Accenture to complete complex ERP implementations quickly and successfully depends on their capacity to quickly and efficiently find solutions to often quite specific configuration problems encountered in the course of ERP implementations. While Accenture's Solutions Engineering service line has completed thousands of ERP implementations, and while many site-specific problems have been solved in the process, individual Accenture consultants will not necessarily have encountered the problems before. It is critical therefore that Accenture is able to provide their consultants with easy and efficient access to solutions knowledge based on past experience.

Managing knowledge to facilitate training and development.

KM is increasingly linked into Accenture's training for new and existing staff. KM is seen to add value in the provision of training and content to new staff in particular. Training and skills development at Accenture is driven through the company's online e-learning system, myLearning. MyLearning is a personalised web-based entry point and navigation tool. It allows employees to review their development planning needs, find the courses that can meet those needs, establish a plan for how and when to take those courses, and then register for the training.

KM services are now being linked into the myLearning system so that, in addition to training courses, employees can also see what relevant tools and methods are available to them. MyLearning is also linked to other databases that utilise real examples and case studies, to provide a complete range of learning materials.

Technology and virtual learning opportunities add to Accenture's established professional development suite. Nevertheless, face-to-face training and development continues to be important.

Managing knowledge to identify new trends and opportunities

KM contributes to business competitiveness for Accenture by providing intelligence on potential areas of business. Accenture reasons that its clients expect the company to be at the cutting edge of new trends in business and management. Senior partners will typically identify new areas of management thinking as viable areas for further research. For example, Accenture is currently developing ideas, products and services around the emerging field of 'supply relationship management'. In order for Accenture to be able to take SRM offerings to the market, the company first needs to ensure that its own

experts are talking with each other about the area and its potential for clients. KM sees its role as facilitating this knowledge development and thought leadership through the use of its expert networks and research services.

The 'How' of Knowledge: practices and processes

Critical to Accenture's successful management of knowledge has been the integration of knowledge management practices into the range of services and resources available to its professionals. Accenture refers to:

Knowledge management as part of a full spectrum of enablers Accenture's professionals leverage to deliver value to clients. Organisationally, these enablers – learning, methods, and tools in addition to knowledge management – are part of a single internal practice (People Enablement). This practice provides Accenture people with the means for generating and sharing ideas, building skills and knowledge, and executing projects efficiently, to help them exceed client and market expectations (Accenture respondent).

Integrating Knowledge Management Service Delivery through the "Client Team Knowledge Program"

Some time ago Accenture moved to increase the integration of its KM functions. Traditionally, KM had been sponsored and managed by industry groups, service lines or geographic regions that resulted in a somewhat 'siloed' approach. This meant that project teams might be contacted by a number of different KM groups from different business units or regions, often seeking similar or related information. One KM professional respondent saw the identification of a partner with explicit KM responsibility as a key turning point for the group. This appointment focused attention on the role of KM within the organisation and gave the group a voice and champion at an executive level.

The 'Client Team Knowledge Services' (CTKS) Program was an initiative designed to provide an integrated range of KM services to client teams through a streamlined process. It enabled the client-facing personnel to obtain the relevant knowledge and skills they needed to deliver to the client and ensured that valuable knowledge was captured, contributed and shared appropriately with the rest of the company (in accordance with contractual arrangements).

The Client Team Knowledge Services program involved a set of services that included:

- Knowledge Enabling: establishing KM roles, facilitating connectivity, training the team, facilitating legal support on confidentiality, and Intellectual Property Rights.
- Knowledge Planning: assisting Client Teams to develop a knowledge plan that identifies their knowledge needs and potential contributions.
- Knowledge Equipping: providing Client Teams with the best available knowledge in accordance with their knowledge plan.
- Knowledge Contribution: facilitating the contributions of knowledge throughout the life of the project.
- KM Operations: tracking progress against the knowledge plan, communicating regularly on status and evaluating knowledge service.

For the program to be successful it was essential that KM professionals worked together. The program facilitated cross team interaction and gave the KM group

visibility in the organisation, all of which improved the Group's ability to deliver value added KM services.

Other means of managing knowledge employed by Accenture include:

The Employee Portal

The Accenture Portal is the key integrator of the company's knowledge management system. It is a web-based tool that aggregates, integrates and personalises all enterprise knowledge and provides access to Accenture's web-enabled knowledge resources, tools, services, learning programs, benefits, news, and career applications. The knowledge channel of the portal provides the "gateway" to the content of Accenture's Knowledge Xchange system.

The Knowledge Exchange

The Knowledge Xchange is the centrepiece of Accenture's KM system. It is a collection of databases and websites accessed via a portal, that supports the sharing and using of knowledge and resources throughout the organisation.

The repositories include executive summaries of previous projects, key deliverables from engagements, lists of available tools and methods, profiles of subject matter experts, links to training and development courses and resources, discussion databases and external and internal research resources. One of the key ways in which Accenture ensures that the lessons learnt in previous projects are easily accessible to project teams is through the use of the Methodology Finder. The Methodology Finder provides enquirers with a single point of access to the full range of resources, methods and tools that are available for any particular or general project problem. (The Methodology Finder includes access to external sources of information available through the Internet). In this way, project leads and team members can quickly access the knowledge derived from the previous experiences of partners and other team leads and members.

While the Knowledge Xchange is an extremely valuable knowledge resource for Accenture, it is apparent that its development has had to be carefully managed and resourced.

The Knowledge Xchange was initially driven by technology; in its first iteration it provided supporting technology and a place to gather and store information that needed to be shared across the organisation. Contributions were encouraged through the use of incentives.

After a number of years of growth, the company realised that it had a large but relatively unwieldy set of databases and the next phase involved a long process of editing, refining and reclassifying the knowledge on the Knowledge Xchange. Accenture now has a powerful and comprehensive knowledge tool and resource that is critical to the company's capacity to store, manage, share and use analytical and other knowledge.

Knowledge Help Desk

The Help Desk is the central reference point for any internal inquiry. Experienced staff on the Help Desk can quickly direct enquiries to the full suite of knowledge services and resources including key contacts, project databases, tools, methods and other resources including subject matter experts.

Instant messaging

Instant messaging is also widely used by Accenture staff. Instant messaging is seen as a particularly powerful tool where resources and expertise are spread globally and where clients are seeking advice, assistance and solutions instantly. Instant messaging enables an Accenture employee meeting with a client to instantly access an expert who may be on the other side of the globe and secure a real-time response to an issue or problem as soon as it arises. Whilst solutions are not communicated via instant messaging, individuals are able to connect and follow up with emails or phone calls.

Expert Circles and Networks

KM has had significant success in developing networks or experts within Accenture to ensure that the company maintains a high profile in thought leadership. Whenever a new area of practice is identified, KM sets about establishing an expert network. Expert networks are built up through two methods. First, a KM professional in the area might begin assembling a network through information provided by partners in different locations working in different parts of the business. KM might then organise a series of conference calls to establish the network. As the work of the network matures, KM will organise regular datacasts on the relevant topic, whereby staff are invited to dial in and listen to on-line discussions amongst the members of the expert circle. Secondly, Accenture uses the discussion databases on the Knowledge Xchange to establish and encourage expert networks and develop them into communities of practice. Anyone accessing one of the discussion databases on the Knowledge Xchange is first required to complete a personal contact sheet, which, amongst other things, asks the person to specify their areas of expertise or interest. When any question is posted on any of the discussion databases the contributor is forced to classify the query into an appropriate category or categories before it can be viewed. The question, once posted, is then automatically sent via direct email to all relevant experts.

This system has now been enhanced with the development of ‘experts.accenture.com’ – an integrated website providing access to information and details on experts across the entire global operation.

Expert circles and networks, and the communities of practice that develop out of them, are the primary way in which Accenture seeks to continually capture and share the tacit knowledge of some of its most critical and experienced professional staff.

While the discussion databases are useful, one KM professional noted that there remains no substitute for direct one-on-one contact. The combination of mobile phones, instant messaging and the KX is facilitating more direct one-on-one contact between knowledge seekers and experts as a complement to the discussion databases. Accenture has also increased its use of video-conferencing, audio-conferencing and webcasts as a way of enhancing the knowledge sharing experience.

The challenge of capturing tacit knowledge

Accenture has had considerable success in exploiting knowledge management, especially in the capture and codification of explicit knowledge. Tacit knowledge has proved more difficult to manage, but with a change of strategy Accenture has been able to mine this valuable area of knowledge for the benefit of the company. Accenture is focusing on using technology to provide opportunities for person-to-person knowledge transfer. According to one respondent: ‘It is human nature to want to share what we know with those around us, however, it is important that the knowledge be applied with context and understanding. Dialogue enables this understanding and enables true knowledge transfer’.

Project leads and key personnel are sometimes interviewed at the completion of a project as a means of drawing out critical tacit knowledge. Videos or audio recordings of the interviews are then made available on the KX using streaming video technology. Accenture is also experimenting with structured debates involving project participants where the discussion and debate centres on the decision-making processes that occurred at 'significant junctures' in projects – moments when critical strategic decisions were made in the course of an engagement – as a means of capturing deep tacit knowledge.

Accenture also uses datacasts, interactive training, expert networks and virtual communities to share knowledge and experience. Ultimately Accenture's organisational culture is seen by the company's KM professionals as critical to its capacity to encourage the sharing of often highly nuanced, tacit knowledge. That culture is seen to be characterised by an environment of high trust, by good top-down communication flows, by a preparedness to provide and accept upward feedback and by the promotion of organisational values that are based on a high degree of respect for individuals.

Evaluation of KM

Knowledge Management is seen to make a direct financial contribution to Accenture's business in a number of ways. Having a successful and effective system of ensuring that knowledge is captured, shared and used is critical to Accenture's market face. According to one KM respondent, it is reasoned that when Accenture goes to market claiming that their service and experience is superior, the claims need to be supported by a system that ensures that organisational knowledge is accessible to all consultants and analysts. Consultants must have easy and effective access to the wealth of experience and expertise that exists across the organisation more generally. As a result commercial proposals often emphasise Accenture's KM record and resources.

KM is also seen to add value to the business by optimising the use of methodologies and strategies, allowing easy and swift access to solutions to particular problems.

Measuring the precise value of KM is difficult

Most of the techniques used by Knowledge Managers at Accenture derive from their use of evaluation techniques for the services they provide. For example, some KM managers routinely survey internal clients to find out how much time using Knowledge Services saved them when delivering to clients.

More generally, the valuation of KM services is conducted by constant monitoring of internal clients' usage of, and satisfaction with, KM services. Accenture measures customer satisfaction, the volume of repeat customers, the size and growth in the customer base and the extent to which clients view KM as a trusted and valued resource. One senior Knowledge Manager noted that as KM at Accenture was not run on a cost for service basis, no numerical, financial measures were used for direct evaluation. Rather evaluation was based on measures of customer satisfaction, supplemented by more direct usage data – number of hits on KM databases, re-use of materials in databases, etc. In this way Accenture KM takes a balanced scorecard approach to evaluation.

Wyeth Australia

The Organisation and its Business Environment

Wyeth Australia is a wholly owned subsidiary of the American-based pharmaceutical company, Wyeth Inc. The core business for Wyeth is health, pharmaceutical and animal health products. In recent years the business focus for Wyeth (and Wyeth Australia) has resulted in the incorporation of lower volume higher cost prescription medicines. These medicines are the results of the more expensive biotechnology research and development through Wyeth's strategic alliances with biotechnology companies. New products for Wyeth are increasingly expected to be vaccines and products derived from biotechnology processes. Associated with this shift in product offerings, Wyeth Australia (WA) has moved away from manufacturing and distributing locally the pharmaceutical products designed and developed overseas. Increasingly, however, Wyeth Australia is responsible for more clinical and pharmaco-economics research of products. This has led to the expansion of their clinical research teams in Australia – one of the key ways in which WA is creating and using knowledge to better inform its critical business decisions.

Competitive Environment

The imperative of shifting from high volume, low cost to higher value add

Wyeth's competitive environment has changed as its market focus has changed. Whereas, traditionally, Wyeth produced and distributed infant formula and had a very wide portfolio of prescription medications, over the past few years the company has divested itself of many of its products. Wyeth has now moved into new therapeutic areas with products such as an anti-depressant and a gastro-reflux medication as well as new vaccines and a product for rheumatoid arthritis. This has implied the need to develop new knowledge and new skills in these therapeutic areas.

Competition in the pharmaceuticals industry has recently been characterised by relatively large numbers of mergers and acquisitions. Wyeth is one of the few large global pharmaceuticals not to have merged with one of its competitors, and in this sense, Wyeth remains comparatively isolated in a market which has become increasingly competitive and challenging as competitors have become larger through M&As. Wyeth is nevertheless amongst the ten largest pharmaceutical companies in Australia.

All pharmaceutical companies operate in dynamic markets. This is partly because the profitability of unique products is inherently limited by patents. As patents on particular products expire, generic manufacturers are able to offer identical products, consequently pharmaceutical companies are constantly under pressure to develop and market new products.

As part of its shift from a high volume, low cost product manufacturer to a marketer of lower volume, higher cost products, Wyeth Australia ceased local manufacturing approximately two years ago. As a consequence, employment in Wyeth Australia was reduced from approximately 600 to around 300 across Australia and New Zealand. About half of WA's current staff are in sales,

distributed throughout sales offices in New South Wales, Victoria, Queensland, South Australia, Western Australia and New Zealand.

The globalisation of Wyeth has also seen WA play an increasing role in the company's Asian regional group as staff from WA have assisted in providing advice and expertise to the regional manufacturing facilities in countries such as Singapore and India. One of the clinical research teams conducts clinical trials in the Asian region as well as providing advice and training in clinical research.

Key business imperatives for Wyeth Australia in the current environment include:

- Maximising the existing portfolio of pharmaceutical products through effective marketing, sales and education;
- Successful launch of and accelerated access to new products;
- Effective advocacy to government under circumstances where many new products are relatively expensive, and where government is seeking to control public health costs in general (in particular through the pharmaceutical benefits scheme);
- Appropriate utilisation of people in the organisation in cross-functional work teams;
- Constant business process improvement to ensure that stock control, warehousing and distribution are operating as efficiently as possible.

WA's market presence, visibility and reputation is critically important to its continued success. In recognition of this, WA is currently developing a new website to improve the company's communications and relationships with the community as a whole.

The 'What' of Knowledge: creating, harnessing and sharing knowledge

Creating Knowledge

One of the major forms of new knowledge generated by Wyeth Australia is that associated with the clinical trial research, which the company undertakes. New medications will typically be provided by the parent company in the US and local clinical trials are then conducted by Wyeth Australia. WA's clinical research teams coordinate the conduct of the trials locally as well as the analysis of results and production of the final reports and publications on the findings. The trials conducted locally generate information that contributes to the global knowledge about the safety and efficacy of Wyeth products. Through dissemination of this information by WA sales representatives to health professionals, WA helps doctors and patients make more informed health choices.

Given that Wyeth is currently in the process of trialling and marketing new products based on new chemical entities, it sees an important supportive role in also educating doctors and other health and medical professionals. Therefore, it is critical that WA is able to effectively gather and disseminate the data drawn from clinical trials as well as from published medical research papers and other related data drawn from leading medical journals. Within WA's medical group the medical communications team is responsible for this continual process of literature researching and collation to make it available to health professionals.

WA also sponsors investigator originated research proposals at various academic institutions and hospitals. The data derived from that research is also published in medical research papers and journals.

Sharing Knowledge

Cross-functional teams to facilitate knowledge sharing

The principal way in which WA has succeeded in improving the sharing of internal knowledge has been through the use of cross-functional teams of various kinds. 'Brand teams' are now common across the organisation. These teams will typically be set up around a particular product or therapeutic area and will bring together sales and marketing, medical, research and other staff to discuss product development, market preparation and internal communications strategies around particular products or therapeutic areas.

Meetings and conferences to share knowledge

So as to better communicate information about Wyeth's activities around the head office in Sydney, WA holds a communal morning tea meeting every Tuesday. Generally these morning teas feature a presentation on a new treatment or product relating to a particular condition and are designed to keep all staff informed of company and product developments. Knowledge about new therapeutic areas is also shared with all employees at 'lunch and learn' sessions.

Unsurprisingly, given that sales and marketing is a critical part of WA's business, the company holds a large number of sales conferences and meetings as a prime means of sharing information. Information and knowledge shared at sales conferences and meetings will generally be sales strategies information and intelligence, sales data and trends, intelligence on competitors, and the experiences of sales staff from the field. Major sales conferences will also feature presentations from customers or relevant associations.

Sales teams meet at least once per quarter. Some of these meetings are highly structured. For example, at the quarterly meetings of the nutritional sales team in Victoria every sales representative presents information on the current sales strategy for their products, and the team reviews strategy and performance.

ETMS: facilitating technical knowledge sharing

Technical or medical knowledge and information is also shared between medical group staff and sales staff using the Electronic Territory Management System (ETMS). Sales staff in the field might receive a query from a practitioner, which they are unable to answer or fully answer immediately. The sales representative can post a medical research or product question via the ETMS and receive a response from a medical group professional within WA, which can then be shared with other sales representatives via the email distribution network. Questions or observations raised by sales staff in the field may also become the subject of 'weekly comments'. Weekly comments are typically made by marketing and other staff in response to the issues raised by sales staff on the basis of their experiences talking to customers.

The ETMS also allows WA's sales representatives to effectively manage more routine information and data relating to their clients. One of the great benefits of

this system is its ability to assist with the retention of knowledge pertaining to clients. When a sales representative leaves the company, information specific to their territory is easily passed on to the new representative via the ETMS.

Effective sharing and communication of supply chain information and data is also critical to WA's operations. WA's upstream supply chain is relatively tight and self-contained within Wyeth. WA distributes product to pharmaceutical wholesalers, and in some cases direct to hospitals. For example, there is a necessity to exchange and share data between WA and the wholesalers to ensure adequacy of supply.

Staff intranet for internal communications

Internal communications about company performance and direction are conducted through the intranet (WANZNET), weekly communal meetings and at various special events. The MD, for example, provides update reports to staff at the national sales conference and at communal morning teas. WA also communicates organisational and corporate information through its in-house magazine, which has recently been made available on the intranet.

Harnessing Knowledge

Sales and marketing data critical

Marketing and sales data and knowledge is critically important for WA. WA has invested considerable resources on software to analyse sales performance against competitors. Each representative uses the software and data to analyse sales trends within their particular territory and their own performance can be benchmarked against competitors. This knowledge is then used by sales reps to target their sales efforts and develop new marketing tactics and strategies.

Marketing data gathered by WA according to standard industry protocols is also used by WA to monitor sales and marketing performance. Marketing data is also drawn from wholesaler trends which indicate what products are being prescribed. The marketing groups also commission specialist research in order to ascertain consumer and customer attitudes and reactions to particular products.

Advisory boards providing important specialist knowledge

WA also relies on the specialist knowledge that can be shared through advisory boards that have been established around particular areas of medical practice. In some instances WA also assists in the establishment of specialist advisory boards to advise on current trends, best practice and thinking around particular medical conditions or therapies. These bodies can provide valuable information regarding the likely needs of medical practitioners in connection with particular areas of treatment.

Mentoring seen as vital for tacit knowledge transfer

WA is also moving to more proactively manage its developmental knowledge. While the company has had succession and high potential planning processes for some time, along with career development plans for employees, WA is now planning to introduce more formalised mentoring programs as a means of improving the exchange and retention of tacit knowledge held by key employees.

Performance data highlighting the importance of project management skills

WA is also placing much greater emphasis on the harnessing and analysis of performance information and data. The company has identified project management as one of the key skills, particularly for sales staff, and has been focussing strongly on the evaluation phase of project management – evaluating how staff and teams have performed against the explicit goals set for a particular project. Teams are therefore asked to review their success against planned activities at the completion of a project.

The 'Why' of Knowledge: purposes and outcome

WA uses its knowledge to:

- Educate and empower sales representatives to respond, educate and inform customers (doctors and all health professionals);
- Better understand markets and market trends;
- Generate information on the safety and efficacy and use of our products to inform our customers.
- Make critical decisions about whether or not to launch particular products on to the local market;
- Inform employees of company direction and business outlook as a means of building employee commitment and engagement with the business.

Communicating medical research information internally and externally is critical for WA. One of the key ways in which WA uses its knowledge is through the provision of information and research results to its external customers. WA's key customers are medical practitioners, doctors and specialists, who are responsible for making pharmaceutical prescription choices and recommendations to their patients. WA does not generally communicate product and research information directly to consumers, the ultimate users of their products. However, WA maintains close links and communications with health and medical consumer associations as well as interest groups that promote research, treatment and management of particular medical conditions or diseases. WA works closely with a number of these groups to promote best practice around new treatments and interventions. In dealing with customers and consumers WA sees 'education as the key'. It is therefore imperative for WA's sales representatives to be extremely well briefed about relevant medical research so that they can effectively educate and inform their customers of the potential benefits and application of new products. WA is also a member of the Medicines Australia and is a signatory to its code guaranteeing that all advertising and promotion of pharmaceuticals is accurate.

The 'How' of Knowledge: practices and processes

Using performance management system to reinforce collaborative behaviours

Recognising that the Australian market environment was changing and becoming increasingly competitive, WA embarked on a major organisational cultural change program commencing in 1992-93. Central to this process was a plan for including all staff in the development of a new vision, mission and set of values for the company. All employees participated in workshops to this achieve this,

discussing amongst other things, team-based ways of working and conflict resolution. One of the key values for WA is 'collaboration'. The importance of collaborative work styles is reinforced through the performance management and appraisal system. As part of their performance appraisal, all staff need to demonstrate how their activities contribute to the realisation of company values, including collaboration.

In addition to the operation of the performance management and appraisal system to reflect WA's commitment to knowledge dissemination and teamwork, the company uses a number of other methods to enhance the effective management of knowledge:

Company Intranet

WANZNET, has just recently been launched at WA. The intranet contains information on the structure of the organisation, contacts, policies and procedures and current issues. WANZNET also links to a number of product specific websites that enable sales representatives to obtain and share current information, practices and ideas. In this way sales representatives are able to exchange data and information with other staff and access marketing and other support staff.

Medical research databases

All WA's sales force have access to a common pool of medical research papers that provide research results and information relating to therapeutic areas and the use and characteristics of pharmaceutical products. Sales representatives use these papers and results to inform customers and the usefulness of particular papers is communicated through the weekly comments facility noted above.

Clinical trials

The sponsorship and conduct of clinical trials is a critical means of generating knowledge to inform customers on product safety, efficacy and usage and to educate sales representatives on the relevant clinical findings.

Sponsored research

WA's program of sponsoring investigator originated research provides another means of generating vital knowledge for the health care community.

Consultations with Advisory Boards

Access to specialist advisory boards provides WA with knowledge on current best practice and preferences amongst relevant professional and consumer groups.

Cross-functional teams

Brand teams provide an important forum for the encouragement and facilitation of knowledge flows and information sharing across divisional areas.

Electronic Territory Management System

WA's ETMS allows sales staff to access benchmark sales data and plan strategies. It also provides a platform for the exchange of more tacit knowledge through the weekly comments facility.

Sales Conferences and Meetings

Critical information on sales trends, company and product developments and the planning of sales and marketing strategies is disseminated and shared at regular conferences and meetings.

Communal morning teas and 'lunch and learn' sessions

These events are designed to share knowledge about company and product developments with a broad range of staff.

Mentoring programs

WA is moving toward a more formalised mentoring program to assist with the sharing of the tacit knowledge often held by key and experienced employees.

Evaluation of KM

As in most organisations with an organic approach to the development of KM, WA has not been able to easily quantify the ROI for KM initiatives. However, individual KM initiatives with an explicit IT investment component can be evaluated to some degree. For example, the introduction of the ETMS was accompanied by an analysis of the likely returns from such a system.

Ultimately, WA's determination to work on its KM practices, while emerging from strategic planning processes, was not the result of any single event or stimulus. Rather WA, as part of its approach to realising its strategic goals and vision, has come to the realisation that learning and the sharing of learning is critical. In the words of the Learning and Development Manager, 'KM simply has to be done to maintain competitiveness...data and information is the lifeblood of the organisation... data and the transfer of data and information is critical, hence the investment in things like medical information and research '.

Kimberly-Clark Australia

The Organisation and its Business Environment

Kimberly-Clark Australia (KCA) is one of Australia's leading manufacturers, marketers and sellers of personal care, family care, health care and related products. KCA is entirely owned by the global Kimberly-Clark Corporation (KCC). KCA employs approximately 1850 employees across Australia and New Zealand.

KCA is structured into a series of business divisions – personal care, family care, professional, health care, New Zealand – and a series of functions – consumer sales, supply chain, finance, corporate services, management information services and human resources.

Being involved primarily in the manufacturing, marketing and selling of high volume consumer products into the retail market, KCA is in a highly competitive business environment. KCA has high market share for most of its products, a very established set of brand names, high levels of customer loyalty and markets several products that tend to be positioned as high quality rather than low cost products. This means that KCA is always vulnerable to the entry of new competitors or the new product offerings of established competitors. This in turn drives the business imperative that KCA must continually strive for product and process improvement and innovation, and must work hard to protect its status and levels of consumer loyalty.

KCA faces competitors that are constantly improving and upgrading their own technologies, processes and products as well. In the view of one manager at KCA the intensity of the threat posed by the competition has increased rather than diminished over recent years as the pace of technological change and innovation has increased. The imperative for KCA is clearly to 'stay ahead of the competition'.

The 'What' of Knowledge: creating, harnessing and sharing knowledge

As a major company that manufactures, markets and sells products, KCA's knowledge needs are very diverse. Key forms of knowledge for KCA include:

- Manufacturing knowledge: patents and licences over products, processes and technologies; product and process innovation; supply chain data and information;
- Marketing knowledge: information and knowledge on competitors, markets, consumers and their preferences; knowledge on environmental, social and community issues;
- Sales knowledge: CRM and related data and knowledge including sales data, market share, knowledge about customer preferences and trends;
- Corporate knowledge: financial data and information; management information; HR information, data and knowledge.

Creating Knowledge

Global links vital for R&D knowledge

KCA creates, imports and acquires knowledge in a variety of ways. R&D is particularly important for both product and process innovation and improvement and KCA can draw on the resources of KCC as well as their own local R&D activities. KCC's R&D activities are primarily run out of a major research facility located in Neenah, Wisconsin. This facility concentrates on the research and development of new product offerings as well as production processes and manufacturing techniques and undertakes R&D related to everything from chemistry, to infrastructure to the use of new production technologies.

Local market knowledge and intelligence

Market research is undertaken globally as well as locally. Local market knowledge is particularly important for KCA as consumer preferences and attitudes, especially toward personal, family and health care products are often shaped and determined by the culture of the local community and society. Critical local market knowledge also includes information and intelligence on competitor activities and market trends for which KCA retains full-time dedicated consultants to analyse market and competitor trends. KCA also needs to access and acquire research on a very wide range of environmental, social and community issues. KCA sees its status in the community and society as vitally important to its profile and presence as a market leader and exemplary corporate citizen. KCA therefore needs accurate, timely and reliable information, data and research on issues such as resource sustainability, waste management and land care.

Harnessing and Sharing Knowledge

Imperative of increasing integration across divisions driving knowledge sharing

Knowledge sharing practices are vitally important for KCA in terms of the facilitation of both internal knowledge sharing amongst divisions and external knowledge sharing between the organisation and its customers, typically retailers. Whereas the traditional business and operational model might have been based on divisions focussing on their own responsibilities, the new business environment, as comprehended by KCA, means that divisions need to be more in touch with each other and with their customers.

For example, whereas the sales division might once have been able to concentrate on its sales figures and maintaining and developing its customer relationships, and whereas the marketing division might have been able to focus principally on its marketing concepts and strategies, both divisions now need to increasingly integrate their strategies, knowledge and intelligence and work more closely with the organisation's customers. This shift has been driven by a number of forces;

- as a response to increasing competition;
- as a means of ensuring the more efficient and effective use of information and intelligence;

- as a means of improving the efficiency and inter-divisional compatibility of business processes; and,
- in response to changing customer expectations and demands.

Customers demanding more information, data and knowledge

KCA's improved responsiveness to customer expectations is particularly significant. The marketing division, for example, might previously have determined the appropriate time to launch or intensively market products according to their own market research data and then informed customers. Now, however, KCA increasingly recognises that its customers will often want access to that market data, and will want to know the reasons behind the preferred timing for the product launch or advertising campaign and will want to know how that strategy contributes to their performance and profits as well as the performance and profits of KCA. This has necessitated the development of much closer relationships and knowledge sharing arrangements and practices between KCA's divisions and between KCA and its customers. Increasingly these are relationships based on partnership and joint responsibility rather than on more traditional provider-customer or inter-divisional relationships.

Cross-divisional teams

The development of new, increasingly integrated relationships between the divisions of KCA itself has been consolidated through the introduction of cross-divisional learning communities in the form of Category Management Teams. These teams include representatives drawn from divisions such as marketing, sales, operations, finance and human resources and meet regularly to develop strategies around specific product areas or 'categories'. The Category Development Teams:

- develop Category Development Plans which set out goals, strategies and timelines;
- are charged with the responsibility of ensuring that their plans reflect the interests of a wide range of internal and external stakeholders;
- create the foundations for learning communities that facilitate the sharing of knowledge and information from the perspectives of the different divisions which have an interest in the particular product category.

The introduction of more cross-divisional communication and knowledge sharing was associated with a strategic change process that commenced with the work of a senior level steering committee that included three General Managers and senior managers from the key functional areas of the business. The steering committee worked to define what customers needed and led to the development of a major change process which saw a comprehensive review of job descriptions, pay ranges, recruitment strategies, business processes and knowledge and information requirements. Learning and Organisational Development had a key role working with the steering committee in ensuring that divisions and functions were equipped with the training, skills and resources to enable them to work together with other functions and divisions.

Benchmarking facilitating production process improvements

Knowledge harnessing and sharing strategies have also been critical to the success and continuous improvement in performance of KCA's manufacturing

plants. By benchmarking their performance against other KCC mills across the world, KCA mills have been able to significantly improve their production efficiency. The benchmarking of KCA's tissue converting plants (which manufacture facial tissues, paper towel and toilet paper) commenced in 1997. A KCA plant is able to benchmark its performance against 180 corresponding KCC plants around the world. The benchmarking and associated knowledge management process involves a number of elements:

- All KCC plants have access to a consolidated database which details all the equipment operated by each of the plants around the world. In this way, KCA plants can ensure that they are benchmarked against comparable plants and identify those plants which use similar or identical equipment and production processes.
- "Common performance measures" were initially developed by KCC central office to ensure standardised data collection and reporting procedures for each plant. The focus is on three key measures of the efficiency and performance of the production process: waste, delay (downtime) and speed. The methods for collecting data at each plant were checked and certified by a visiting team from KCC central office.
- Each plant routinely enters performance data on each of the measures and receives a monthly report on the plant's comparative performance. The reports are reviewed at monthly meetings attended by the Operations Manager and the Asset Team leaders (asset teams are organised around each of the plant's major product types). The reports serve to identify where potential improvements need to be achieved by highlighting superior performance on particular measures at particular plants.
- Knowledge about sources of performance improvement is then acquired through the operation of the global working groups. These global working groups, constituted by operations managers from plants all around the world, have been designed by KCC as ongoing bodies for sharing often very detailed information on production processes and techniques.
- The KCC working groups meet face-to-face periodically, and members maintain regular contact in between meetings via email correspondence and email discussion and distribution lists. Specific questions about production methods and processes are asked and answered; information about equipment modifications is shared; arrangements for plants to run trials for other plants are organised; details about safety incidents and fixes are shared. Details about the implementation of SMED have also been a regular focus for information and knowledge sharing. Single Minute Exchange Dies is a production methodology designed to reduce machinery and equipment changeover times so as to minimise production line downtime. The logic of the system is to review all the steps that must be taken for changeover and identify those that can be completed while the line is still running as means of reducing downtime.
- Ideas about improvements and changes to production methods and processes gleaned from the knowledge shared within the working groups is then communicated by the Operations Managers through the asset team leaders to the asset teams on the shopfloor. Information and knowledge exchange, and direct feedback from the shopfloor, is facilitated by crew meetings involving the Operations Manager, the asset team leader and the

entire crew. The meetings feature a data show from the Operations Manager, a discussion about proposed process changes and feedback from the shopfloor workers.

In addition to facilitating knowledge sharing about best practice methods and specific solutions, the benchmarking initiative has also led to a number of cultural changes. One Operations Manager noted that prior to the program commencement in 1997 there was a general belief that plant performance was pretty good. The benchmarking highlighted the extent to which it was possible to improve efficiency. He also noted that the process had led to a new level of transparency in production data and information: standardised performance data was now available to plants across the world and to all employees as well.

KCA mills are aiming to build on the success of the benchmarking initiatives by further extending their knowledge harnessing to improve the gathering and utilisation of shopfloor production and process knowledge. It was noted that KCC's benchmark mills overseas are distinguished by management spending significant amounts of time on the shopfloor. This is seen to facilitate improved communication on the shopfloor and to improve regular feedback from workers on the effectiveness of process innovations.

The 'Why' of Knowledge: purposes and outcomes

Knowledge to sustain company reputation as a leading corporate citizen

Like its parent KCC, KCA is driven by a strong determination to present a positive and progressive corporate image to its staff, the market and the community more generally. KCA expends significant resources ensuring that it plays a positive role in the communities where it operates and ensuring, in particular, that it is equipped with the latest research and information on issues associated with the environment and the company's role in responsible environmental management.

KCA also works hard to develop and maintain strong constructive and enduring relationships with its staff. In addition to progressive and proactive HR practices and employment conditions (which has seen KCA rated as an employer of choice in 2000), KCA appears committed to effective communication with its staff and with its stakeholders – its customers, its supply chain partners, its ultimate consumers and the community more generally.

Knowledge and information about the environment, society and community and about KCA's role in environmental management, and its impact on the communities where it operates, is seen as important for KCA for a number of reasons. First, senior management at KCA (and KCC) has always placed great stock in the company being a strong and respected corporate citizen. The company funds significant programs of social and community development around the world. Second, it is recognised that being an informed environmental manager and corporate citizen makes good business sense. KCA acknowledges that consumers are becoming more concerned with corporate ethics, appropriate environmental standards and practices, and the social responsibility of major corporations. Good practice on these criteria helps sustain KCA's leadership position in the market. Third, KCA's attempts to integrate the firm's divisions, clarify its corporate and business message to its staff, and promote progressive practices and initiatives across the community, help build the 'family and

community' feel that KCA sees as distinctive to its organisational culture and characteristic of its relationships with staff.

Knowledge as the basis of strong customer relationships

Knowledge is also used within KCA to build and strengthen all-important customer relationships. Market knowledge, including the results of market research and the 'softer' knowledge about the preferences and perspectives of KCA's retailer customers is critical for retaining existing customers and for maintaining the high profile of KCA products with those customers.

Knowledge to continue manufacturing process improvement

KCA's manufacturing division also depends on manufacturing process knowledge in order to ensure that production processes, methods and technologies are efficient and leading edge. As detailed above, process and production knowledge is acquired through the benchmarking of plant performance against comparable overseas KCC plants and the operation of the working groups that share ideas and strategies for improving production performance.

The 'How' of Knowledge: practices and processes

As a large, successful, customer-focused organisation with an enormous amount of diverse information and knowledge to manage, KCA uses the full range of methods of knowledge harnessing and communication. Meetings and email are commonly used. One example of the cross-divisional team, the Category Management Teams, meet regularly to share knowledge. Email is also used heavily throughout the organisation.

ERP facilitating faster and more effective communication flows

KCA has had IT systems for some time that have permitted the storage of data, information and analyses on all aspects of the business – operations, supply chain data, customer records, financials, management information, etc. Recognising the need for best practice communication flows and information access, KCA has worked to develop IT systems that improve the visibility and transparency of key information and data and enhance the response times for queries for information, data and reports. In 2001 KCA implemented SAP/R3 as a means of integrating the legacy systems into a single uniform system that would ensure the improved integration of processes and procedures and facilitate faster, more accurate information flows and greater accessibility across the organisation.

The introduction of the new ERP was accompanied by a major training investment on the part of KCA. For many workers in particular functional areas, such as manufacturing, this was the first time that they were required to use computer based systems to record and access data.

Facilitating improved integration of divisions and improved knowledge sharing and information flows was not, of course, simply a matter of installing SAP/R3. Staff practices, behaviours and the culture around knowledge and information had to change as well. Networking within and across divisions of the business has always been important and continues to be strongly encouraged by KCA. However, KCA has also introduced other systems designed to facilitate the

capture of key tacit knowledge held by employees. For example, sales staff are required to routinely record all meetings and communications with customers so that KCA is always able to access complete and comprehensive customer records and data.

Performance management system used to reinforce knowledge sharing

KCA has been able to capture this critical tacit knowledge through the technology at hand and through the operation of the performance management and development system. Sales management teams, for example, are formally responsible for ensuring that all their employees maintain accurate records of all contacts and related data. More generally, though, KCA has sought to use the performance management and development system to more strongly integrate individual employees into the whole company by clarifying objectives, upgrading job descriptions, sharpening performance measures, developing detailed competencies and providing clarity as to how the individual employee fits within the larger organisation. It is apparent that this has been a key way of clearly communicating the company's business vision and encouraging employees to take a 'whole of company approach' to their own role.

Communication of strategic company information

Internal communication of news and information about the business generally is facilitated in a number of ways. The Managing Director conducts bi-annual communication sessions where information about new products and developments, market intelligence, financial information and recent success stories is provided. This is also supplemented by the release of a quarterly video from the MD, which is made available to all sites.

Particular worksites also conduct a wide range of information sessions including, for example, training days that are regularly held at the mill sites to discuss various topics associated with production, product or the market.

The KCC staff intranet is also widely used for the communication of information and news on a global scale. The intranet also has a number of active features. For example, the intranet's "Ask Tom a Question" feature enables Kimberly-Clark's staff from around the world to direct questions to the CEO, Tom Falk.

Mentoring to ensure the transfer of tacit knowledge

As an employer of choice KCA has an enviable record of high staff retention rates. However, KCA's own analysis suggests that a relatively large proportion of staff are due for retirement over the next five to ten years. A significant number of these staff, with long work histories at KCA, possess critical tacit knowledge that the company can ill afford to lose when they retire. As a result KCA is investigating mentoring as a method of knowledge sharing which would place new or more junior staff in positions working alongside experienced employees who are looking to expand their skill sets and should facilitate the transfer of knowledge from those that may retire in the medium term future. In this way KCA plans to ensure the timely transfer of tacit knowledge from experienced to less experienced staff in key parts of the organisation.

Knowledge management development a key part of company management development programs

KCA's extensive learning and development programs also make a contribution to supporting and improving better communication and knowledge sharing amongst key personnel. In 2002 KCA launched its Mt Eliza In-house Management Development Program developed by KCA in conjunction with the Mt Eliza Business School. The program provides a structured business administration education and training course covering all levels of qualifications from Graduate Certificate through to MBA. In 2001 KCA called for nominees to participate in the program from across all parts of the organisation in Australia. For the first intake in 2002 23 employees were selected. One of the key ways in which the Management Development Program is making a contribution to the knowledge development and sharing practices in KCA is through the work of the course's syndicate teams. All participants in the program work in a syndicate team which is made up of employees drawn from various divisions and sites of the organisation. Each syndicate team is set a specific work problem that relates specifically to KCA. The teams work on their problems as a team and develop a solution which has a direct practical application to KCA. This syndicate team approach has a number of major benefits:

- Real KCA problems are addressed and solved by the syndicate teams; the ROI is measured by estimating the value of the solution against the investment in the training;
- The program enables KCA to directly capture all the immediate benefits of the training; whereas KCA had previously found that its staff undertaking MBAs or management training would share their experiences and knowledge with students from other organisations, knowledge is now retained and used within KCA.
- The work of the syndicates is based on knowledge sharing practices;
- The functioning of the syndicate teams makes a major contribution to the development of knowledge flows and networks that can then be relied on by employees when future problems, issues and tasks arise.
- Participation in team problem-solving tasks helps employees understand the impact of their decisions and their work on other parts of the business thereby contributing to a better understanding of the 'big picture' of KCA.

The program itself is also seen by KCA to assist in retaining valuable employees and thus assist in retaining knowledge.

Training and skills development has also been important to the improvement of performance in KCA's manufacturing division. Over the past two years KCA has introduced a number of significant organisational changes in its production plants. Some maintenance functions have been outsourced while production and process workers have been trained in maintenance to enable them to undertake routine and minor maintenance thereby minimising disruption to the production process. This Maintainer Program has necessitated a significant investment in the training of operations workers. The training provided over the past two years has involved a mix of on-the-job and off-the-job components toward the achievement of nationally recognised competencies and qualifications.

With a large and diverse employment profile, KCA needs to carefully manage its developmental knowledge relating to the skills, competencies and training of its staff. KCA's career development system includes a program of annual development meetings for all employees, career development teams for each of

its functional areas and databases that contain information on skills, competencies, qualifications and development goals of all employees.

Evaluation of KM

KM at KCA is not formalised in any single overarching KM program. Nevertheless the multiple practices and processes for effectively managing KCA's extensive knowledge demands have clearly made a major contribution to the company's success.

KCA's systems for improving the knowledge and information available to sales representatives, as well as the company's use of marketing knowledge, has helped maintain KCA's strong sales growth. KCA consistently breaks its monthly sales records and this strong performance is attributed in part to the company's capacity to handle and use sales and marketing knowledge.

KCA also commissions an annual Best Employers Survey administered to all its employees. The survey taps employee ratings of the company's performance as an employer and measures the extent of employee 'engagement' with the company. According to the consultants who administer the survey, levels of employee engagement are positively correlated with business performance. The surveys, which measure employee perspectives across a wide range of HR and organisational variables, and benchmarks that data against the annual performance of a wide range of other companies, have consistently identified KCA as an employer of choice. In 2000, for example, KCA was voted one of the top 25 companies in Australia to work for.

Knowledge management practices contributing to high retention

Consistent with its reputation as an employer of choice, KCA has high levels of staff retention. The average length of service across the company is approximately 9 years; very high by industry standards. Along with remuneration, working conditions and the quality of the work experience, KCA's knowledge management practices play a role in retaining staff. High levels of employee satisfaction at KCA appear to be related to the quality of the work experience, and in particular, to the development, knowledge and skills acquisition that employees report receiving. KCA employees appreciate the skills development, cutting edge technology and leading brands that are characteristic of the company.

Knowledge management practices contributing to the bottom line

KCA's knowledge acquisition and sharing initiatives introduced across its manufacturing division have made a major contribution to the bottom line through the realisation of considerable improvements to production performance and efficiency. It is apparent that the benchmarking program initiated in 1997 has had a major stimulus effect – highlighting potential areas for production process improvement, providing a clear focus on the key dimensions of waste, delay and speed, and providing access through the working groups to the successful innovations employed by similar plants elsewhere in the world. As a result of the benchmarking, for example, one of the company's tissue converting plants reported a significant performance jump across 12 different converting lines in the period 1998-2000. As a result of the introduction of teamwork and the re-organisation of the maintenance function in that plant, a further performance jump is expected to be realised in the next two to three years.

Corporate Express

The Organisation and its Business Environment

Corporate Express describes itself as 'one of Australia and New Zealand's leading single source suppliers of indirect goods and services to the office' (Annual Report 2001). While the company is readily identified with the provision of office supplies, it also supplies computer supplies, business furniture, IT solutions, promotional marketing, print services, coffee, catering and washroom supplies. The company's key strategy is to make the acquisition of office and other non-core supplies as easy as possible for business customers. The company highlights the fact that in order to achieve this it:

- Is a single source supplier for all business essentials;
- Provides next business day delivery;
- Uses a central computer system to ensure efficient geographic coverage;
- Exceeds 98% in-stock fill rates for all locations;
- Facilitates flexible and convenient ordering;
- Employs personal account managers to assist in cost cutting initiatives for customers.

Corporate Express (CE) is a highly successful business. Through acquisition and organic growth the sales revenue of the company has increased from \$17.4 million in 1990 to \$633.4 million in 2001. For the calendar year 2001 profit after tax increased 28% to \$32 million. CE is a publicly listed company with a 52% major shareholder – the Dutch multinational Buhrmann NV.

Competitive Environment

Being in a dynamic, high volume sales market the environment for Corporate Express is extremely competitive. In the office supply side of the business, CE faces competition from two major operators (the US multinational Boise Cascade, and the Australian operator National One) as well as a range of smaller, often regional and specialist operators. CE is also conscious that it faces future changes in the competitive environment in the form of new approaches to selling in the market, for example, from new developments in e-commerce and the emergence of new competitors that aggregate the provision of an even wider array of products and services on-line.

As a supplier to Australian business, CE also sees itself as experiencing the effects of the increasing competitive pressures that its customers' businesses are increasingly under. As businesses seek to save money on the cost of all inputs, so the cost of office supplies comes under increasing scrutiny.

A key part of CE's business model is to offer single sourcing, national coverage, a consistent product range and consistent pricing. The CE business model, in fact, seeks to capture some of the perceived benefits of knowledge management and offer them to customers. In effect, CE seeks to provide to its customers simplicity and consistency in their management of all the data and information around the procurement of office and other 'non-core' supplies. CE argues that its customers can benefit from the ease and efficiency of managing that procurement through on-line ordering, guaranteed pricing and consolidated invoicing. CE sees this as one of its key competitive advantages and

has used this message of being able to ‘take the pain out of’ the procurement of non-core supplies to promote itself and aggressively grow its business.

CE’s principal business objective is to maintain a high growth focus and recognise the inherent competitiveness of its market. As a result, the company places a major emphasis on winning and retaining business and works hard to maintain and develop a strong service and sales culture. In addition to its size and reputation as a company that can deliver as promised, CE sees its competitive advantage as its capacity to offer customers simple, efficient, cost-effective fulfilment of their needs. The company’s internet ordering system, ‘NetXpress’, is the largest transacted B2B site in Australia and accounts for 40% of all orders received.

As a result of the company’s keen awareness of the competitive nature of their business and the company’s recognition that ease and reliability of service is their key competitive advantage, CE is committed to the exhaustive measurement of all aspects of their customer service performance. Moreover, in order to deliver on its promise of consistency and reliability in filling customer orders, CE needs an information and data system that is modern, efficient and reliable.

The ‘What’ of Knowledge: creating, harnessing and sharing knowledge

Creating Knowledge

Company performance data

Key knowledge for CE is knowledge about its own performance and the company’s capacity to extract and use data on the performance of its own business is critical. Therefore important data includes fill rates data, data on delivery times, data on time taken from ‘click to click’ on NetXpress and data on customer satisfaction and expectations. CE seeks to collect and analyse data on all aspects of its service and sales functions and the company measures every aspect of its service, sales and delivery performance and seeks to use that information, and analyses of that information, to constantly inform strategic sales and marketing decisions.

Product knowledge, sales and customer data

‘New knowledge’ required by CE includes product knowledge. CE’s strategic suppliers provide a constant flow of information on product developments and offerings. Other new product knowledge is acquired by CE through participation at trade fairs, access to stationery news magazines, and other trade publications, industry websites and so on.

Market research data on customer and consumer trends and preferences is largely gathered by CE through its supplier relationships. Most suppliers, as producers, will conduct their own research on markets for particular product lines and that information will generally be passed on to CE as a major customer. Other product knowledge can also be important. For example, as a distributor, CE needs to understand some of the environmental issues surrounding the manufacture of particular products so that it can respond to customer preferences.

In terms of business and competitive intelligence, CE seeks to exploit the ‘soft’ information about competitors and the marketplace that is picked up by sales staff in the course of their discussions with customers and potential customers. Information gleaned by sales representatives will typically be escalated up the management hierarchy and, if sufficiently critical, will be used by sales managers to inform their strategic decisions.

Building knowledge through a major training commitment

CE seeks to build the knowledge and skills of its employees through a major commitment to training. In 2001 the company significantly increased its training commitment and CE's 1400 employees undertook nearly 55,000 hours of training in that year. Service training accounted for 52% of that training, with personal development (18%), sales (15%) and product (14%) training accounting for the balance. CE sees this investment as adding value to the company's intangible assets. The value of that investment is obviously enhanced by CE's improved staff retention. CE also has very high levels of staff satisfaction. The results of CE's staff satisfaction surveys are consistently better than the composite average of some 250 other Australian organisations undertaking a similar survey.

Training levels, staff retention and staff stability are seen as critical indicators for CE because they imply 'an increasingly experienced workforce with greater knowledge and skills therefore ensuring more effective delivery of the company's promise to its customers, shareholders and suppliers' (Annual Report, 2001: 8).

Harnessing and Sharing Knowledge

CE is a sales and distribution company that does not produce any of the products it sells. Strategic supply relationships are therefore extremely important and CE is committed to developing strong strategic relationships with its suppliers. As noted above, knowledge sharing with strategic suppliers will include information on products and markets trends.

ERP critical for sales, market and customer data

Business data and information required for the efficient operation of the business is handled by the company's ERP system that runs sales, order entry, distribution, invoicing and general ledger. The ERP system facilitates the flow of business information about, for example, sales data concerning which customers are ordering which products in what volume. Account managers use the ERP system as a mine of information that informs their decisions and approach to customers. The ERP system used by CE, "MasterPac", is the critical means for storing operational and customer data. The system facilitates access to that data for sales staff, account managers and more senior managers. The ERP system and the ability of CE's staff to access, analyse and use the data in the ERP system is the information and knowledge foundation on which CE is able to offer its key service to customers: advice and ideas on how to organise their non-direct product procurement more efficiently and effectively. It also follows that CE sales staff need to regularly mine the ERP for relevant data and information, analyse that data and present it to customers in a highly accessible way. Account managers can search the ERP databases by account, identify the account's order history, analyse trends and identify gaps in that customer's ordering behaviour. The account manager will also review the customer's fill rates, costs, and volumes so that they are fully informed about the way in which the customer is using CE's services. On this basis, CE's account managers are able to demonstrate to customers a detailed understanding of their procurement behaviour and to propose possible ways of improving their usage of CE. CE sees the real contribution of their ERP to KM management in terms of its *facilitation* of quick and easy access to accurate and up to date information that makes this sophisticated approach to account management possible.

For CE there is a clear distinction between the *data* in its ERP and the *knowledge* possessed by its employees – knowledge of how to access, manipulate, interpret and present that data in a way that makes sense to their customers.

Knowledge of customers' business and usage central to the service offered by CE

CE may not immediately appear to be a knowledge company in the sense that the heart of the company's business is the sale and distribution of products that are not produced or apparently 'value-added' by CE. However, in addition to streamlining and enhancing the quality and flow of data and information about products, customers and market trends, CE has recognised that its service to its customers can be improved through the provision of information and analysis to those customers about their own business. In 1999 CE developed and launched a new initiative to achieve this value-added service for its clients – Strategic Procurement Analysis (SPA). SPA is a proprietary program developed by CE that maps a customer's current procurement processes and costs and identifies opportunities for improved efficiencies and lower costs for customers. The SPA program also provides suggestions for implementing re-engineered procurement processes and new product choices that will realise savings for customers. SPA is conducted by CE's business analysts in conjunction with a customer's procurement or finance team. The SPA process involves:

- Defining and reviewing the customer business' strategic procurement goals
- Collection of data on the customer's procurement process and activities
- Analysis of process and estimation of transaction process costs
- Product audit which identifies potential savings through choice of alternative products
- Recommendations which may include using internet ordering, just-in-time delivery, single source supply reporting and vendor performance measurement
- Savings summary which details the total savings target, new and old costs.

As a KM tool SPA is an example of using customer information, and the company's experience and expertise in procurement, as a means of analysing part of the customer's business. In turn that analysis leads to recommendations for using CE's products and services more cost effectively.

The 'Why' of Knowledge: purposes and outcomes

Knowledge for proactive sales and marketing

Account managers use information on customer purchasing behaviour drawn from the company's ERP to enable them to work proactively with their customers. Account managers seek to periodically review their relationship with their customers and use the information and data on customer behaviour to suggest to customers ways in which they might use CE's products and services more efficiently or effectively. For example, for major clients CE account managers can use the ERP to prepare a report on customer usage, model potential savings that would result from the use of alternative products, present that report to the customer and offer to amend their orders accordingly. In addition, in the case of very large customers, account managers might recommend a full SPA analysis. In any event the purpose for using the knowledge is the same: to strengthen the relationship with the customer and maintain and increase the size of the account.

Embedding knowledge in processes to achieve increased efficiencies

In its warehousing operations, CE is moving toward increasingly automated warehousing and logistics systems to cut back on the amount of analysis that is required on the shopfloor. Technology is transforming warehousing work at CE (as in many other companies). Traditionally, warehouse workers relied on their sometimes tacit knowledge of stock location, proximity and quantities to most efficiently fulfil orders. In their most advanced warehouses CE uses warehouse and distribution management systems based on barcode scanners and 'pick-to-light' and 'pick-to-voice' technologies to automate aspects of the order filling process. As this system directs store workers to the appropriate aisle and position, and then directs them to take a specific number of articles, some of the discretion and opportunity for error and inefficiency is removed from the process. Obviously this has significant implications for quality and speed – the system can deliver optimal efficiency and eliminate the need for quality checking.

According to the HR manager, 'the technology changes the skills required to work in our warehouse. Instead of our people having to keep information in their head, the information is more conveniently stored and presented to the person'. The codification of what was previously the tacit knowledge held by experienced store workers into automated warehousing routines implies the need for less training for those workers, results in efficiency and process savings and removes the need for 'checkers' as part of the QA process.

The HR Manager recognised that the changing of the warehousing jobs implicit in the new technologies might potentially make those jobs less rewarding and satisfying for employees. As a result, CE have worked to ensure that employees have been directly involved in the development and implementation of the process and technology changes. As a result CE warehouse staff are enthusiastic about the opportunity to work with leading edge technology and one of the most advanced automated warehousing and distribution systems in Australia.

This new technology-enabled way of managing knowledge by codifying areas of tacit knowledge and embedding that knowledge into the warehousing and distribution system might also affect the way in which employees are rewarded. The HR manager speculated that it may lead to a greater propensity to pay on the basis of 'what people can do' rather than 'what people know'. By focussing on the linking of rewards to output performance rather than tacit knowledge the HR manager saw an opportunity to potentially 'incent the people and share the benefit with them'.

CE uses data, information and knowledge to ensure the efficient performance of its business, improve warehousing and distribution efficiency and train and educate employees. However, the company's overarching rationale for knowledge is its use in improving customer relationships. CE's mission is 'to provide single source solutions which make it easier and more cost effective for our clients to do business'. Ultimately, for CE, the realisation of that mission depends on the knowledge of their employees, especially their sales representatives' knowledge of their customers and their customers' business.

The 'How' of Knowledge: practices and processes

As with many large companies CE requires communication systems and methods for disseminating information about company performance, direction and strategy to its employees.

Communication of information and consultation

Information about changes to the organisation of work is typically communicated through committees and meetings. The introduction of new technologies into the warehousing and distribution part of the business, for example, was communicated through a variety of mechanisms. In its Sydney warehouse, for example, CE has a Joint Consultative Committee (JCC) involving representation from the main union, the National Union of Workers. The JCC was a principal mechanism for introducing and discussing the changes with the workforce. The management of the changes included presentations from the vendors of the technology, management's account of the impact of the technology on job losses, and a presentation on how redundancies would be handled.

Communication of more routine information about the company and its performance is provided through the management structure. Early each year CE holds a three-day formal management conference involving all the management group from across Australia and NZ. The conference reviews all the results from the previous year, and the priorities for the coming year and the longer term. The information presented at the conference is then disseminated by managers to their staff.

CE's staff intranet, "Grapevine", is still in its infancy. Grapevine currently includes news and information, a public noticeboard and social pages. The email and intranet systems are largely used for managing HR and payroll and as an electronic correspondence and document communication device. The company has to date regarded the development of the internet ordering system, NetXpress, as a higher priority, reasoning that the company's outward market-facing perspective is a greater imperative than its inward organisation-facing perspective.

Reforming internal knowledge management systems without losing external market focus

CE's history of M&As necessitated a major investment in re-organising and modernising the operations of the companies it acquired in the mid to late 1990s. Acquired facilities needed to be redesigned and rebuilt, legacy systems for operational and business information, data handling and KM had to be de-commissioned and replaced with the systems. In the process CE has integrated around 50 facilities into the 25 it currently operates. Not only did this require a significant financial investment it also demanded an internal focus on systems and processes. It is apparent that a key to CE's current success has been its capacity to quickly move out of this "inward looking" phase back to an "outward-looking", market and service oriented perspective.

Other methods of managing knowledge

In addition to these means of managing knowledge, CE also uses:

- Supplier networks for product information and market research intelligence;
- Sales meetings for the sharing of customer and competitor intelligence;
- An ERP system for managing business process data and customer sales data;
- The Strategic Procurement Analysis program for sharing knowledge and analysis with customers;
- Automated Warehousing and Distribution systems for improving the efficiency of process knowledge flows in the warehousing environment.

Evaluation of KM

Ultimately, CE measures its performance of its management of knowledge, information and data in terms of its single most important ultimate metric – market share. At a more detailed level CE conceives of the value of KM in terms of the contribution that the customer knowledge held by sales representatives and account managers makes to identifying and capitalising on sales opportunities. For example, an account manager will have access to detailed data on a customers' spending behaviour on particular lines, and be able to estimate likely future needs. The value of that knowledge is seen by CE to be realised when the account manager makes extra sales by meeting those identified needs.

As a publicly listed company, CE's share price is an important measure of its performance and success. In the opinion of the HR manager CE's healthy share price reflects, to a considerable degree, the company's intangible asset value. In CE's case much of that intangible asset value is associated with goodwill – CE's market reputation as a company that can deliver to customers. In turn, that capacity to deliver is dependent on what CE's staff know and can do. In this sense CE sees the knowledge of its employees as central to the company's intangible assets. The value of the company's goodwill, according to the company's 2001 financial statements, was estimated to be almost \$84 million; equivalent to about 13% of revenues.

PA Consulting

The Organisation and its Business Environment

PA Consulting is a multinational IT and management consulting firm headquartered in the UK with offices around the world. PA employs approximately 3500 staff worldwide with around 100 employed in Australia in offices based in Sydney and Melbourne. The Australian offices service clients in Australia, New Zealand and Asia, although Australian staff will also be included on other international projects from time to time.

The company is structured according to a matrix structure with a series of practice units which are disciplinary-based, cross cut by a series of industry sector groups. The practice units are in turn grouped into broader practice groups including IT Consulting, Business Transformation (business strategy, business processes, change management and project management) and Systems Implementation (building, testing and integrating IT systems). In other parts of the world PA also has practice groups specialising in Contract R&D (product development, product design, commercialisation in wireless electronics, pharmaceuticals and medical devices). Other practice groups are industry-specific and focus on sectors such as electricity regulation, financial services, payment systems and air transportation regulation. Approximately 30% of PA's business is in systems implementation, the remainder in management consulting.

The management of knowledge within PA is organised on a global basis. The IT infrastructure group, based in the UK, manages the overall IT and information systems architecture for PA. An advisory group to that IT infrastructure group is responsible for the design and structuring of systems and processes for knowledge capturing and management.

Competitive Environment

PA Consulting in Australia has seen its competitive environment change fundamentally over the past five years with the emergence of a number of smaller organisations occupying an expanded 'lower tier' of the management consulting market. These small organisations, often based on a small number of consultants, have tended to specialize in lower cost contract work and small scale projects. The demand for larger-scale team-based consulting has been constrained in recent times by a number of factors: the general trend toward clients with significant management expertise within their own ranks has decreased the perceived need for external consultants, and increased cost pressures associated with the current economic climate has added further pressure to the management consulting market.

In this competitive market PA has a clear view that it must position itself as a firm of 'experienced practitioners'. One senior manager at a client noted that 'unlike a lot of your (PA's) competitors you're not full of brand new graduates... the majority of your consultants have significant industry experience'. As a result, the existing knowledge and experience of PA's consultants is one of the company's most valuable assets and a source of competitive advantage.

The other dimension to PA's perceived competitive advantage is its capacity to offer solutions and assistance in the implementation of those solutions – PA aims to provide clients with a partnership model where PA and the client together implement proposed changes and solutions. PA seeks to provide (and market its capacity to provide) sustainable implementation of solutions as well as just proposing well researched and designed solutions.

PA also sees itself as providing highly customised solutions for clients. It sees the role of its teams to be to understand the client's business, the nature of their problems and strategic ambitions and, on the basis of their industry experience and knowledge of the client business, to develop highly customised solutions that add value for their clients – indeed PA's consultants are remunerated on a measure of this.

PA sees the determinants of success and failure in contemporary management consulting around two key imperatives: first, to maintain a reputation for being able to deliver on the promise – a reputation for delivering on time and on budget is critical; second, the company's skill set and capabilities must be relevant to the business issues of the day as they impact on clients. Key business issues can change quite quickly – in the late 1990s the industry was dominated by Y2K readiness; in the first couple of years of the new century e-business has been one of the prominent business issues for many clients.

The 'What' of Knowledge: creating, harnessing and sharing knowledge

Creating Knowledge

Knowledge of current business issues and ability to adopt a position important for sustaining client confidence

One of the principal imperatives driving PA's success is its capacity to position itself with the capability to deliver on current business issues. This implies that the firm needs to have a strong understanding of emerging business issues. In order to differentiate itself from its competition, and to capitalise on its perceived competitive advantage of its "practitioners experience", PA believes that it must also be able to present itself as a thought leader. For example, while the company recently saw many of its competitors promoting wholesale e-business solutions to clients as a 'do or die' imperative, PA took a position that e-business strategies must be more gradual and sympathetic to the constraints and realities facing individual business clients and must reflect the delivery of economic value.

The knowledge that allows PA to take a position on emerging business issues is largely generated as a result of the reflections, deliberations and experience of the company's existing professional staff. PA does not rely heavily on arrangements with external research institutes or bodies, but instead seeks to draw most of its new or creative knowledge from its existing professional employees and its clients.

PA has its own Thought Leadership program to facilitate the development of new ideas and perspectives on current business and IT issues. The Thought Leadership program seeks to tap into the intersection of individual consultant's expertise (tacit knowledge) and particular experiences with clients (analytical knowledge).

Harnessing and Sharing Knowledge

Thought Leadership Program

At the closedown of a client project, members of the team are required to complete a short case study report on the project. In cases where the project was particularly innovative or notable the client will also normally become involved and permission will be sought from the client to allow the findings from the case study to be publicised. Typically the case studies are saved simply as Word or PowerPoint documents.

The case study documentation is then stored in a dedicated Case Studies area of the company's global corporate intranet known as the "KnowledgeNet". The documents are searchable by all the typical fields: by title, subject, service line, client, team, as well as full text searching of content. The KnowledgeNet is accessible worldwide through all office LANs and remote dial-up. All case study reports are completed according to a standard structure – problem, response, benefit to client.

Performance and project management data

Another critical form of knowledge for the company is internal management and performance information and data. This kind of project management, performance and developmental knowledge is critical to PA's capacity to accurately plan its resource and skills needs, capacity and future projects. Data on resource commitments, revenue, profit, utilisation, sales pipeline value and so on are gathered by the firm and provide real time (or near real time) performance information that enables quite a modestly-sized firm to efficiently optimize its resource utilization and expertise.

PA has a sophisticated system for tracking resource utilisation within the firm. All staff complete weekly timesheets detailing current commitments and billable hours as well as weekly projected commitments for at least the next twelve weeks.

Sales pipeline data

The firm also utilizes a sales pipeline management system where opportunities for prospective client work are tracked. These opportunities are classified in the system as to their maturity (eg: 'early lead'; 'firm proposal'; etc.). All actions and contacts in relation to prospective clients are recorded on the system and provide constantly updated data that can be used to generate reports on prospects by office, service line, sector, etc.

The sales pipeline data works as a management information system facilitating efficient operations management for the firm, but it is also seen as a communication device – facilitating information flows across the organisation, about prospective work as well as projects currently in train. The data is open and accessible to all senior members of the firm – partners, consulting managers and resource management staff across the organisation.

Market and industry intelligence

Market and industry intelligence is also important for PA. Typically, PA captures this knowledge through consultant and managing partner discussions and meetings with clients and others in business. Through these meetings consultants will typically gather information about current issues of concern as well as perspectives on what competitors in the market are offering. Strong client relationships are seen as the foundation for knowledge on what is needed in the marketplace and what is likely to be needed in the future.

Strategic organisational information

PA tends to communicate strategic management and market intelligence by way of senior management commentaries around recent firm performance data and market trends. Corporate perspectives such as these are typically communicated via monthly corporate wide emails.

The 'Why' of Knowledge: purposes and outcomes

Analytical knowledge used for business development and project work

Analytical knowledge, captured through the case study reporting format central to the Thought Leadership program, is utilised in a number of ways. First, the knowledge stored in the Case Studies folders is a critical resource for business development and marketing. Senior managers will routinely draw on the case study material for framing proposals and tenders to prospective clients.

Second, the case studies are, of course, a critical resource for operating teams at the start or during the life of a particular project. Consultant teams use the case studies as a starting point to identify like projects and the relevant consultants who worked on those projects. All case studies list partner in charge, assignment manager and team members. Consultants then contact those individuals directly to seek further information, knowledge and resources.

Consultants working on new projects and seeking knowledge relevant to their projects will also access other resources on the KnowledgeNet. The KnowledgeNet stores documentation and data relating to examples of prior work, best practice reports, sales proposals, presentations, workplans and analytical instruments. The Net is also searchable by industry sector and these searches will generate industry analyses and reports that can provide an instant orientation to a particular sector.

Industry knowledge vital to maintaining thought leadership

PA's use of knowledge and need for knowledge is also driven by its marketing imperatives. As a management consultancy firm in a competitive environment where knowledge is one of the key commodities, being on top of recent developments and current trends and future directions in business, management and IT systems is essential for maintaining market share.

The 'How' of Knowledge: practices and processes

PA does not have a formally badged 'Knowledge Management' program as such, nor does the company have a 'Knowledge Manager' or Knowledge Management section. PA does have a library in the sense that there are designated administrative staff attached to practice areas within the firm that are responsible for the collation and classification of material received from consultants for the KnowledgeNet. These staff will also work with consultants to meet knowledge, information and research requests and will undertake searches for internal and external data and information.

Case studies on KnowledgeNet used to promote knowledge sharing

Most routine project-related knowledge sharing within PA occurs through the medium of the Case Studies on the KnowledgeNet. The contributions and assistance provided by consultants who worked on previous projects are vital. PA encourages experienced consultants to assist operating teams on their current projects, when contacted as a result of information on the KnowledgeNet, by including assistance with other team projects as part of the performance appraisal criteria for all consultants. Providing assistance of this kind across the firm is seen to be an important part of the culture of PA – 'Never be afraid to ask and always answer if asked'.

Maintaining a collaborative culture

PA has always attempted to protect and cultivate the professional collaborative culture that is seen to sustain formal and informal knowledge sharing practices. The company was originally formed in wartime Britain with an explicit commitment to investigate ways of improving labour productivity through the application of manpower planning, training and scientific management principles. As a result 'productivity through people' (both in terms of its consulting to clients and in its approach to internal development and operations) has been one of the guiding principles of the firm since its inception.

Knowledge sharing criteria built in to performance management systems

Performance management at PA includes routine assignment reviews conducted at the completion of each project. Individuals are appraised according to their operating capability and performance, client management capability, and openness in information sharing. In this way, assignment managers conducting these reviews are directed toward considering the information and knowledge sharing behaviours of all consultants on the team. Project review appraisal data feeds into the half yearly and annual performance appraisals for all staff, so any issues around knowledge sharing will also emerge at the more comprehensive performance appraisals. 360 degree performance appraisals are used throughout PA and knowledge sharing behaviour is one of the key dimensions on which subordinates and colleagues at an equivalent level (as well as supervisors) routinely evaluate professional staff.

Recognising, valuing and developing innovative ideas

Innovative ideas that lead to new projects or deliver significant value to clients are also specifically recognised at PA. Where an idea or line of enquiry promoted by a consultant through the Thought Leadership program leads to the winning of new work or delights a client, that contribution is explicitly recognised and valued.

The development of innovative ideas is central to the rationale of the Thought Leadership program more generally. When management identifies a potentially promising new idea logged on to the KnowledgeNet, the idea is often developed as a prototype by a small team. The prototype might be in the form of a scenario where steps for offering the solution to the client are 'walked through'. Generally these scenarios and potential solutions will be proposed and developed by consultants familiar with particular industries and their issues. When the proposal has been developed internally, consultants or the managing consultant might then outline the approach to a particular client to gauge the potential appeal of the approach.

Building in knowledge sharing to routine work practices

Individual consultants working for PA develop significant industry and client contacts as well as significant technical expertise. While organisational access to technical expertise is facilitated by the KnowledgeNet, sharing the tacit knowledge that comes with the experience of working with particular clients is transferred and shared in more informal ways. PA tries to encourage consultants to look for links to other parts of the business and other consultants when meeting with clients. Very often, consultants from other parts of the business with a potential interest in or contribution to make to the project will be called in to attend client meetings. Not only can this build more business but it also facilitates a degree of transfer of tacit knowledge between key consultants.

Learning from the losses: the loss review process

PA gathers market and industry intelligence through its consultants' and managers' relationships with clients. More formally, the company also has a loss review process which seeks to gain insights from the projects it fails to win. When a prospective project on the sales pipeline management system is classified as 'lost' this triggers a review into what can be learnt from the experience.

Market intelligence

Market intelligence is also systematically gathered by the company's central marketing group that undertakes competitor scans and advises management of significant competitor developments.

Strategic organisational information

Strategic organisational information is communicated throughout the organisation via the global intranet and through regular meetings: meetings of all staff in the office are held on a quarterly basis; and practice group meetings are held monthly.

Mentoring for development

PA also has a relatively comprehensive mentoring program. Every employee in the organisation has a dedicated 'mentor', often someone from outside the employees' practice area, but located in the same office as the employee. The mentors are meant to be available for staff to seek relatively informal and ad hoc advice pertaining to current assignments and issues.

Training for development

PA also runs a structured internal training and professional development program for all staff. New staff undertake introductory training on principles and techniques of consultancy practice within the company. Further courses are designed to cater for specific disciplinary areas and cover specific substantive areas of knowledge and skills. Courses are centrally developed and normally delivered locally. Course attendance and completion and information on competencies is held centrally on the KnowledgeNet. Hours are budgeted against individual staff for both receiving and delivering training. Some of the training is web-based, although most is face-to-face. The networking that results from attendance at the training courses is seen to be just as valuable as the actual skills development that occurs as a result of the training.

Evaluation of KM

For PA the assessment of the returns on the company's various investments in knowledge management is more intuitive than based on 'hard measures'. PA's current knowledge management practices were largely the result of the strategic planning process undertaken in the mid 1990s that resulted in a vision for the firm in the year 2000. That vision identified both areas of practice the firm wanted to pursue as well as business processes and procedures that needed to be developed and refined. In terms of business processes the firm drew on existing best practice within the firm, attempted to isolate the elements of best practice and disseminate that best practice throughout the entire firm. Information on best practice processes were disseminated largely through

the medium of the intranet. Knowledge and sharing of knowledge was the key thread of the Vision 2000 exercise for PA.

PA sees that it is now reaping the rewards of the very significant investment that the best practice business processes exercise demanded. The company is confident that the enhancement of business processes and the improvements in the efficiency in using knowledge within the firm has resulted in significant savings although it has not been formally quantified. In PA's view the company's improved knowledge management has lead to increased internal operational efficiencies and improvements in the quality of message that the company can take to market. In particular, improved knowledge management practices have meant that PA can turn ideas into outcomes for clients much faster and to a higher level of quality. This has been seen to make a particularly strong contribution to the efficiency of some of the smaller offices of the business – such as in Australia, Singapore and Hong Kong - where resources have always been relatively tight.

PA sees KM as contributing to improvements in each of the key performance measures of time, cost and quality:

- shorter lead times in offering solutions to clients or in bringing new ideas to the market;
- taking out costs by not 're-inventing the wheel' when solutions to particular business problems are being researched;
- helping to ensure that proposed solutions are quality solutions based on sound experience.

According to one senior manager at PA the single most important element of knowledge management for any company of any size is probably: 'Knowing what we've done, and knowing how well we've done it'.

Business Services Group - Roads and Traffic Authority

The Organisation and its Business Environment

The Roads and Traffic Authority (RTA) is a statutory authority established in 1989 under the NSW Transport Administration Act 1988. The RTA is responsible for the management of the roads and traffic system of NSW in conjunction with state and local government agencies. In particular the RTA is responsible for:

- Planning, constructing and maintaining the NSW road network;
- Improving road safety;
- Managing the use of the road network to achieve consistent travel times;
- Test and licensing drivers, and registering and inspecting vehicles.

The RTA is involved in a number of different businesses that necessitate a high degree of coordination with a large number of other government agencies and stakeholders. For example, the planning, development and management of the road network requires coordination with various state, local and federal government agencies, NGOs and community groups. The services of the RTA impact on virtually everyone in the state's community given that virtually all goods and services have some relationship to the road and transport network of the state. This underlines the fact that the RTA is concerned with the delivery of a service critical to the welfare and economy of the state.

The RTA is a very large organisation employing approximately 6400 equivalent full-time staff across more than 200 offices in NSW.

This study focuses on one section of the RTA – the Business Services Group (BSG).

The BSG within the RTA provides a range of value-added services to internal clients – generally speaking it provides a range of management services to the operational parts of the organisation. Those 'shared services' include:

- Business processing – including the management of financial transactions and the related processes and record keeping;
- HRM;
- Procurement and strategic sourcing;
- Financial management including the provision of financial analysis and reporting services to internal clients;
- Consultancy support services – management consultancy advice to assist clients in performance improvement, systems development, facilitating quality and managing project teams;
- Services to RTA staff and internal business groups in relation to workers' compensation management, return to work and rehabilitation strategies and OH&S;
- Logistic and facility services – the BSG is the managing agent for all the leased accommodation occupied by the RTA around the state and manages the motor vehicle fleet used by the RTA. This section is also responsible for other office services, records management, archiving, library and information services.

The BSG has approximately 340 staff across 15 offices and has an annual expenditure of approximately \$32 million, although the group is responsible for managing a total revenue budget of over \$100 million.

One of the major challenges facing the BSG is enhancing the transfer, retention and management of knowledge throughout the organisation given the critical role and knowledge of a large number of staff approaching retirement age. This is a key KM challenge for the RTA in general and the BSG in particular.

In Facilities for example, strategic sourcing and procurement is a major function. The problem is that most of the key staff in that part of the business are approaching retirement. The BSG plans to introduce a program for recognising the contribution of key staff and a program of identifying candidates to gradually move into those positions with the established staff member acting as mentor for an extended transition period.

The other major imperative for the BSG concerns the improved integration of the previously disparate functions that were brought together under the shared services umbrella around two years ago. The group has successfully re-engineered its processes to take advantage of the new structure; financial, technical and service delivery mechanisms are now in place. Now the BSG sees its main task as getting the best match between its people and their knowledge and the service delivery responsibilities of the group. Given that most staff in the group have migrated from different parts of the organisation, and given that under the restructuring of the operations of the group functions have changed, a new imperative is to determine whether the right people with the right skills are in the right jobs.

As a result, the BSG has been developing an organisational development program and strategy that is focussed on identifying skills, competencies, individual aspirations and developmental needs of all its staff.

Competitive Environment

Given its status as a statutory authority, the RTA does not have any general competitors for the provision of its services. Nevertheless, the RTA still sees itself as operating in a very competitive and performance-driven environment. If the RTA fails to perform then the organisation would be likely to be substantially restructured, much in the way that under-performing private sector organisations will become targets for hostile takeover or closure. The organisation therefore needs to be effective and to demonstrate its effectiveness.

Similarly, while the BSG is mandated as the service provider for the RTA, it is apparent that the internal BSG will only continue to be accepted by internal clients to the extent that it is competitive and cost effective. The BSG operates on a commercial basis, providing services on the basis of fully loaded cost recovery pricing. The BSG is now developing profit margins and is starting to measure performance against profit margins for specific parts of its operations. The threat of the RTA moving to external service providers, if BSG services were to cease to be competitive, introduces significant commercial pressures into this part of the organisation in particular.

Many of the functions performed by the BSG now demand of employees what the manager of the group described as 'corporate nous'. For example, the group needs to provide business process expertise through its capacity to efficiently operate its ERP, provide financial advice, provide advice on the management of workers' compensation issues and offer assistance on negotiating deals for the strategic sourcing of various goods and services.

It is apparent that the BSG is increasingly moving toward a stronger commercial and business focus in its operations and this has had major implications for the demand for, use and exploitation of knowledge.

The 'What' of Knowledge: creating, harnessing and sharing knowledge

Creating Knowledge

Benchmarking to achieve best practice in shared services delivery

Most of the 'new' knowledge required by the BSG concerns information and knowledge about trends and best practices in shared services provision. For the BSG the most effective way of gaining access to that knowledge is through strategic alliances with other large organisations that also have major shared services operations.

The RTA's BSG is a member of the 12-member National Shared Services Benchmarking Consortium. The consortium includes a number of very large Australian and multinational corporations (including Westpac, Orica, CSR) with significant shared services divisions and provides an opportunity for members to share experiences and information on a regular basis.

Working with consultants to develop innovative solutions

The other principal form of new knowledge required by the BSG concerns the search for ideas, models and practices on new ways of organising commercial practices within a governmental environment. For example, the BSG needs to have access to detailed knowledge about ways of combining and reconciling commercial service delivery functions with corporate governance functions in a public sector setting. This includes, for example, answering questions such as: how can the BSG develop a market-based pricing structure in its public sector environment?

The BSG seeks to gain access to this knowledge through building strategic relationships with management consultancy partners who are prepared to work as part of team with key individuals within the BSG. The BSG is therefore working with the shared services and government management consultancy divisions of some major consultancies in an attempt to develop a coherent market based pricing structure for its services.

Harnessing and Sharing Knowledge

Harnessing knowledge of current capabilities

Given the BSG's current emphasis on the need to ensure that its people and their skills and interests are appropriately matched to the business outcomes sought by the group, it necessarily needs knowledge about the skills of current staff, their capacity for development and their aspirations for development. The BSG currently harnesses this knowledge through the performance management and development program. It is planned that that program will be enhanced by a skills audit program which will then enable development issues to be brought into sharper focus.

Sharing knowledge of best practice approaches

As noted above, the development of an increasingly commercial and business focused culture has been one of the key imperatives for the BSG. As part of this initiative the

BSG has been driving a process of quality and performance improvement in its own functions and business processes. Key to this has been the stimulation of knowledge sharing, especially amongst the different office locations performing identical shared services functions. The knowledge that the BSG is seeking to have shared amongst its offices includes knowledge about configuring IT and business process systems and tips and techniques for improving service delivery performance more generally.

The 'Why' of Knowledge: purposes and outcomes

Knowledge needs, usage and management as guiding principles for restructuring

The BSG's knowledge management strategy has been driven by its strategic goal to provide increasingly efficient and effective services to its internal clients and to further develop the group's commercial focus. In order to achieve those goals the BSG was formed and the functions once performed by the disparate functional groups have been integrated and restructured. Knowledge has been used as a guiding principle for that restructure, in particular, the functions are identified and recombined on the basis of the contribution of particular kinds of knowledge to the achievement of business outcomes.

The BSG manager noted that the traditional structure of the previous shared services functions was such that jobs often involved a mix of routine business process knowledge (or administrative knowledge) and technical or professional knowledge. As a result, many jobs had previously developed as involving both office support services and high level business analyst services. Further, office support and business processing services, as well as business analyst services tended to come under the finance function, particularly in the regional offices of the BSG. As a result there was a sense in which regional offices of the BSG were reflecting strong regional personalities rather than exhibiting strong and coherent functional relationships across the entire organisation.

In part, the restructure and ongoing redesign of many of the jobs and functions in the BSG has been based on separating out and reconfiguring these contrasting knowledge functions. As a result, for example, business processing functions have been moved out of the finance group and into the logistics group. Now, all business processing administrative centres around the state are organised under a single state-wide manager who facilitates a team that is spread across a number of regional offices. This means that the business services part of the operation can benefit from information sharing, resource sharing and work sharing. For the BSG this appears to have had a number of distinct advantages – improved efficiencies in business processing, greater recognition by staff of the significance of the business processing function and improved information and knowledge flow between people working in business processing.

The restructuring of the business processing functions was accompanied by the introduction of a new ERP, SAP/R3. The introduction of the new ERP required considerable training and a high degree of information sharing between the business processing staff in all offices. For example, one of the regional RTA offices had recently experienced major problems in the operation of the new ERP. It was quickly discovered that another regional office had encountered similar problems and had developed a solution. The new organisational and communication structure easily facilitated the communication of the solution from one office to the other.

The implementation of the ERP in itself helped the BSG quickly identify where there was a performance problem and the consistency of the system across the state meant that the solution developed in one regional office was readily transferable to the other.

The 'How' of Knowledge: practices and processes

The BSG in RTA sees one of its major imperatives to be 'opening doors to knowledge'. This implies the need to cultivate an environment in which ideas and knowledge flow freely and where the larger organisation is able to encourage the contribution of new ideas and perspectives. In turn the RTA sees this as being based on the creation of a 'culture of enthusiasm'.

In addition to the development of a skills audits component and a renewal of the performance management and development program, the BSG recognises that there needs to be a shift in the 'mindset' of the business. The BSG reasons that its people need to feel part of a vibrant commercial and progressive business. It is seeking to instil a 'volunteer' culture rather than a 'survival' culture; a culture where staff volunteer new ideas and initiatives.

The method adopted by the BSG to encourage this cultural shift has been based on changing the business model and the way the organisation relates to clients and customers. Generally this model is seen to be based on the BSG as a fully contestable business rather than on a 're-badged' corporate services group. Thus, as part of its governance structure, the BSG has introduced a Shared Services Board – seven members, three of whom (including the chair) are external to the RTA, who perform a function similar to that of a Board of Directors. The Board is also working with senior management to shape the group so that it is in a position to offer and provide services to external clients, such as other government agencies.

Communicating a new business-oriented culture

The BSG has focussed on communicating the strategic imperatives associated with the group's commercial focus and business orientation on a face-to-face basis. The series of formal and informal communications is being worked through a two-stage process.

First, all the Sydney and regional managers in the BSG were brought together for discussions on the strategic plan. At these workshops managers were able to participate in SWOT analyses and workshop particular strategies.

The second stage involves the Manager of the BSG visiting each of the 15 offices of the BSG across the state to discuss the plans with staff at all levels of the organisation.

Encouraging knowledge transfer amongst functionally-related but regionally-dispersed offices

Cross regional communication of knowledge has been one of the key issues for the BSG in recent years. As noted above, the reorganisation of functions on a state-wide, rather than a regional office basis, and the introduction of an ERP, has enabled knowledge, solutions and ideas to be quickly communicated. Nevertheless, the problem which remained for the group was how to ensure that those opportunities for knowledge transfer were actually taken up by staff. Making knowledge sharing of this kind actually happen was attributed by the BSG to effective leadership. In the example of the one regional office sharing its ERP operational solution with another, the successful transfer was encouraged by management's initial recognition of the significant contribution made by the regional office that first developed the solution and their suggestion that that solution be shared. Similarly, management needed to encourage the regional office with the problem to seek assistance.

While the BSG does not have a formally designated KM program, there are a number of specific program initiatives within the business plan that have a strong KM focus. In

particular a number of programs are attempting to cultivate knowledge sharing practices amongst the regional offices of the organisation. The major impetus for knowledge management was clearly the creation of the business services group and the integration of many functions that this implied. Most knowledge management practices have developed as a means of facilitating that integration and realising the efficiency improvements the integration has made possible.

Important KM style initiatives have included:

- The Organisational Development program involving the systematic identification of the skills, qualifications, competencies, experience and developmental aspirations of all staff in the group.
- The benchmarking of the BSG's shared services delivery against the shared services groups of a number of large, leading corporations in Australia under the National Shared Services Benchmarking Consortium.
- Undertaking projects in conjunction with specialist consultants in order to research and investigate novel approaches to the management of shared services in a public sector environment. In particular these projects are focussing on ways to separate out and cost the corporate governance aspects of the BSG's responsibility from the service delivery aspects.
- An internal best practice program whereby regional offices are directed to the key personnel in other offices where successful business processing solutions to closely related problems have been implemented.
- A proposed mentoring program focussing on experienced workers considering retirement in the next couple of years. Under this program experienced officers will work closely with 'appointees elect' to facilitate the transfer of deep, tacit knowledge.

Evaluation of KM

Given that knowledge management does not exist as a formally designated program or set of programs it is understandable that the BSG is not able to readily quantify their commitment to knowledge management practices.

The initial decision to invest in a range of knowledge management practices arose as a result of the imperatives facing the organisation as the business services group was formed. Business processing standardisation was necessary for the implementation of the ERP and the group decided to take the opportunity to review business processing and identify best practices within the company. While management at the BSG was unable to provide an estimate of the costs and benefits involved it was reasoned that improved business processes and improved communication skills and opportunities will inevitably be associated with more efficient outcomes.

Baryon Pty Ltd and GPC Electronics

The Organisation and its Business Environment

Utilux, established in Australia over 80 years ago, designs, manufactures and markets a wide range of interconnected products and related services for the electrical power, automotive, consumer, communication and contract electronic manufacturing industries. In 2001 Utilux Australia and Utilux New Zealand were sold to the electronic connectivity systems supplier, Tyco Electronics – Utilux Australia and New Zealand are now divisions of Tyco. Baryon Pty Ltd is the holding company that retains Utilux Europe, Utilux China and the contract electronics manufacturer, GPC Electronics based in Penrith.

This case study draws on both the experiences of Baryon Pty Ltd (previously Utilux) and GPC Electronics, even though they are distinct legal entities.

GPC Electronics is a contract electronics manufacturer of finished products, largely for the telecommunications industry. GPC manages the introduction, manufacture and support of products such as broadband wireless systems, optical communications equipment and various computer peripherals such as EFTPOS terminals. GPC's clients include Nortel, Toshiba, Ericsson, Siemens and Alcatel. GPC has enjoyed spectacular growth in recent years and now employs around 450 staff. Over the past 7 years GPC revenues has been growing at a compound rate of approximately 40% per annum.

Competitive Environment

Utilux Europe, Utilux China and GPC Electronics (the Baryon Group) are involved in an intensely competitive global environment. That environment has been distinguished by manufacturing customers, themselves competing in a competitive global marketplace, increasingly concerned to try to 'commoditize' as much as possible the components and other inputs being provided by suppliers. Commoditization - the process of grading and standardizing products and services to make them more homogeneous as market commodities – tends to have the effect of driving down prices. In addition to the sheer volume of competition from producers and suppliers from across the globe, companies like the Baryon group companies therefore confront this tendency to commoditization and strong downward price pressure on their products as a feature of the market. As suppliers try to increase the 'value-added' in their services and products by offering unique products, services and customized solutions, purchasers are trying to drive out cost by looking for standardized solutions and easily substitutable products and services.

The global and regional market for electronic and connectivity products and services has become increasingly competitive in the past few years – widespread industry consolidation reflects the increasingly hostile environment. Utilux Europe is able to maintain competitiveness through access to relatively inexpensive labour through its plant in the Slovak Republic as is the Chinese business, operating out of Hong Kong but using a manufacturing plant in southern China. GPC Electronics, with a site in Australia and a smaller site in NZ, relies on contract electronics manufacturing for US and European customers undertaking customised, relatively low volume assembly.

The market environment for the Baryon companies is made even more challenging by the pace of change characteristic of the electronics and telecommunications sectors in the past few years. The entire dynamics of the industry are now prone to change every six to twelve months. Given this pace of change, key management issues tend to be

strategic rather than operational – it follows that critical knowledge is, therefore, strategic information about the nature and direction of the electronics and telecommunications industries rather than operational knowledge. Whereas a quality model, for example, might have been appropriate in the past where retaining important customers was the major imperative, the key issues for the business are now likely to be what future customers will look like. Customers, even very large customers, are not necessarily going to be long term customers because they may well no longer exist in six or twelve months time.

GPC's traditional customer base – telecommunications manufacturers in North America – has shifted in the past twelve months as the effects of the US recession and the sluggishness of the telco sector has forced it to seek out new customers. In recent times GPC has broadened its customer base to include a greater share of the European and Australasian markets.

Customer relationships are critical for GPC. With globalisation GPC's competition has intensified; GPC's customers, multinational manufacturers of telecommunications systems, are able to source components and products from across the world. In GPC's market the two key competitive criteria are currently cost and time to market. High quality is seen to be largely an expectation or a 'given'. Despite cost and timeliness being the key determinants, GPC concedes that it does not seek to compete on cost – it does not position itself as a low cost competitor, but must be cost competitive in terms of total cost. Total cost competitiveness implies low field return rates, good engineering support, capacity to offer both 'design for manufacture' and 'design for test' solutions and supply chain management competence, as well as competitive unit cost.

The 'What' of Knowledge: creating, harnessing and sharing knowledge

A wide variety of forms of knowledge are important for the Baryon group of companies. In particular however, given the dynamic, intensely competitive and global nature of the electronics and electrical products, market industry knowledge, market intelligence, process knowledge and what might be termed 'supply chain knowledge' are amongst the most important forms of knowledge for the companies.

For its Australian operations in particular (previously Utilux Australia and New Zealand and now GPC Electronics) Baryon recognised that they could never compete as a low cost producer. The only future for those Australian operations lay in knowledge intense products and services – products and services where there is a relatively high value-added, knowledge component. As a general approach then, the Baryon companies adopted a knowledge-intensive strategy rather than a high-volume, low-cost commodity strategy.

Creating Knowledge

Limited scope for product R&D but continuing importance of process R&D

Traditionally, Utilux invested heavily in R&D typically in collaboration with its customers. However, the development of the industry has made R&D increasingly difficult to conduct out of Australia. As Utilux's customers were increasingly acquired by foreign owners design autonomy was removed from those operations and shifted to parent companies' overseas headquarters.

GPC has always been a highly innovative manufacturer and continues to undertake significant *process* R&D, however, given that GPC is a contract manufacturing company there is little scope for *product* R&D.

Professional associations for benchmarking

GPC acquires most of the new knowledge it needs through linkages to professional and industry bodies and associations. For example, the company is a member of the Surface Mount and Circuit Board Association (SMCBA). The association provides teaching and training resources and offers international standards, qualified instructors and hosts workshops and forums. The SMCBA provides the industry with an opportunity to develop a critical mass and an effective networking and knowledge sharing community for the industry.

Innovative ideas from key employees

The process innovation knowledge sought by GPC involves technical, manufacturing process knowledge but also includes business process knowledge and innovation – improvements in order entry, work scheduling, dispatch and shipping, invoicing and account management and CRM. GPC's philosophy has been that while technological innovation in production processes can be an important source of competitive advantage, it is rarely a long term or unique source of competitive advantage. More durable competitive advantage comes from 'people and processes'. The key source for these innovations for GPC is the company's mid-tier professional ranks, particularly their project management skills. GPC sees its main competitive advantage in terms of its capacity to provide excellent project management. Project management at GPC tends to be relatively rigorous and systematised and is based on a high degree of customer involvement.

Harnessing and Sharing Knowledge

Most of the knowledge needed by GPC tends to relate to industry and market trends, customers, production processes and previous project experience.

Global market intelligence critical

GPC needs to be able to analyse and assess market trends on a global basis. Senior and middle management at GPC are continually surveying the global industry landscape for information about likely market and industry trends. This kind of intelligence is gathered through a number of means – informal communications from customers (who tend to use a number of different global suppliers and therefore have an important perspective on the industry), information in trade magazines and newsletters, information supplied through subscription to electronic bulletin boards and discussion lists.

Analytical knowledge generated through 'lessons learnt'

GPC systematically gathers and interprets data and knowledge in the process of developing and introducing new products for customers. The key point for information analysis and knowledge sharing here will normally occur at the end of the 'new product introduction' (NPI) phase. This is normally conducted as a formal review and 'lessons learnt' sessions and reports after the first few batches of a new product have been completed and any design or process issues have been solved. These reviews will involve project team members, relevant engineers, the GM operations and, potentially, other senior managers. The focus of the sessions is on reviewing successes and failures and drawing out the lessons that can be learnt from the experience and applied to future projects. Outcomes might involve, for example, the inclusion of a process or procedure

in a 'template' – the template might take the form of a fact sheet or checklist of issues to think about at the start of a new project.

Knowledge about customers

At GPC customer relationship management tends to be handled one-on-one by Account Managers. GPC's Account Managers seek to forge long term and collaborative relationships with their customers and rely on regular relatively informal communications. Discussions with customers tend to be weekly and those discussions are normally minuted. Above all, GPC account managers see their role as cultivating a partnership with their customers. Central to that partnership is the development of a detailed and deep understanding of the customer's business, their competitive environment and strategic imperatives rather than just an appreciation of their immediate concerns and needs.

Industry intelligence important for business development

Market, industry and customer intelligence is important for retaining existing customers but is also critical for business development and the winning of new customers. Rather than advertise, GPC tends to directly approach potential new customers, identified on the basis of market and customer intelligence. BDOs and Account Managers will identify potential new customers and directly approach them furnishing them with information on the kinds of services offered by GPC and an account of how those services might be an appropriate fit for the potential customer.

Strategic organisational knowledge

Given the modest size of GPC the company tends to rely on fairly conventional and informal means of communicating company information: bulletin boards, monthly BBQs and regular communications through the supervisory structure in the factory.

Teams used for knowledge sharing

The factory itself is organised on the basis of functional teams managed by team leaders and supervisors with relatively high levels of autonomy reporting to the manufacturing manager. GPC has also experimented with ad hoc problem solving teams that have worked on specific production or other shopfloor process problems. The use of these problem solving teams has met with mixed success. The more successful teams have tended to benefit from the leadership skills of some team members and from a fair degree of diversity in the team make-up.

Communications between managers across functional lines also tend to be relatively informal. Evidently this is possible given the size of the organisation and the relatively flat structure of the organisation. Cross functional project teams involving managers and supervisors from a wide range of functional areas are established when strategic or developmental issues need to be addressed. Participation in cross-functional teams is seen to be encouraged by the culture of the organisation rather than by any explicit HR or performance policy. According to one manager at GPC that participatory culture has been sustained in part by an organisation that is consistently adequately resourced.

The stimulation of knowledge sharing throughout the Utilux organisations was achieved through the structuring of all companies in terms of market-facing business units that were themselves encouraged to have regular management meetings for middle managers where information and intelligence was extensively shared. Business units

also carried out regular employee surveys and customer surveys as a means of gathering intelligence.

Knowledge sharing was also encouraged through office design. The Utilux offices at Kingsgrove were explicitly designed around KM principles: totally open plan and designed to encourage meetings and discussions around and at some of the busiest thoroughfare points – around photocopiers and refreshment stations. Board rooms and meeting rooms were designed with glass walls promoting the image of transparency. The new offices were seen by Utilux to have made a major contribution to encouraging informal communication, collaboration and knowledge sharing.

On the shopfloor the Baryon companies utilized project teams and self-directed work teams. The self-directed work teams were typically designed to enhance process improvements and productivity and these were seen by senior management to have mixed results – successful for some workers and teams but not others. Generally, the work teams appear to have worked better in the support areas (such as warehousing) than in the production areas on the shopfloor. Nevertheless successful work teams enjoyed a significant degree of autonomy, had shopfloor team leaders and were responsible for outcomes with very strong results.

Codification and standardization of processes through technology and quality systems

For the Utilux companies and GPC, process knowledge was gradually systematized and codified with steadily expanding operations and with the advent of new technological innovations and trends such as ISO quality systems. As a result, production procedures and engineering specifications came to be electronically stored on the MRP system and the CAD systems. The process of systematizing and documenting processes also assisted with the goal of translating shopfloor tacit knowledge into explicit knowledge.

Supply chain knowledge

Supply chain knowledge is perhaps the most important strategic information and knowledge for the contemporary Baryon companies. In the dynamic electronics and electrical products manufacturing industries supply chains are becoming increasingly fragmented and globalised. In the relentless search for higher quality at lower cost, purchasers along the supply chain are constantly searching for world's best practice suppliers from across the globe. As a result, supply chains are becoming increasingly disaggregated into smaller units and the supply chains are, in turn, becoming increasingly complex. Operators such as Baryon seek to add value through their knowledge of those supply chains so that they can advise their customers strategically on supply chain integration as well as supplying them with high quality, low cost product.

Supply chain knowledge involves knowledge of customers and knowledge of suppliers. Obviously it has been important for Baryon and its predecessor to understanding what the market needs and what specific customers want. However, given its imperative to be experts on the industry and the entire supply chain, it has also implied the need for Baryon to understand their customers' customers. In other words, Baryon needs to have advanced knowledge about their customers' business environment and strategic imperatives.

At GPC knowledge sharing is both an internal and external imperative. External knowledge sharing is undertaken in a number of ways. First, knowledge sharing with customers is achieved through the practice of having customers attend weekly project

meetings. Not only does this involve customers in the decision-making process, it also provides GPC with access to customer information and intelligence. In practice this can be critical – customers are able to react to proposed plans and techniques as they are developed by GPC throughout the project. These meetings help GPC project managers gather information about customer preferences and ideas about potential solutions.

This style of project management, relying on a high degree of customer involvement, also underlines the importance of the tacit knowledge of Project Managers. For example, some customers will be more inclined to seek solutions to specific problems in the course of the meetings; other customers will be satisfied for the problem to be minuted with the solution developed subsequently. This kind of tacit knowledge – knowing the preferences and preferred consultation styles for different customers - will typically be possessed by experienced project managers.

In such a dynamic market, market intelligence is critical to Baryon. Again, with offices located in a number of continents, and yet with a relatively modest total employment size, the Baryon group of companies, and Utilux previously, is distinguished by very quick communication of market intelligence around the companies.

The 'Why' of Knowledge: purposes and outcomes

Using global knowledge to leverage stronger customer relationships

As competitive manufacturers, process knowledge has always been critically important to the Baryon companies' goal of continually improving production processes. However, the Baryon companies have also succeeded in using their global perspective as a means of leveraging stronger customer relationships. For example, most of Utilux's customers were Australian-based and had an Australian perspective, although the trends and direction of the markets they were involved in were being shaped decisively by overseas and global forces. Utilux's overseas operations provided it with a global perspective that enabled the company to speak with authority to customers and gain a key strategic advantage over their competition. Interestingly, this was despite the fact that most of Utilux's competitors were themselves much larger global companies. While those competitors may have had an even stronger global perspective and orientation they were generally less adept at communicating those perspectives to their customers because their KM systems were more unwieldy. Utilux's competitive advantage in KM was its relatively modest size and the informality and embeddedness of many of its KM practices allowing knowledge to flow easily and quickly to account managers and through to customers.

GPC has also developed a very strong global perspective. Until the recent US slowdown the vast majority of all its products were shipped overseas. Close customer relationships with primarily overseas customers has given GPC a deep familiarity with the global industry.

Because of their knowledge and their use of knowledge, the Baryon companies can present to their customers more than just an informed global perspective on trends and future developments. Baryon's global experience and involvement provides it with a strong knowledge of global supply chains. In this way Baryon is able to offer its customers improved integration into those global supply chains by communicating their understanding of (upstream) design solutions and possibilities and (downstream) market trends. This has the effect of emphasising to Baryon's customers that the company is more innovative, more informed and more integrated into the global supply chains that structure the global electronic and communications product industries.

At the most general level, knowledge management has been central to the survival and prosperity of Utilux and now Baryon. Innovation is often seen as the key to competitiveness, however the Baryon case demonstrates that KM is critical to innovation. In order to survive, Utilux needed to grow; in order to grow it needed to be innovative; and in order to be innovative it had to manage its knowledge, particularly its industry knowledge, effectively.

The 'How' of Knowledge: practices and processes

Learning organisation principles

The Baryon group of companies were developed and modelled along the lines of the learning organisation in an attempt to ensure that, wherever possible, when individual employees learnt, the company learnt as well. For example where a staff member attended a conference or trade show overseas they were always encouraged to share knowledge gained with other staff across the organisation. This original orientation to the principles of the learning organisation appears to have been sustained in the contemporary culture of GPC.

Different knowledge sharing strategies have been employed for different levels of the companies.

Knowledge sharing amongst senior staff was promoted by annual four-day strategic planning meetings of the general managers from across the organisations. At these meetings each manager was asked to present their three-year strategic plan for their division. Obviously this process forced all managers to speak in some detail about all their projects and facilitated a strong sharing of knowledge on a global basis. It also compelled managers to continually take a long to medium term strategic view of their part of the business and to explain what new products were being investigated and developed.

Collaborative links for process innovation

Technical and production process knowledge has generally been acquired through collaborative arrangements. On technical and process issues Baryon has traditionally collaborated with universities, industry associations, state and federal government agencies and other organisations and acquired new knowledge from conferences and trade shows.

Use of innovation rate targets

The main driver for innovation at Utilux was the innovation rate target - 30% of all products had to have been developed within the past three years. The target of 30% new products was established as one of the four KPIs for all businesses in the group. This was further reinforced by the identification of innovation as one of the six values of the organisation.

As noted above, technical and process knowledge tended to be stored on the CAD system in the engineering area and on the MRP system in the production area. Prior to acquisition by Tyco, Utilux had moved to an elaborated MRP system that improved the transmission of important customer data. For example, relevant staff would be alerted by automatic email immediately a product ordered by a customer had been produced and was ready to ship.

Standards a key for benchmarking at GPC

GPC employs a range of strategies to ensure effective knowledge capture and dissemination.

Technical information, whether related to engineering and design or production processes, tends to be stored in electronic databases. Typically most of this data is in the form of standards, regulated and issued by industry bodies such as IPC, the US based trade association representing the electronic interconnection industry. IPC issues standards and guidelines, undertakes research on industry problems and publicises new developments in the industry. International standards, such as those developed and issued through IPC, have become increasingly important for the industry as it has globalised. The rise of international standards has clearly facilitated more consistent communications in the industry; it has also, of course, facilitated greater commoditization. GPC estimates that five or six years ago it was common for the largest customers to specify their order according to their own standards. Now however, it is increasingly common for customers to order in terms of IPC classes and specifications. Similarly it is imperative that global competitors like GPC are able to promote to the market the fact that they can manufacture to IPC standards.

Standards provide the key source for manufacturing and technical specifications, but also serve as an effective benchmark, as a training resource and as a basis for the identification of required competencies.

Continuous production improvement at GPC

At GPC information and data on production processes is systematically gathered and monitored as a means of constantly seeking improvements in production processes. The production technology in the GPC factory allows for fault information to be quickly and efficiently captured. Fault information will be processed through a MS SQL server and the data is collated and analysed. That analysed data can then be used to try to identify the source of the problem and to devise a solution. This kind of analysis can be used in 'inspection mode' in order to determine whether a production process should be stopped so that a persistent problem can be rectified, as well as 'statistically' to try to improve the processes more generally over the longer term.

The data, and, once analysed and interpreted, the knowledge, can be used to improve first pass yield rates for products under production, and improve processes so that they can be more robust generally. As the technology becomes more sophisticated, the analysis of process data and the fault identification methodology makes a major contribution to driving out cost from the production process and improving time to market.

Leadership and communication

GPC believes it has had some success in building and nurturing a positive knowledge sharing, cooperative and participative culture. The development of that culture, especially amongst middle and senior management is seen to have been encouraged by inspirational and visionary leadership, by effective communication of company and strategic vision and by a relatively open and flat organisational structure. Sustaining that culture in the face of very strong growth in terms of revenues and employment numbers is a challenge for GPC. Part of its success in maintaining that culture has been careful recruitment, particularly to new, key management positions.

Evaluation of KM

For Baryon KM is a “do or die” issue in the sense that effective and increasingly effective management of knowledge was seen to result in the survival and prosperity of the companies. Baryon saw itself as having little choice but to take its KM seriously.

Baryon also resisted the idea that KM should be seen as a stand-alone independent initiative. KM is not seen by the company as a specific program or project; rather they reason that the management of knowledge is something that everyone in the company does and given that knowledge is so critical to the companies’ competitive edge the management of knowledge has always been an imperative for the company.

Baryon has also always seen itself and styled itself as a very ‘conceptual’ company in the sense that it has always tried to cultivate a strong understanding of the industry and of the company’s place within the industry. Baryon has used conceptual frameworks as a way of orienting strategy – a strategy based on increasing the knowledge component of its products and services and developing solutions for customers rather than standardised, commoditised products.

AMP Henderson Global Investors

The Organisation and its Business Environment

AMP Henderson Global Investors (AMP Henderson) is the asset management business of AMP Limited, one of Australia's largest financial service providers. AMP Henderson designs and manages a variety of investment products across a range of asset classes. The company is distinctive in that it is a 'multi-asset class' fund manager offering products in the traditional fixed-interest area (equities, bonds and other fixed interest investments) as well as private equity and property. Its products and services include Australian shares, international shares, Australian bonds and cash, international bonds, property, private capital and a range of other investment products including diversified and socially responsible investment funds. These products are offered to institutional investors, master trusts and personal investors, although AMP Henderson has no direct contact with retail clients – its products are available to retail clients through AMP Financial Services.

AMP Henderson was responsible for managing almost A\$300 billion worldwide as at the end of 2001. AMP Henderson is one of the largest Australian share managers and the largest bond and property manager in Australia. The company is a global operation with a significant presence in the UK (as well as Australia) and with growing businesses in Europe, the US and Singapore and offices in Hong Kong and Japan.

Competitive Environment

The competitive environment for AMP Henderson has become increasingly difficult as more and more international competitors come into the Australia/ New Zealand market. Naturally enough, this competition has increasingly squeezed the fees that the company can command. In order to continue to compete successfully in the market AMP Henderson has developed a very clear strategic view that the company must define and position itself as a 'product leader' that is focused on delivering higher margin products. The company wants to avoid low-cost commodity-style competition where there is constant competitive pressure driving down fees and margins. This in turn demands that the company takes a highly innovative approach to the development of new products – the company's goal is that by 2005 20% of revenues must come from new products and/or distribution arrangements. As a means, then, of differentiating itself from its competition, the company needs to continually design higher margin products – those that succeed in providing very strong investment returns so that high-end clients are attracted and retained and so that performance fees for AMP Henderson are enhanced.

The competitive landscape for the company has also been intensified by the emergence of 'implemented consulting'. Institutional investors rely on consultants for advice on investment funds and products; these consultants are now able to act as both advisors and fund managers – providing advice *and* investing the money. Evidently this poses a potential threat to AMP Henderson's business.

Moreover, owing to the increasingly 'open architecture' of the investment industry and trends toward greater corporate transparency the fee structures behind any investment product are widely known by clients, consultants and competitors. Clients themselves, with greater access to a wider range of investment information and advice, and greater knowledge of the industry are also becoming increasingly well-informed and demanding. In this way, readily accessible knowledge is driving a more challenging and competitive environment. Web-based sources of information combined with the

capacity for investors to trade on-line themselves has led to the proliferation of products and systems that more easily enable clients to reach their own conclusions about investment decisions and to act on those conclusions. Software now available in the US, for example, allows investors to track the performance of fund managers over time and by specific investment product classes. As a result much of the mystery and mystique that may have once surrounded fund managers has disappeared. As a consequence operators like AMP Henderson recognize that they must ‘value add’ and be seen to be clearly ‘value adding’ for their clients.

The company’s operating environment is also characterised by a high level of regulation and scrutiny – as detailed below, the company’s business processes and all aspects of performance are subject to detailed scrutiny by the consultants to big institutional investors and ratings agencies. The industry is also subject to regulation by bodies such as the Australian Prudential Regulatory Authority (APRA).

The ‘What’ of Knowledge: creating, harnessing and sharing knowledge

Creating Knowledge

As suggested by AMP Henderson’s explicit goal to have 20% of revenues generated by new products or new distribution channels by 2005, the company needs to generate a constant stream of new knowledge, new ideas, new products and new means of distributing those products.

New knowledge, as well as acquired knowledge, is structured and coordinated through the company’s global intranet platform, ‘the Source’. The Source provides key information for all AMP Henderson staff around the world; it includes links to documents, video, presentations and global and local scorecards that plot company performance against key indicators so that people in the company have a good understanding of the business.

The R&D Web and the incubation of innovative ideas

A major stimulus for knowledge management at AMP Henderson’s was the introduction of an R&D Web. The R&D Web was a knowledge repository developed as part of the Source and designed to stimulate knowledge sharing practices. The R&D Web contained new ideas gathered from around the business. A dedicated team was originally set up to examine ideas as they were submitted by staff from around the business. Ideas tended to be categorised under three rubrics –

‘business efficiency ideas’ that related to some method of business process improvement that enabled the company to take costs out of processes;

‘thought leadership ideas’ that identified topics and emerging issues on which the company needed to develop a position for clients;

‘product ideas’ that proposed the development new investment products.

The best ideas under those categories were identified by the team and were taken forward for further development and implementation. A larger team of information specialists, project leaders and approximately 15 staff drawn from operations, HR, IT and investment managers then assessed the suggestions and identified ideas to undergo further development.

The R&D web was very successful in heightening the profile of innovation within the company. Once that goal was achieved, and it was felt that innovative practices were integrated across the business as a whole, the dedicated team supporting the R&D web was dismantled. The development and promotion of innovative ideas is now seen as part of the responsibilities of each team and group in the business.

Research and analysis undertaken by teams

AMP Henderson also needs to constantly research and generate knowledge on investment trends, share market performance, the performance of specific investment products and the performance and outlook for individual companies and other drivers of product performance. Data and information on the performance of specific investment products and data on share market performance is analysed and interpreted by the company's Investment Analytics team. This knowledge is provided for internal use and for company clients. A Portfolio Services team also undertakes extensive research and analysis on fixed interest investments, Australian and international shares and diversified investments. Most of the company's teams need to undertake their own research and analysis according to their own area of operation. For example, the company's Australian Shares – Capital Team is responsible for the identification and review of top performing stocks on the Australian share market. Members of that team are therefore continually meeting with company managers and directors, assessing company balance sheets and reports and filtering and evaluating industry intelligence.

Harnessing and Sharing Knowledge

Tacit knowledge of experienced professionals

Technical knowledge, experiential knowledge and 'soft' market and industry intelligence are all vitally important forms of knowledge for AMP Henderson. These are also classic forms of tacit knowledge, generally not readily suited to codification. Most of the company's professional staff are highly qualified and often highly experienced specialists. Their knowledge is, of course, extremely valuable to the company.

Given that the simple codification of such complex and subtle knowledge is virtually impossible, AMP Henderson has devoted considerable energy and resources to encouraging a knowledge sharing culture, to setting up a large number of opportunities for staff knowledge transfer and sharing and to the development of networks across the global business. (These are discussed below).

Analytical knowledge and the Lessons Learnt program

Analytical knowledge is critical for AMP Henderson. For example, information about projects or products that have been successfully used by the company's teams in one part of the world can be easily and quickly accessed by individuals and teams in other parts of the world via the Source. Similarly, information and intelligence about products and projects known to one division or team can be vitally useful for other teams or divisions of the business.

Harnessing and sharing critical analytical knowledge was initially promoted at AMP Henderson through a formal *Lessons Learnt* initiative. The program was based on the key activities of the company as set out in a strategic plan. Case studies of particular activities (such as an instance of new product development or an acquisition) were compiled to identify what was done well, what was not done well and what the company needed to do about it. Discussion groups were then established, normally of

12-15 selected people participating in a forum to discuss and evaluate the project case. These group meetings were designed to operate in an atmosphere of high trust so that the people who were involved in the project were able to be frank and honest in their observations and evaluation. One of the most tangible outcomes of the discussion group was the snapshot of the key lessons learnt from the case study. This accessible summary was then lodged on the Source for access by all staff. However, one of the most important longer term outcomes of the process was the direct knowledge transfer that occurred in the course of the group discussions. This was seen to help key employees understand the perspectives and contributions of other staff, and it also facilitated networking across the organisation – networks that continue to be used today.

While the formal *Lessons Learnt* program has now been discontinued, the knowledge sharing practices encouraged by the program have become integrated as a routine part of the work of project teams and groups within AMP Henderson. Now, as part of the regular project cycle, teams are expected to include a *Lessons Learnt* component – at the completion of the project, the lessons learnt are extracted and summarised on the Source.

The 'Why' of Knowledge: purposes and outcomes

Knowledge to build thought leadership status

As noted above, the development and delivery of increasingly high value-added products and services to clients is one of AMP Henderson's key strategic goals. A number of the company's rationales for managing knowledge flow from this strategic objective. For example, it is seen as critical for the company to continue to 'extend out the boundaries of the business' to embrace their clients and provide them with more information and more highly developed intelligence. Implicit in the new style of relationship with clients is that AMP Henderson be perceived to be 'thought leaders' as well as product leaders; to be 'smart' and 'well-informed' and to have 'a view about things'. Knowledge about a wide range of issues affecting the general and sector-specific investment markets is therefore important to the company's mission to further build its reputation as a thought leader.

Knowledge as a basis for educating clients

Thought leadership status is also seen by the company to be critical because it is also increasingly important for AMP Henderson to try to encourage clients to take a longer term view of performance. The performance of any investment fund is bound to be cyclical, although clients accustomed to bull markets and positive investment conditions are prone to forget this fundamental truth of investment. In order to persuade clients to take a view beyond the current (or the next) downturn, AMP Henderson sees thought leadership as vital. Client retention, especially in challenging investment phases, is seen to be decisively influenced by the company's capacity to educate clients and end-users. AMP Henderson relies on its knowledge base and the knowledge of its teams to present to clients an authoritative voice that enables the company to educate clients persuasively and manage their expectations effectively.

This educative role extends beyond immediate clients and customers. For example, on the retail side, AMP Henderson has no direct market relationship with individual financial planners, however as a fund manager whose products may or may not be ultimately recommended and used by financial planners (including AMP and independent financial planning advisors) AMP Henderson regularly runs information seminars and provides tools for those financial planners. The company also gives those

financial planners regular access to some of the company's most senior and experienced financial experts so that they can understand how and why particular investment decisions are being made.

Knowledge to better understand the company's market and the thinking of their clients

AMP Henderson also uses knowledge to better understand the decision-making processes of its clients and potential clients. In particular the company needs to understand the logic and considerations employed by investors in determining where to invest. The company's market research area is responsible for market tracking and for identifying the relative importance of particular variables such as brand, performance, stability, reliability, etc. These data indicate that while performance is, of course, important, it is not always the *most* important consideration for investors – reputation and brand quality are also very important.

Good management of knowledge critical to market evaluations of the company

The company is also judged by the market on its knowledge management practices. Effective knowledge processes are a particular metric against which AMP Henderson is routinely evaluated. For example, consultants require fund managers like AMP Henderson to periodically complete detailed questionnaires including information about business processes including, for example, processes in place to ensure that the knowledge and expertise of certain key individuals within the organisation (who may have been responsible for certain high performing products) can be retained in the event that they leave the company. Ratings agencies also base their assessments of fund managers like AMP Henderson on a variety of factors (beyond recent performance), including the quality of business processes. The company reasons that effective knowledge management is central to the efficiency and quality of those processes.

Engagement of staff

AMP Henderson's own internal research has indicated that staff have a strong desire to know about the company's strategic direction and how the company is tracking against its strategic goals. The company sees this communication of corporate information as critical to sustaining and supporting the intrinsic rewards sought by the company's employees. Employees want to know how the company is going because, amongst other things, this provides them with a sense of identity, purpose and achievement. High quality internal communications, strong knowledge sharing practices and ample opportunities to learn are seen by AMP Henderson to make a vital contribution to the company's status as an employer of choice. One of the reasons for the company doing KM as well as possible, and to continually improve communications and KM, is to attract and retain high quality people.

Productivity

Developing and implementing efficient methods of storing and providing access to knowledge, particularly strategic and new knowledge, is seen by AMP Henderson as a key to continually improving the productivity of their investment professionals. The Source is an efficient and effective way of facilitating employee access to the information that they need and want about the company and its performance as well as

information about the operating environment, previous projects and substantive investment-related data and intelligence.

The 'How' of Knowledge: practices and processes

Promoting knowledge sharing through workspace design

The facilitation of knowledge sharing is clearly one of the key goals for AMP Henderson. In addition to the IT infrastructure of the Source – one of the company's most important initiatives for ensuring knowledge transfer between key staff – the company has also sought to apply knowledge sharing principles in the design and development of the company's new Sydney office headquarters.

The company's internal research on the ways in which innovative and creative thinking could be encouraged revealed that knowledge sharing was critical. The research also indicated that these knowledge sharing practices did not just need to be formalised through the use and application of technologies, but they also needed to be stimulated through the encouragement of direct interaction between key people. Thus, the company's new premises have stairs (rather than elevators) between floors, totally open plan workspaces (in place of offices) and a large number of communal areas for formal and informal group work. Moreover, the sense of openness and security is reinforced by that fact that these spaces are quarantined from external visitors; meeting spaces are located on the ground floor of the building. The workspace also features 'war rooms' for project teams, and an 'innovation village' where dedicated teams can be brought together to work on senior management sponsored special projects.

Using performance management systems to drive knowledge sharing

AMP Henderson also use aspects of their performance appraisal and management system to directly encourage knowledge sharing. The way this operates varies between different divisions and teams. In the Clients and Marketing team, for example, bonuses are dependent on staff demonstrating that they are growing their knowledge and are involved in project activity. Knowledge development and participation is linked to a points system which feeds directly into the performance evaluation and performance related pay. (Staff can earn points by attending various knowledge development courses and meetings, including, for example the Knowledge Series discussed below). More generally, knowledge sharing is linked to all performance appraisals for all staff as a consequence of knowledge sharing being identified as one of the company's core values.

Building employee appreciation of the whole business through formal and informal information and knowledge sessions

Management Lunches

Every six weeks a series of four lunches is held in the Sydney office where employee groups of about 20 share lunch with two members of the senior management team. These lunches are designed to enable staff to discuss any aspect of the business with senior managers.

Senior Management presentations

Whenever a senior manager from another part of the company's global operations visits the Sydney office, that manager is required to make a presentation to staff explaining that part of the business's challenges and current priorities. Again, this is seen to contribute to staff developing a stronger appreciation of the global business.

Four Quarters

In Australia (and the UK) the company hosts a quarterly themed event which includes presentations to staff on current priorities and tracking of company performance against those priorities. The events also provide an opportunity for the company to recognise outstanding performance by particular teams.

The Knowledge Series

In Sydney, the office hosts a Knowledge Series – sessions where practitioners from particular parts of the business explain the facts and issues surrounding their part of the business, for example, the fundamentals of the various asset classes.

Middle Managers Forum

AMP Henderson has recognised that networks need to be strengthened up and down the business. Forums where middle managers discuss operational and strategic issues with senior managers are held to build stronger partnerships between different levels of management.

Cross-functional teams

When the company is in the process of developing a new product, for example, a specific cross-functional team will typically be established. The teams will normally enlist representatives from a wide range of functional areas - equities, private capital, property alongside marketing and product development, legal and tax, HR and e-business professionals. One of the key challenges for the company is ensuring that these teams include the right individuals. Identifying key people is largely the responsibility of the senior management team.

Using developmental knowledge for retention and succession planning

Henderson Talent Talks

Regional and global management teams hold a meeting three times a year to assess talent in the business across a series of major categories. The meetings are designed to ensure that the company knows where its high performers are, to ensure that appropriate programs are in place to assist with their individual development, and to assess the adequacy of the reward policies in relation to those employees.

Succession planning programs

Succession plans exist for all key management positions in the business. Gradually the company is extending their succession planning from the top tier of the business down throughout the entire company structure.

Using and contributing knowledge resources

The company recognises that despite the quality and sophistication of the Source, getting staff to routinely rely on the Source is always a challenge. Being a web-based resource, rather than being directly integrated with email on the Lotus Notes platform, staff still need a particular reason to access the Source. AMP Henderson has gradually migrated its electronic resources from Lotus Notes to the web-based application over the past two years. The prototype version of the Source took six months to develop and the system went live about four months later. Inevitably, resources were committed to the technology as a first priority and, under tight financial conditions, finding adequate resources to fund appropriate training and promotion of the Source has always been challenging. One key lever for stimulating staff use of the Source has been the development of homepages on the Source for each of the company's teams – in this way the Source has come to be seen as a workspace for increasing numbers of employees.

In addition to steady improvements in the functionality of the Source, the web based form of access has come to be increasingly appreciated by the many staff travelling away from their office. Now staff email (on Lotus Notes) as well as complete access to all LAN drives, can be accessed remotely through the Source.

AMP Henderson experimented with a number of other strategies to build staff usage of the Source. Management reported that the use of 'champions' to promote the use of the Source had been 'moderately successful'. It was suggested that the use of champions was successful in the initial start-up phase but less effective in the longer term. In the mid term, use of the Source was significantly encouraged by the introduction of cash rewards for staff contributing the best new ideas to the R&D Web. The Source is now well established as a critical knowledge management resource for the company.

Instilling a collaborative culture rather than a competitive culture

Management at the company also sees the cooperative and collaborative culture of the company as significant in stimulating good knowledge sharing practices. AMP Henderson is conscious of the fact that some of its competitors have developed a very strong internally competitive culture. AMP Henderson has tried to steer away from such a competitive culture toward a more demonstrably team-oriented, collaborative culture. As a consequence the bonus incentives at the firm are not necessarily as large as at some other companies in the industry. In addition, working as part of a team is explicitly recognised as part of the reward structure through its incorporation into individual performance criteria.

Knowledge management as a set of inter-related practices and initiatives

The company has also consciously adopted a strategy of undertaking a large number of different initiatives that have had their own rationale and logic, but which together amount to a comprehensive approach to the management of knowledge. The company has reasoned that different things appeal to different people and that the company must provide a wide range of different kinds of opportunities for people to learn, access company information (from the specific to the general) and share insights, opinions and knowledge.

Management respondents were adamant, however, that it was important not to badge these initiatives under an overarching banner of "Knowledge Management". According to one manager:

'If you get out and say 'this is knowledge management' people just cringe...just because there is such a misconception...developing a document repository and saying 'that's knowledge management'; its given the concept a bad image.'

Evaluation of KM

It is apparent that AMP Henderson has been pursuing a strategic approach to Knowledge Management even though that strategy has been more implicit than explicit. The managers interviewed conceded that a more coherent underlying strategy was probably warranted, if only to serve as a critical point of reference for the evaluation of current and future initiatives and to clarify 'why we are doing it'. As a result the company is currently developing a global knowledge management strategy to orient its future development.

In the view of these managers knowledge management is an underlying business process. 'Knowledge management isn't something new in the last five years. The logic of learning from experience, even managing information is not new'. What is new, however, is the priority which needs to be accorded the practices and processes that constitute KM and the importance of closely integrating those initiatives with business strategy. In the terms of one manager:

'We're saying this is the way we've got to do business and so the underlying strategy has got to sit side-by-side with the business strategy so that the things we're doing here [in KM] are enabling where the business is going'.

Methods of evaluating the success of knowledge management initiatives

As for most companies it is very difficult for AMP Henderson to actually gauge the precise investment the company has made and is making in knowledge management, given that so much of what is done is informal and intangible. One key point of evaluation, however, is against the company's strategic ambition of 20% of new revenues coming from new initiatives or products and distribution channels. The company currently measures and monitors that headline number and knowledge management practices and initiatives are seen to make an important and direct contribution to the stimulus of this form of innovation.

Knowledge sharing behaviours and employee's reliance on creativity and innovative ideas are also measured through the company's staff surveys. The surveys allow the construction and measurement of an innovation index that taps the extent to which staff are using new approaches and products and doing new things in their work.

The company can also get information on the utilisation of its KM infrastructure. In terms of usage of IT infrastructure and facilities, for example, the company measures and monitors the usage of the Source as captured by data on hits on the site.

AMP Henderson management doubted that any organisation could accurately calculate a ROI for KM. Indeed management doubted the wisdom of even trying to develop more sophisticated measures that might be capable of measuring, for example, the productivity gains associated with the introduction of a particular KM initiative. It was queried whether the investment required to develop effective measures of ROI or productivity would be worth it given the complexity and intangibility of the factors involved. Given the difficulties associated with developing accurate and comprehensive measures, management argued that it was preferable to rely on intuitive and qualitative judgements of effectiveness. These judgements were not simply impressionistic however, but were seen to be based on the strength of the logic underlying the case for knowledge management.

Managers at AMP Henderson argued that, in the absence of strong quantitative measures for evaluating KM, the case for investing in KM practices is best made on the basis of the logic of the case. For AMP Henderson significant investment in KM was

supported by senior management on the basis that the logic of investing in knowledge was sufficiently compelling and logical. The case was made in terms of the values of the company, the likely productivity gains and the improvement in decision making that were seen to be likely to flow from easier access to better information. From the perspective of these respondents, clarity of vision – an accurate picture of what can be delivered from KM initiatives – was the most important ingredient in making the case for KM. Australian boards, they reasoned, could be convinced by an analysis of the current state of affairs, a clear vision of the ultimate goal and a detailed strategy for reaching that goal.

Chapter 2: Small and Medium Sized Enterprise Case Studies

This chapter presents the case study reports on the eight small and medium sized enterprises selected for study. The case study selection rationale and method are described in Chapter 1 of the main report. The eight case study SMEs studied were:

- Jones Condon Chartered Accountants Insolvency Practitioners
- The ARMS Group
- TECRA International
- Planit
- ComLearnCo¹
- Stoneworld
- Frontline Business Services
- Prowess Development

¹ Not the company's real name

Jones Condon Chartered Accountants Insolvency Practitioners

Jones Condon (JC) is a medium sized firm of chartered accountants specialising in advising and assisting individuals and enterprises in financial difficulty. JC offers a range of corporate insolvency services including advice and administration of voluntary administration, deeds of company arrangement, voluntary liquidation, and receivership as well as individual insolvency arrangements including bankruptcy and Part X arrangements. JC employs approximately 40 staff across two main offices in Sydney CBD and Parramatta.

Forms of knowledge

Knowledge of insolvency law and industry knowledge critical

JC is a knowledge organisation in the sense that the expertise and experience of the company's staff is the key source of its competitive advantage. Most of JC's staff have a commerce or related degree and many are recent graduates or are still studying. JC's partners and senior staff have a wealth of insolvency experience, however most new staff generally have limited specific experience in insolvency law. JC therefore needs to train its staff in the specialist area of insolvency law and practice and while staff will often undertake external courses, effective learning on the job is the most important means of knowledge acquisition.

The other area of knowledge that is critical for JC's staff is a knowledge of business practices, processes and the environment in specific industries. From time to time JC relies on bringing in specialist consultants with experience in particular industries to assist.

Office Procedures Manuals and Technical Manuals used to standardise, facilitate and manage business processes

Insolvency is, of course, a highly specialised and technical area. Once JC is appointed as a liquidator for a particular company, for example, detailed procedures and requirements laid down in the Corporations Act need to be followed. The procedures and requirements pertaining to particular types of insolvency cases (voluntary liquidation, deed of company arrangement, etc) are specified in the company's Technical Manuals. More routine information is contained in the Office Procedures Manual. Both the Technical and Office Procedures Manuals are electronically stored on the company's local area network and are easily accessible and searchable by all staff.

JC is now moving to a computerised system for the management of these technical requirements and procedures. Staff responsible for a particular matter are prompted, through their Microsoft Outlook system, when deadlines for particular steps are approaching. The system can be designed so that prompts and reminders are also issued to supervisors and managers or partners in the event that particular steps are not completed by responsible staff by specified dates.

In addition to the checklists and automated reminder and management system, the Technical Manuals also contain precedents and standard letters, and electronic versions of relevant forms and documents.

Partnership style relationships with clients are an important source of knowledge

Most of JC's work is referred from accountants or solicitors. In this sense accountants and solicitors are JC's clients and maintaining and sustaining close relationships with referring accountants and solicitors is vital. In addition to maintaining links through informal means JC sends out periodic newsletters to its client base and hosts a number of functions for clients throughout the year.

Clients provide a valuable source of intelligence on industry and market developments – including information on trends in particular industries and the matters that JC's competitors are involved in. JC maintains a database of its clients enabling the company to identify where its referrals are coming from so that the company knows who its key clients are.

Analytical Knowledge

While JC does not have a formal, overarching program for capturing and communicating analytical knowledge – the knowledge gained through the experience of particular projects – JC has systematised and streamlined the design and use of standardised precedents and documents to some degree. This has effectively embedded best practice procedures within standard office routines and procedures.

Detailed tacit knowledge of particular projects and files is normally possessed by senior managers and the partners. A staff member seeking analytical knowledge will typically approach their manager who will direct them to relevant staff who they know worked on a related project.

Knowledge Sharing

Knowledge on processes and procedures is shared through the Office Procedures and Technical manuals. Substantive knowledge that can be drawn from previous projects is shared through the informal referral process noted above. In addition to these mechanisms knowledge is also shared through the work of regular meetings & committees.

Regular committee meetings prime vehicle for knowledge sharing

In addition to regular meetings between the managers and partners from the two JC offices, JC has two important committees for knowledge sharing:

- The Systems Committee is responsible for monitoring and reviewing operating and business process systems across the organisation, ensuring, for example, that processes are standardised and are working efficiently.
- The Marketing Committee is responsible for recommending strategies to improve the organisation's marketing efforts.

Staff can place particular items on the agenda of either of the committees, typically by emailing the chair of the relevant committee.

The Systems Committee, in particular, also provides a vehicle for systematically collecting and evaluating staff feedback and suggestions for further improvements to operating systems. For example, staff might identify specific documents which are routinely required for a number of steps in the processing of a file. The suggestion that that document (and documents of that type) be scanned and stored electronically will be

fed to the Systems Committee and might then become mandated as a standard procedure.

Sharing Learning

Knowledge is also shared through monthly training sessions, which while open to all staff are normally targeted at a specific staff need. Normally these training sessions will be conducted in-house by JC staff.

When staff attend any external training, conference or information session they will normally be required to share that information by reporting back at a training session.

Communicating strategic company information

The communication of strategic information and news about the company is relatively easy in a small firm like JC. The company relies on email for minor news items of interest to staff. More significant strategic information is communicated and discussed at regular or special staff meetings.

Knowledge acquisition

One of the key ways in which the organisation ensures it is meeting best practice industry standards is through its membership of the Insolvency Practitioners Association of Australia (IPAA). Amongst other things, the IPAA issues statements of best practice, specifying in detail the best practice procedures and preferred content of correspondence, notices, etc. that should be followed for various types of insolvency processes. JC complies with all IPAA statements of best practice. This provides a means for JC to ensure that it is meeting industry best practice standards in terms of operating procedures.

Why has knowledge management worked at JC?

The manager from JC who was interviewed attributed the success of knowledge management initiatives at JC to the size and culture of the firm. He suggested that a firm of three partners and approximately 40 staff meant that decisions could be made and implemented relatively quickly. For example, new initiatives in the area of knowledge management will often require some change to the IT systems, although these are relatively easy and inexpensive to change given the modest size of the offices and the LAN.

JC also believes the changes implicit to its knowledge management program have also been successful because management has successfully built and sustained an open, participative and collaborative culture where ideas and suggestions do flow freely around the office and across all levels of the organisation.

Results of knowledge management at JC

The manager at JC interviewed observed that the introduction of the Technical and Office Procedures Manuals had resulted in improvements to business processing efficiency and consistency. Continuous improvement in processes is also built into the firm's operations through the Systems Committee. The existence of standardised procedures and manuals combined with a relatively sophisticated approach to training and skills development and monitoring has also facilitated the improved functional flexibility of staff and contributed to further efficiencies.

The ARMS Group

The ARMS Global Group Pty Ltd provides advanced credit risk management and debt collection services for a wide range of small, medium and large size businesses. The company, established in 1975, employs over 60 staff in Australia and New Zealand and approximately 15 in New South Wales.

Over the past 18 months, the ARMS Group has undergone a dramatic change process resulting in the growth of the business at a rate of between 25% and 30% per annum. The effective management of knowledge has been critical to the company's spectacular growth.

Forms of Knowledge

The ARMS Group uses a wide variety of forms of knowledge:

Developmental Knowledge

The company has introduced over the past 18 months a rigid and highly structured training regime whereby skills, competencies and training needs are systematically monitored and recorded. Training needs for all staff are reviewed every 3 months and upcoming training commitments are diarised for all staff in advance on the company's Microsoft Outlook system.

Procedural Knowledge

As a debt collection and credit risk management company, efficient business procedures and processes are critical to the ARMS Group's success. While the company had traditionally not systematically recorded processes and procedures, in early 2002 the Company embarked on a systematic process of introducing new internal practices and procedures. The inspiration for the re-design of the company's business processes came from the Professional Practices Management System (PPMS) designed and promoted by ACA International – The Association of Credit and Collection Professionals. The PPMS provides a framework for collection agencies to develop, implement and ensure adherence to a set of industry specific professional practices and policies. The 17 elements of the system effectively constitute a quality check list of required policies and procedures relating to all aspects of the agencies standard business processes.

The PPMS has been successfully used by the ARMS Group as a key resource for procedural knowledge. Once in place, the standard operating procedures implied by the PPMS have been continually reviewed and revised by the ARMS Group according to the company's own performance and evaluation. According to the manager interviewed, the introduction of the PPMS has made a big difference to the firm's performance. The system has helped the company introduce best practice procedures, eliminate duplication, and forced the company to introduce comprehensive strategic plans.

Tacit Knowledge

Despite the rigorous systematisation of procedures through the PPMS process, some of the most important knowledge possessed by the company's employees remains tacit knowledge – in particular, the methods techniques and approaches used by the company's collectors. This kind of knowledge is inherently difficult to codify. The company has succeeded in extracting greater value from its employees' vital tacit

knowledge of collecting techniques and methods through a number of mechanisms. First, telephone collectors are required to attend weekly meetings where all collectors discuss their work, what they have done in the past week and raise issues about particular collection methods. Secondly, the company has introduced a procedure whereby an under-performing account will be reviewed at least weekly and moved to a different collector so that at the end of one month, a difficult account will have been handled by at least 4 different collectors. In the estimation of one manager, this process alone has seen the percentage of possible debt recovery increase from 74% to 96%. This simple strategy of forcing the reallocation of under-performing accounts has meant that the ARMS Group is able to better exploit the range of different collecting styles characteristic of their staff.

The method of allocating accounts to particular collectors is computerised through a custom designed form of proprietary software. The application is fundamentally a diary that allocates jobs to particular officers. The system also compels management to automatically review the allocation of accounts which have been under-performing for a period of time. Accounts that have not been meeting the minimum percentage recovery after 14 or 21 days, are automatically allocated to a reject file which the senior management team is automatically prompted to review twice a month. According to one manager the savings that have resulted from the introduction of this system have been dramatic. Whereas previously it was not unusual for the company to hold an outstanding account for up to two years, outstanding accounts are now dealt with in 14 or 21 days. These improved efficiencies have resulted in savings estimated to be equivalent to one staff member.

Market and Customer Knowledge

The ARMS Group is now working to improve its management of knowledge and intelligence relating to the kinds of services sought by the company's key customers and clients. The company is embarking on a strategy of attempting to offer to the market a broader range of more diversified services so as to avoid reliance on relatively low cost services. The company sees its future in offering more high value-added services that may also involve partnership arrangements with other service providers. Senior management of the company is accessing this customer intelligence by maintaining close partnership relationships with key clients and by identifying issues of emerging concern for those clients. An important part of that strategy involves the ARMS Group in forging partnership arrangements with other service providers so that the company can present to clients a broader range of value adding services. Another element to this strategy involves training staff in the full range of services that can be offered by the company so that staff are better able to advise clients on the range of options that may be available to them.

Industry Intelligence

Senior management of the company stays in touch with industry developments via a number of means. First, the manager of the Sydney office maintains a shareholding in all of the company's major debt collector competitors and, as a result, gains access to information about those companies' strategies. The company also relies on the internet as a key source of information on new industry trends, new standards and developments particularly those pursued in the US market which tends to lead developments in the Australian market.

Knowledge Sharing

Process knowledge critical for the ARMS Group is now effectively shared amongst all staff through the medium of the standard operating procedures developed as a consequence of the PPMS implementation program. The continuous improvement of these procedures has also been facilitated by the introduction of regular team meetings, which has resulted in the continuous review and revision of those procedures. Continuous improvement of procedures has also been assisted by the introduction of new reporting formats for all staff including “stuff up forms” which staff are required to complete where accounts have not been satisfactorily dealt with. These stuff up forms are periodically reviewed in order to ascertain whether procedures need to be changed or tightened.

Standard operating procedures are electronically stored both on CD and on local area networks. In addition to having access to the operating procedures, all staff are provided with an employee manual which details the job description and key procedures relevant for each position within the organisation.

Results of Knowledge Management at The ARMS Group

As noted the introduction of new methods for managing process knowledge has resulted in major efficiency savings for the company. As a result, the ARMS Group is able to process an estimated 20% more income while maintaining existing resources. Providing front-line staff with easier access to standardised procedures has also allowed management to entrust more complex tasks to operational staff. This in turn has allowed senior management to focus more clearly on strategic issues including marketing and business development. In the case of the ARMS Group, these initiatives have not however led to a deskilling of operational staff. On the contrary, the reforms have led to an increasing need for training and skills development amongst operational staff and has led to a renewed commitment from the company to recruit the most experienced and able staff possible.

TECRA International

TECRA International Pty Ltd develops, manufactures and markets diagnostic kits for use by the food, health care and cosmetics industries. TECRA's products are sold and supported in over 40 countries either through its own sales organisation or through a network of distributors. TECRA's kits are designed to test for a variety of antigens including salmonella, staphylococcus and E.Coli. The company's manufacturing process is therefore a highly technical microbiological endeavour that includes the need to grow specific antigens. As a result, the company's Sydney headquarters includes a farm and laboratory as well as an R&D area in addition to the corporate services, sales, marketing and manufacturing departments.

TECRA International employs a relatively highly skilled, highly trained and highly educated workforce. In addition to approximately 10 employees in corporate services and administration, TECRA International in Sydney employs around 25 staff in their manufacturing section. Most of these employees hold microbiological degrees or qualifications. Sydney headquarters of the company also operates an R&D area which employs 5 full-time research scientists. TECRA's sales and marketing staff also require a high degree of microbiological knowledge so that they can effectively liaise with clients and customers.

Forms of Knowledge

Customer Information

Given that the reliability of TECRA's diagnostic kits, it is critical to the company's continued success and high reputation TECRA International is highly dependent on receiving timely feedback from customers. TECRA's complaints co-ordinator is responsible for managing customer complaints and ensuring that user feedback is accurately communicated back to the design and production process.

TECRA relies on its network of distributors as well as its own technically trained sales and support staff located in New Zealand, the UK, France, Hong Kong and the USA for intelligence on local market trends.

New Knowledge and the R&D Process

Product Innovation

TECRA is a knowledge rich company operating in an extremely dynamic and competitive global market. As a consequence, it is vital for TECRA to have ready access to up to date information and knowledge that allows the company to constantly investigate and develop new products and new production processes and techniques.

For example, TECRA is currently researching and developing new automatic testing machines that automate much of the testing and diagnostic process for clients utilising traditional rapid manual test kits combined with smart card technology. The automated process allows clients to complete tests in 8 to 24 hours and means that clients potentially require fewer staff and fewer qualified staff to undertake testing. Through this innovation, TECRA is aiming to fill a specific niche in the existing market – while automated diagnostic machines are available for high end, high volume users, the new TECRA device would be unique in the mid level part of the market. TECRA also sees this product development as providing an opportunity for the company to move away

from a dependency on the low-cost high-turnover sector of the market. The innovation also holds the promise of establishing longer term relationships with customers – on purchasing an automatic machine customers would contract with TECRA to undertake a minimum number of diagnostic tests over a specified period utilising TECRA's manual kits that fit inside the automatic diagnostic machines. In this way, TECRA hopes to expand its market without cannibalising its current customer base.

Process Innovation

The process of developing diagnostic kits for specific antigens is inherently time consuming, complex and extremely resource intensive. In order to improve the efficiency of the production process, TECRA is currently researching a process referred to as 'recombinant antibody production'. The process essentially involves the production of antigens exclusively within the laboratory setting without the need to use animals. The introduction of such a process would result in massive savings in terms of lower overheads and faster production cycles.

Knowledge Sharing and Knowledge Flows

Internal knowledge flows

As a small company with a global reach in a competitive high tech market, TECRA relies on efficient internal and external knowledge flows. Given the modest size of the organisation and the fact that most of the core administrative, management, manufacturing, packing and research functions are concentrated at the Sydney headquarters, internal knowledge flows create few problems. Good internal communications are also helped by the fact that most employees have been with the organisation for a relatively long time and each of the key sections of the organisation attend to work as relatively well established teams. Management seeks to ensure a good flow of information throughout all levels of the organisation by ensuring that they are highly visible to all employees and that they often 'get out of the office and talk to people' regularly.

Flow of market intelligence maintained by sales teams and distributors

TECRA also needs to ensure that it receives a constant flow of information and feedback on the market reaction to its products. Intelligence on customer attitudes to the company's products and the direction of customer preferences in various countries around the world is provided by TECRA's well established network of international sales and support teams and distributors. These staff and distributors are critical for transmitting local market knowledge back to headquarters.

MRP used to ensure business performance information flows

The flow of business performance information and data to management has been improved through the introduction and elaboration of an Manufacturing Resource Planning (MRP) system. Whereas TECRA had traditionally encountered some difficulties in maintaining optimum stock levels of key supplies, the MRP system has resulted in a much more efficient approach to stock control.

Management at TECRA International is obviously concerned to monitor and maintain efficient production processes and ensure maximum productivity. Production process efficiency is monitored on a standard monthly basis by calculating a simple productivity measure of total output divided by costs of production.

Results of Knowledge Management

TECRA International attributes a good deal of its success to its capacity to continually innovate as a result of the work of its R&D Department. TECRA recognises that removing the R&D function from its operations would make an immediate and very significant contribution to the bottom line. However, the company has recognised that maintaining an in-house R&D capacity is critical to the continued success of the company and a key to its competitive edge. The company constantly needs to be moving towards the development of new products and processes. As noted above, the company prides itself on its capacity to move into new markets and satisfy emerging client demands. In addition, diagnostic products only have limited shelf lives of between 5 and 15 years and the market is always searching for quicker and more efficient methods for conducting diagnostics. Therefore, TECRA's R&D Department enables the company to move into new markets, secure new sales and develop new longer term relationships with its customers.

Despite the business case for maintaining an R&D function, TECRA is highly cost conscious and must exploit all opportunities available to defray the considerable costs involved in R&D. As a result TECRA works in conjunction with various University Departments and institutes from time to time and takes advantage of Government support in the form of the R&D tax concession. TECRA's case however demonstrates that the experience of small firms with Government programs can sometimes be disappointing and cause them to rethink the wisdom of taking up government innovation support programs. For example, TECRA recently applied for Federal Government funding support under the AusIndustry R&D Start program which is designed to provide grants and loans to Australian businesses undertaking R&D. Although the company's application was successful they were subsequently informed AusIndustry was now currently unable to grant financial assistance for new projects and would not be able to fund any projects until 2004. Despite this lack of Commonwealth Government assistance, TECRA is determined to try to maintain its modest but highly significant R&D capacity within Australia.

Planit

Planit is an IT company specialising in software testing services, related training services and related products and solutions for clients in Australia and overseas. Planit therefore has three related parts to its business:

- The Testing Services Group provides a comprehensive range of testing solutions for mainframe, client and web applications.
- Professional test and development training programs provide training on test analysis skills, core and technical testing skills as well as web testing skills.
- The Products Division supplies and supports a range of testing and quality control products that clients can install in order to improve the performance and integration of their software testing activities.

Planit employs approximately 50 staff across its offices in Sydney and Melbourne. Most employees are qualified and accredited software testers with IT degrees and qualifications often complimented by experience in business or other professional settings.

Forms of Knowledge

Business and Technical Skills Important

All employees recruited into Planit are expected to possess a sound grounding in the technical skills and knowledge required to work in IT systems testing. In addition to the importance of technical competencies however, Planit places great importance on the application of that technical knowledge in a business context. Practical technical and business knowledge tends to be communicated to employees through the operation of the company's 'buddy' or 'partner' system. Under this system, every employee in Planit has a designated buddy who is typically a more senior and more experienced professional who has the responsibility to pass on technical and business knowledge to those in their team.

Developmental Knowledge Systematically Gathered

Planit systematically gathers data on employee skills, competencies and training through a number of processes. Data on employee's skills and abilities is systematically gathered at the point of recruitment where training needs can also be identified. In addition to the firm's formal performance review and evaluation process, Planit also relies on feedback received from employee mentors acting as buddies or partners under the 'buddy' system. Planit regards communication skills as particularly important for all its professionals. This kind of knowledge – knowledge of how to deal with and communicate with clients, and knowledge of how to train and communicate with co-workers – is communicated through the buddying process. Planit reasons that this kind of knowledge can only be effectively developed by employees by working closely with experienced professionals. Planit sees this experiential model of learning as being relatively expensive to facilitate but very important for the business.

Process Knowledge

Knowledge of standard technical and business processes is also important for Planit. As employee numbers at the company have been increasing, Planit has come to appreciate

the importance of systematically documenting and making available those processes. The company has recently completed the task of documenting most of the important processes which staff need to follow and cataloguing and placing those processes as documents on the company's data bases.

Analytical Knowledge

Lessons learned from previous projects is evidently vital for a company such as Planit. Knowledge of the previous projects and experiences of the company tends to reside with the senior management team. Typically, an employee commencing a new project will seek information on the company's previous experiences in this area by first contacting their buddy or mentor. In the event that the mentor is not a senior manager, the mentor will refer them on to a manager familiar with the relevant projects and personnel. While the company is considering moving toward a central electronic repository for storing details and lessons learned from previous projects, there is a view in the company that it is still very important to have a system that encourages people to discuss previous experiences with each other rather than relying largely on documentation.

Knowledge Sharing

As noted above, the company's buddy or mentoring system is critical for ensuring that key tacit knowledge is available to the right people at the right time. The communication of the tacit knowledge possessed by experienced and senior professionals is not only critical for business performance and the development of the abilities of new testers, but it is also seen to make a critical contribution to sustaining what the company sees as its distinctively collaborative culture. That culture is also seen to be characterised by a strong sense of identity and commitment to the company and the professional testing process.

Knowledge Acquisition

Most of the new knowledge required by Planit relates to developments and trends in IT systems and software packages, trends across a wide range of IT-user industries and other intelligence relating to market trends. In order to acquire this knowledge, Planit invests in training staff through internal training and external training courses and workshops, in addition Planit actively participates in the work and activities of a large number of relevant industry associations including the AIIA (The Australian Information Industries Association), SEA (The Software Engineering Association), ITEA (International Test and Evaluation Association), SESA (The Systems Engineering Society of Australia), ACS (Australian Computer Society), ISEB (Information Systems Examination Board), ISACA (Information Systems Audit and Control Association) and various other organisations and committees. Planit sees active industry participation as a valuable and inexpensive means of maintaining ready access to up to date knowledge and intelligence on all aspects of the IT services and training industries.

ComLearnCo²

ComLearnCo is a small provider of computer based training (or e-learning) systems and related services catering to a large range of large and small public and private sector organisations. The company employs fewer than 20 staff in its Sydney office. Staff include Account Managers and Consultants, Application Engineers, Technical Support Representatives and a small Sales force.

Forms of Knowledge

The principal forms of knowledge required by ComLearnCo include competitor intelligence, information on clients and their needs, and process information and knowledge. First, ComLearnCo constantly requires access to up to date information and intelligence on the pricing, selling and promotional strategies of its competitors. Second, key client knowledge includes information about current contracts, and the current and emerging needs of clients and potential clients. Third, process information includes details on the licensing arrangements pertaining to specific products and the procedures associated with those licences as well as more routine internal business process information.

Knowledge Sharing

As ComLearnCo is part of a larger global organisation, the company has had to develop both global and local methods to facilitate knowledge sharing. The organisation's global intranet site includes a number of high tech features to encourage global knowledge sharing including a "virtual meeting room". Staff can dial into the global website to access Power Point presentations, listen to speeches and discussions and communicate using the site's chat facilities. The company's global intranet site contains a massive amount of information and data as well as insights and new information. In order to manage this sheer volume of knowledge and information, the Sydney office of ComLearnCo uses a "knowledge champion" to monitor the site at various times throughout each work day to identify and locally communicate information and new items likely to be of importance for staff in the Sydney office. In addition, other staff are necessarily drawn to the global intranet in order to access other information including for example, required technical specifications and other information pertaining to specific products and services.

The company also operates a local level knowledge management system. The local system includes a series of databases including information on local contacts, copies of presentations made by local sales representatives and previous proposals provided to the company's clients.

Owing to the modest size of the Sydney office, staff at ComLearnCo are understandably accustomed to meeting each other's knowledge needs through informal sharing practices whether face to face or using email. The company is currently undergoing a major change process, however, which implies the need for the organisation to more actively develop virtual knowledge sharing practices which in time it is hoped will replace some of the physical knowledge sharing practices which have been traditional within the office. As more staff spend more time working away from the central office, computer based knowledge sharing facilities will become increasingly important. ComLearnCo clearly recognises the challenge in encouraging staff to consistently and

² Not the company's real name

continually use and contribute knowledge, information and data to the Lotus Notes system. The company believes that the best way to promote the intensive use of the local Lotus Notes system for critical knowledge sharing is to clearly demonstrate the value of the system so that consistent use of the system becomes a habit for most staff.

Evaluation of Knowledge Management Arrangements

As a dynamic small company operating in a highly competitive global environment and market, ComLearnCo is likely to continue to support a dual strategy of knowledge management. In addition to demonstrating that local and small scale knowledge management systems can be effective alongside larger global systems, the case also demonstrates that IT based knowledge repositories need not be extremely sophisticated. The company operates a relatively simple Lotus Notes system whereby staff are able to quickly ascertain the likely utility of a particular posted document by simply identifying the identity of the author and the date of posting. In a small organisation such as the Sydney office of ComLearnCo, this level of detail appears to be sufficient for most staff.

Stoneworld

Stoneworld is an importer and wholesaler of natural stone and ceramic tiles. The company supplies retail stores as well as builders working on large construction sites. The company in Sydney employs approximately 20 staff in their marketing, sales, finance and warehouse divisions.

Forms of Knowledge

As a small wholesaler, Stoneworld depends on customer knowledge, market knowledge, industry and product information, and stock control information. For example, Stoneworld's sales representatives need to develop a strong knowledge of the purchasing preferences of their customers, principally retail stores. As an importer, Stoneworld also needs to keep abreast of the latest products and consumer trends from around the world. Company representatives gather this information by attending international trade fairs at least twice per year. The company is also a member of the Marble Institute of America and uses this Association to keep informed of new fashions, technologies and methods of production and design.

Accurate and timely information on stock is also critical for the company. The company seek efficiencies from maintaining minimum stock levels. In order to achieve this, the company utilises a computerised stock control system informed by data on sales trends for the previous 5 years.

Knowledge Sharing

As might be expected, knowledge sharing practices at this small company are relatively informal yet effective. Customer information gleaned by sales representatives along with data on sales trends and figures feed into weekly meetings of finance, marketing and purchasing staff to review stock levels.

Stoneworld attributes much of its success to solid and dependable relationships with its key suppliers. Of its 8 principal international suppliers, most have been supplying to Stoneworld for over 5 years and the company has secured exclusive distribution deals with a number of those suppliers. Interestingly, the company has based those relationships on a strong knowledge of the supplier's business environment and targets.

Effective, informal knowledge sharing practices at Stoneworld are sustained by the company's conscious attempt to encourage a co-operative, collaborative and "family-style" culture. Open communication is also seen to be supported by a relatively flat organisational structure, a lack of demarcations, and express commitment by management to address employee problems quickly and openly, and a visible and accessible managing director.

Frontline Business Services

Frontline Business Services is a small Sydney based company specialising in the printing of variable information – such as bar codes, pin numbers and security labels – using a wide variety of printing technologies and media. The manufacturing process tends to be very computer intensive. The company employs approximately 20 staff including Accounts, Sales and Despatch staff as well as a significant number of technical workers operating the machinery for the production process. The company also employs some IT professional staff.

Forms of Knowledge

Frontline relies on a variety of forms of knowledge pertaining to product and process innovations, process and information data and market intelligence.

Process and Product Innovation Vital

Frontline is constantly on the lookout for new ideas regarding possible use of existing equipment for the production of new types of products. The company estimates that around half of all new production or process ideas tend to come from within the firm. Other new ideas tend to come from an investigation of current overseas trends or directly from customers who demand a particular product on the basis of their need or something that they have seen elsewhere. Most internally generated new ideas tend to come from the owners of the business who will develop a prototype, trial that prototype and then seek feedback from existing or potential customers. In this way, Frontline uses its own existing customer base and contacts for market research. On occasion, new ideas on process or products will come from other workers at Frontline. Frontline also monitors developments in the worldwide industry by accessing information from trade magazines as well as using overseas trips to observe contemporary developments in major market areas such as retailing. Frontline is an international business in the sense that the company has agents and markets in a number of overseas countries including the United States. US trends are often a pointer in these industries to likely future developments in Australia and, for example, the company has recognised a growing market in the US for high security tamper labels.

Process Information and Data Essential for Maintaining Competitiveness.

Frontline has succeeded in developing and sustaining long term relationships with key customers. The company estimates that approximately three quarters of its customers are long term customers. Frontline has traditionally attempted to avoid competing purely on price instead concentrating on innovative solutions and high quality products. The company also positions itself in the market as being able to produce and dispatch products quickly. Frontline processes all orders received within 48 hours. This level of efficiency and quality is made possible by a fully automated accounting and data control system which enables efficient production with minimum human intervention. Accurate information on the manufacturing process whereby products are constantly checked, scanned, counted and weighed enables the production process to constantly report on output and quality. In turn, this data is used to streamline the allocation and organisation of batch production jobs.

Technical Equipment Knowledge Converted into Organisational Knowledge

Reliable high quality performance from its production equipment is critical for Frontline. In order to minimise equipment down time, Frontline attempts to use every visit of a repair or maintenance technician as a training session for operational and technical staff. All of these staff seek to learn from the maintenance technicians so that they can undertake routine maintenance and repairs. Frontline reports that this experiment in acquiring and developing equipment maintenance knowledge in-house has been very successful over the three years since the practice was introduced. For example, maintenance technicians working with the company's Printronics Lasers were reportedly called out on average every 10 days when the system was first installed, however by 2002 the company had gone almost 9 months without need to call on a maintenance technician for that equipment. This learning from maintenance technicians and integrating that knowledge as part of the responsibilities of the technical workers in-house has resulted in major cost savings and greater responsibility for the technical workers.

Frontline has also succeeded in making technical workers increasingly responsible for the measurement and reporting of production process data. While this provides important process efficiency information for management, in the view of Frontline, it has also improved many shop floor jobs and provided those employees with a greater incentive to monitor performance and achieve explicit maximum targets.

Lessons Learnt - The Role of Analytical Knowledge

Frontline has two simple but effective processes for ensuring that the lessons learnt from previous jobs and production runs are not lost to the company. First, the company's accounting software maintains records searchable by a customer, job sheets, date and/or name of job. The records include a brief report on the project. Second, Frontline maintains a 'run book' on all of its machines. The run books contain samples of specific labels including full technical specifications. The run books simply sit with the machines and provide a simple and effective means for staff to check to see whether similar products have been previously produced.

Building Knowledge into Jobs

Given the repetitive nature of much of the production work and the relatively small scale of some of the company's batch jobs, Frontline has purposely attempted to build higher knowledge content into the jobs performed by technical workers. For example, the company has attempted to put as much responsibility as possible into technical worker's jobs to encourage those workers to take on challenging tasks, take responsibility for areas of work and to take responsibility for their own machines and for the development of solutions to problems that may arise. This approach has resulted in a significant improvement in employee retention levels which in turn contributes to a more experienced and knowledgeable employment profile at the company.

Knowledge Sharing

Given the modest size of Frontline, sharing of knowledge between staff has been relatively easy to encourage. The company has largely relied on informal practices to build a community spirit and sense of identification with the company. Management attempts to actively encourage teamwork approach, a preparedness to help out fellow workers, cross training and multi skilling and an absence of demarcations. All of these practices have contributed to relatively free flowing information amongst all staff.

Prowess Development

Prowess Development specialises in the design and development of customised software solutions and various business information and data management systems. In addition Prowess will be involved in the adaptation of client legacy systems with the design, development and implementation of new modules for those systems. Prowess has a diverse range of clients including credit card companies, other companies in finance, education and retail sectors.

Prowess Development employs approximately 30 staff, predominantly software developers responsible for writing computer code, as well as testers, business analysts, administrative and sales staff. Employees tend to be organised into project teams responsible for particular clients or specific business areas.

Forms of Knowledge

Technical Knowledge

Most employees at Prowess are recruited into the organisation with base technical knowledge in software design and IT systems. The company seeks to constantly update its technical IT knowledge base through attendance at various IT industry events such as the regular Microsoft Technical Education conferences. Company staff of course also regularly consult IT industry technical journals and research papers of specific interest.

Industry Knowledge

In the past few years, Prowess Development has consciously attempted to enhance its knowledge of developments in the software business applications industry. While Prowess talks to its existing and potential clients in order to identify industry trends and developments, the company has focused on networking through attendance at industry seminars and membership of a relatively large number of IT industry and computer associations and networks. The company has consciously developed associations with related companies working in the same industry space (e.g. Telecommunications data networks) with a view to developing more formal partnerships with associated small companies.

Capturing, Codifying and Using Tacit Analytical Knowledge

The major knowledge management initiative pursued by Prowess Development has been the development of a system for codifying the critical tacit knowledge and experience of its software developers in the form of standardised modules that can be re-used in future systems developments projects. Some years ago, Prowess recognised the importance of guarding against the loss of knowledge especially as labour market conditions in the IT industry were characterised by relatively high turnover of important staff. The company also realised that in order to achieve improved efficiencies as it moved into working with new technologies, it needed to try to standardise some of its solutions to enable a quicker turnaround of work and limit the extent to which staff were constantly “reinventing the wheel”.

In simplest terms, the knowledge management system is based on the identification of particular sets of software code that represent clever solutions to particular problems. The code is then recorded and retained as a standard function or module and is added to what is referred to as the “framework” of modules. The framework – effectively the

knowledge repository – also includes vital context information for each module including information on the possible applications for the module, required inputs and potential outputs and other advice on the use of the module. A particular module, for example, might provide the program required for password issuing and checking that could be used as one element of part of a larger set of modules that could be designed for a particular IT security application. Using the framework, the standardised modules contained within it can be drawn on to develop and constitute a larger application.

The framework has apparently changed Prowess Development's approach to its business. When analysts and designers speak with potential clients, they can frame potential solutions in terms of at least some of the standardised modules available in the framework. Specific customised solutions for clients can be commenced on the basis of edits and adaptations to existing modules. Clearly this enables developers to reach final software solutions more quickly and efficiently than designing the entire solution "from the ground up". The framework is based on the company's intranet and is fully and easily searchable by all staff.

Knowledge Sharing

Encouraging Active Use of the Framework

Evidently for Prowess Development's system to work effectively, individual developers and programmers needed to be encouraged to contribute to and use the knowledge contained in the framework. Re-use of other tested solutions does not, of course, always sit well with the culture of independently minded software developers. Contribution to and use of the framework was encouraged by a number of factors. First, a key brief to team leaders has become the re-use of as many existing modules and solutions as possible as part of all projects. Second, regular team meetings constantly emphasize the benefits and reinforce the advantages of the framework. Third, and perhaps most importantly, the knowledge management initiative represented by the framework was designed and developed by the managing director and chief software architect for the company. As a result, all staff quickly recognised that 'follow through' on this initiative was guaranteed.

Evaluation of Knowledge Management

Prowess Development has built up a substantial body of knowledge in its KM repository, the framework, over the past 18 months to 2 years. A number of savings and efficiencies are readily identifiable. The use of standardised functions and modules reduces the need for testing, for example. Secondly, the time taken to complete projects and develop solutions has been dramatically reduced and in some instances halved. Thirdly, the system has also proved valuable in its capacity to facilitate the easier and more flexible deployment of different staff on different projects. With access to a range of standardised modules, staff new to a project are more easily able to quickly develop solutions. After 18 months Prowess Development is seeing a major payoff from its investment in a new knowledge management system. The company reports that projects are now more profitable, business development is more competitive and there has been a major improvement in efficiencies 'across the board'. Moreover, the company believes that its valued professional analysts and developers are now able to spend more time working on the development of solutions to genuinely new problems rather than the "reinvention" of solutions that might already have been developed.

The Australian Business Foundation is sponsored by:



BAKER & MCKENZIE
THE GLOBAL LAW FIRM

PRICEWATERHOUSECOOPERS 

 **UBS Warburg**

 | **Westpac
Business Banking**



J O I N N O W.....

You can become a member of the Australian Business Foundation for as little as \$55 a year.

Together with other like-minded individuals, and our patron, Australian Business Limited, you can help us advance knowledge about what makes Australia competitive, creates jobs and enhances living standards.

You can have your say about important issues that the Australian Business Foundation should examine.

And, you can keep in touch with all our latest research findings.

For details, contact:

Australian Business Foundation
140 Arthur St, North Sydney, NSW 2060

Ph: 61 2 9458 7553

Fax: 61 2 9929 0193

Email: foundation@australianbusiness.com.au

Internet: www.abfoundation.com.au

<p>Strengthening Australian enterprise through research and policy innovation</p>
