The Path to Collaboration: A study of Knowledge Management in the Australian Defence Organisation

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Abstract

Knowledge creation is the key to an adaptive and innovative organisation. Leveraging knowledge in a Defence Organisation faces many barriers as well as acting as a catalyst for growth in strategic and operational environments. Command and control depends on the effective creation, management, sharing and use of knowledge. Collaboration in a knowledge enabled environment is essential to the adaptive and creative command and control required in the post Cold War World. Although the possibility of conventional war is relatively low in the Australian Theatre, an upsurge in intra-state conflicts and the varied responses of humanitarian relief, evacuations, peace-keeping and peace enforcement place heavy demands on a relatively small Defence Force. The study of knowledge management (KM) in Australian Defence examined how the senior decision making elements of the organisation created, captured, organised, accessed, shared and used tacit (implicit) knowledge. This paper reports on the findings and recommendations for knowledge improvement.

Introduction

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The priority task for the Australian Defence Force is the defence of Australia without relying on the combat forces of other countries in the highly unlikely event of armed aggression. The White Paper notes that Australia is more likely to face contingencies that do not include conventional war:

> 'At the same time, military operations other than conventional war are becoming more common. Since the end of the Cold War, there has been a worldwide upsurge in intra-state conflicts. ……. Over the next 10 years the ADF will continue to undertake a range of operations other than conventional war, both in our region and beyond. Many of these operations will be at the lower end of the spectrum, but often they will be more demanding.' (Australian Government 2000, p.VIII)

In addition, future operations are most likely to be carried out in coalition with other countries forces as well as NGO and civilian organisations. For these ad hoc alliances to succeed will require effective mechanisms for a strong culture of knowledge sharing. The high probability of involvement in these more complex and knowledge intensive operations adds to the urgency of developing the knowledge environment within Defence. Knowledge and information management procedures and practices will need the flexibility to cope with operations ranging from those involving only close allies to ad hoc international coalitions.

This means the entire Defence Organisation must become more flexible, adaptable and innovative to be able to successfully take on this unknowable and diverse range of contingencies. Meeting these new obligations requires that the organisation develop more effective ways of creating, capturing, organising, sharing and using knowledge. In short, Defence recognises that it must move from reliance on a "Technology Edge" to achieving a "Knowledge Edge".

The appointment of a senior military officer to the post of Chief Knowledge Officer is an acknowledgment that the Australian Defence Organisation recognises the importance of improving knowledge management in the organisation to meet the challenges of the "knowledge era". This paper reports on a study commissioned by the Chief Knowledge Officer. A major focus of the study was to gain a broad understanding of the state of Knowledge Management (KM) in the corporate policy development areas in Defence. The purpose was to discover current knowledge initiatives and to identify the collective view on systemic KM enablers and constraints.

Models of Knowledge Management

Philosophers since the time of the classical Greeks have been searching for the meaning of 'knowledge'. The traditional definition of "justified true belief" involves both personal beliefs and arguments of justification. Burke (Burke 2000) defines knowledge recursively as "meaning derived from information and other knowledge".

Although the terms " information" and "knowledge" are often used interchangeably, there is a clear distinction. Nonaka (1994, p 15) summarises the distinction as:

> "…information is a flow of messages, while knowledge is created and organised by the very flow of information, anchored on the commitment and beliefs of its holder."

Information is a necessary medium for initiating or formalising knowledge and can be viewed as having a semantic and syntactic perspective. The syntactic aspect of information is the about the form of messages, the semantic aspect is the content of messages. Information theory concentrates on the syntactic and engineering, aspects of information rather than the semantic content. Telephone calls, for example, are charged according to their distance and duration, not on the basis of the conversation content. The knowledge transfer, however, depends on the semantic, or conveyed meaning, aspects of the information flow. Thus, in the context of knowledge creation and innovation, the semantic aspects of information flow rather than the syntactic aspects are the focus.

A useful dimension in considering knowledge is the distinction between "tacit knowledge" and "explicit knowledge". Explicit knowledge is codified knowledge that can be articulated and transmitted in a formal, systematic language. This is the kind of knowledge referred to above. It can be encoded in messages and transmitted or stored.

Implicit or tacit knowledge is more difficult to define, and "is deeply rooted in action, commitment, and involvement in a specific context" (Nonaka 1994). It embodies elements of mental models, experience, skills, know-how and refers to the individual's images of reality and visions for the future. This knowledge is not easy, and is often impossible, to encode and transmit.

Although knowledge can only be interpreted in an individual's brain, there is a sense in which collective knowledge also exists. The knowledge of a group or organisation in a context is often greater than the sum of the knowledge of the individuals in the group. This form of knowledge is also difficult to quantify, but plays a vital part in innovation and planning that extends beyond group and organisational boundaries.

This renewed attention on knowledge is driven by the observation that the world is moving into a 'knowledge age' where the importance of knowledge calls for a shift in the thinking in society and in large organisations. Research in this area has produced a variety of models that can assist understanding of the dynamics of knowledge management in organisations.

A seminal paper by Professor Ikujiro Nonaka (1994), building on his research into the management of product innovation (Nonaka 1988; Nonaka 1990), identified a dynamic

model of knowledge creation and transformation. The key part of the model is the dynamic linkage between the explicit, expressible form of knowledge, and the intrinsically human tacit knowledge so well discussed by Polanyi (1962; 1966). Nonaka sees the cycling between the two forms of knowledge as fundamental to the knowledge creation process as it spirals out from individual knowledge to group, organisational and inter-organisational knowledge. Nonaka and Takeuchi (1995) provide examples, including a military example of the importance of this process is in innovation and competitive success.

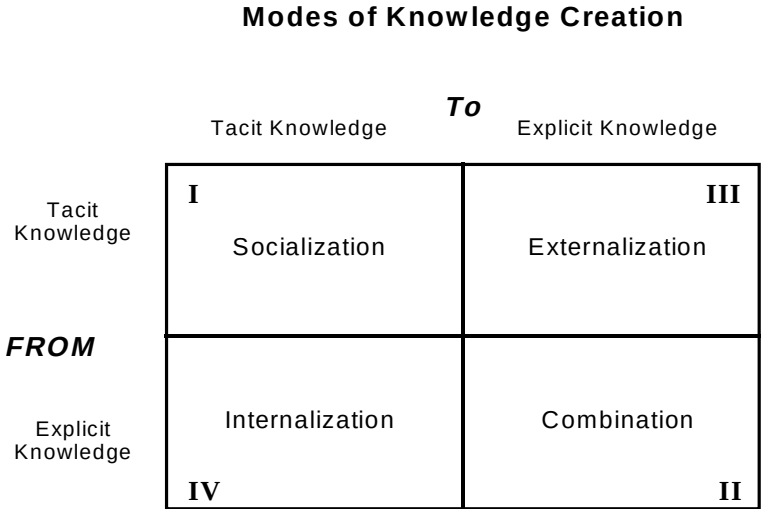

Figure 1: Nonaka Model of Modes of Knowledge creation

This model has been extended by Nonaka (1994) and others (e.g. Kogut and Zander 1992) to show that although knowledge resides in the heads of people, there are important interactions between and among groups that are important in knowledge management. The figure below shows conceptually how knowledge can be thought to spiral around the knowledge creation modes and on into group, organisation and inter-organisation knowledge sharing and creation.

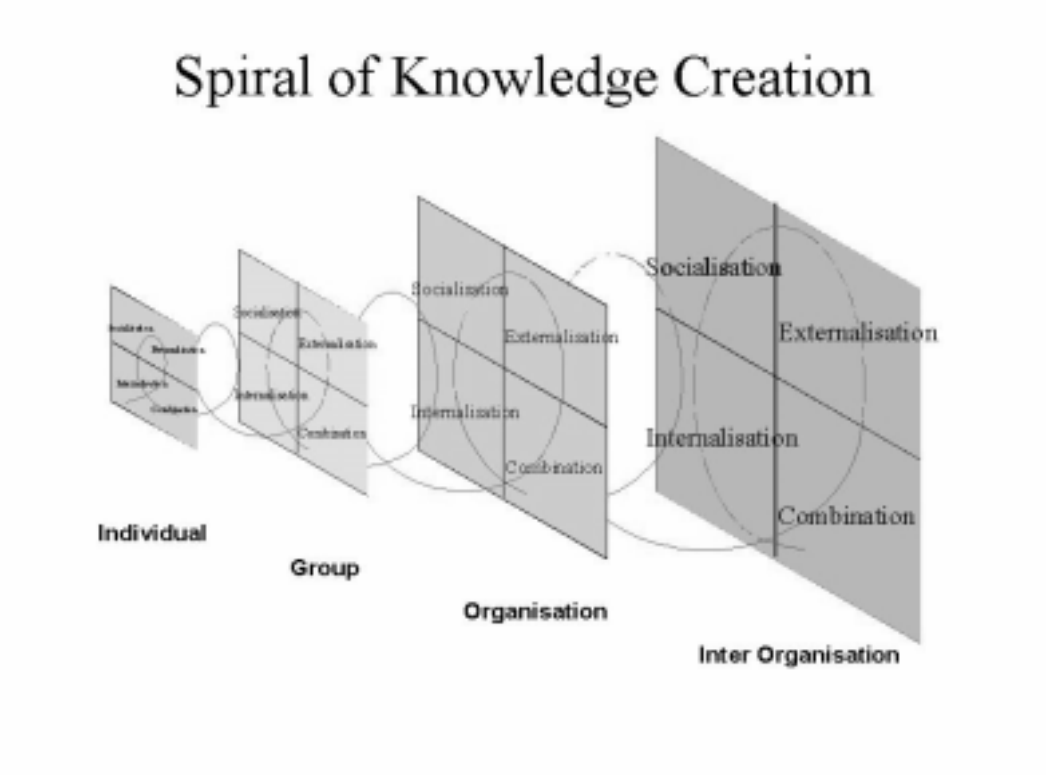

Figure 2: Knowledge Creation Spiral

Many other models have evolved as researchers and consultants attempt to find methods to understand how organisations Create, Capture, Organise, Share and Access and Use knowledge. Often these are tied to ideas on how to manage information resources within organisations (e.g. Davenport 1997; Prusak 1997; Broadbent 1998; Davenport 1998; Davenport and Prusak 1998; Fransman 1998).

More recently particular aspects of knowledge management have emerged as themes from ongoing research. These have been used as the basis for books which offer more specific was of analysing the key aspects of knowledge management. For example von Krogh et al (Von Krogh, Ichijo et al. 2000) list five enablers for strategy and knowledge creation:

- Instil a Knowledge Vision,
- Manage Conversations,
- Mobilise Knowledge Activists,
- Create the Right Context and
- Globalise Local Knowledge

Survival for an organisation in the knowledge era is dependant on mobilising and applying all the knowledge (tacit, implicit and explicit) available to that organisation. It is argued (cf Von Krogh, Ichijo et al. 2000) that the term "Knowledge Management" implies control of

processes that may be inherently uncontrollable, or at least stifled by heavy-handed direction. They argue that managers need to support knowledge creation rather than control it. They call this "Knowledge Enabling".

A major difficulty in the transition to the new era of competition for organisations is the fundamental cultural change required. Management practices that have proved successful in the industrial age can be serious inhibitors to success in the knowledge era. The overview of issues in Knowledge Management discussed in this section summarises the research in the field and provided the basis for this study.

Method

The study team consisted of two DSTO researchers and an external consultant, with knowledge and experience in general management, KM, and information systems. The study was carried out over a four month period. Semi-structured interviews were conducted with 60 people to solicit their perceptions of the state of knowledge management in Defence and their views of the key areas that need to be addressed by the CKO.

The structured interviews consisted of six questions. The initial orientation question asked participants to describe their positions, functions and their relative location in the organisational structure. The next set of four questions asked participants from their perspectives in the organisation, how knowledge was:

1. created;
2. organised and accessed;
3. shared;
4. used.

The final question asked 'if you were Chief Knowledge Officer for a day what was the one most important thing you would do.'

All interviews were written up as soon as possible following the meeting, using a consistent structure. These documents became the base data for the subsequent analysis. Interviewee comments were consolidated into several different mind-maps using frameworks identified from the research literature in this field. It emerged that the comments best fitted into four major groupings:

- Cultural,
- Organisational,
- Technology and
- Learning.

These groupings were then used to structure the analysis. In each group the interviewee comments on the knowledge environment were consolidated into one of the comment types:

- Systemic enablers,
- Systemic constraints,
- Current initiatives and
- Recommendations.

A matrix defining the current situation and associated recommendations was produced, called the KECIR analysis (KECIR is Knowledge, Enablers, Constraints, Initiatives and Recommendations). A further column was added to KECIR to define external exemplars which might act as reference points.

Although this analysis was based on a relatively small number of interviews with a sample selected, not at random, but primarily for their interest in knowledge management, the team believe that the insights that emerged from the analysis have substantial face validity. The reported systemic enablers and constraints accord with those reported in the KM literature and the recorded recommendations cover similar themes to those reported in successful knowledge initiatives in other large organisations.

Findings

The first step in the analysis of the interviews was to combine the interviews into a single body of text, organised around the interview headings. The comments within each main heading could then be read in a block, and issues that represented some degree of consensus were identified. It was discovered that the key issues that emerged could be conveniently grouped into four main headings:

- cultural,
- organisational,
- learning and
- technological.

These key issues were further grouped into subheadings. The subheadings are represented in the Mind Map in the following figure. This section is structured around the subheadings defined in the Mind Map. Of course, many of the issues have implications across several subheadings, so the categorisation is approximate.

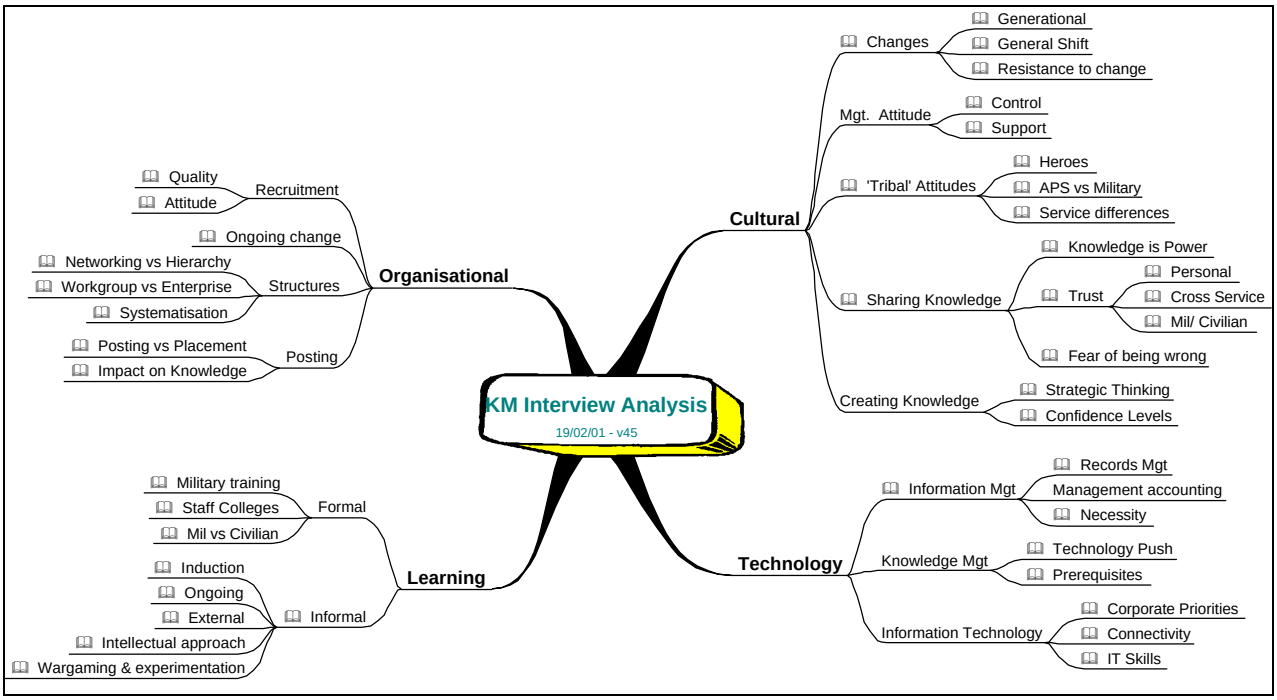

Figure 3: Knowledge Management - Principal Interview Analysis

Cultural

The role of culture emerged as the major enabler or inhibitor in achieving a more knowledge enabled organization. This is not surprising in an organisation that is as culturally diverse as Defence. As the study was quite exhaustive in the exploration of the subcategories only a few illustrative examples, resistance to change and cultural attitudes, will be given in the paper which is necessarily of smaller scope.

Resistance to change was a common theme in the cultural changes category where the following is the voicing of a systemic constraint. The phrase 'comfort zone' was frequently heard as a major driver in causing people to resist change. A reason quoted is that *'Defence culture enables people to rest in their comfort zone'*. Further, military training does not teach flexibility or risk taking outside a well defined set of known parameters. A senior officer commented with some frustration that *'Things have moved slower than I wanted'*.

In contrast to the systemic constraint of resistance to change, the overall view is that attitudes are changing throughout the ADF, both to the acceptance of a "joint approach" and to the acceptance of strategic thinking as a necessity. For example, one senior officer noted *'a change from arguing about whether to have MROs {Military Response Options} to arguing about the MROs'*. These trends are certainly indicative that the requirements to support a knowledge-based approach may emerge in time. To quote a civilian interviewee, *'There is cultural change and Defence now thinks purple to a much greater extent'*. Another senior civilian suggested that '*Military culture is not a barrier to change.*

Organisational

Organisation forms a major heading that emerged as the result of the analysis of the interviews. Defence has gone through a huge amount of change in the past years so issues involving the effects of organisational change loom large in many people's minds. Examples from recruitment and retention, attitude and organisational change are detailed here.

Whilst Defence continues to be able to recruit good people, a major concern is that of how to retain them. Interviewees noted a change of attitude among younger officers, arising from changes in society, which presents both an opportunity for new directions, but also a challenge in how to keep those officers.

It is claimed that the services are able to recruit top class or at least above average people. To quote, *'There is a higher than average talent coming into the services. These people need to be encouraged, have high expectations set and deliver on those expectations. This is a real obligation'*. There is also a top class graduate assistant intake. *'Found smart* graduate assistants *were more valuable in Timor contingency than junior military officers.'* The accepted view is that the problem is to retain these people. It is recognized at the highest level that this is vital. *'Key to improving Defence is how we select, develop and use people'*.

As stated elsewhere in the report, military training is widely thought to conflict with open thought in many ways. Attitudes among younger officers have changed over the years, arising from changes in society. '*Young people are more open in their interactions with senior officers'*. The issue of retention is a real one in everyone's minds. *'The type of person needed in an open knowledge environment would have been "weeded out" along the way'*.

Ongoing organisational change has effects on losing knowledge by breaking personal connections and losing group knowledge. It also makes it difficult to sustain initiatives that are longer term. '*Problem is that the new way of managing the capability will take several years to permeate. ... worry that Defence will change direction again and the work will be lost'*. This may be the case for Knowledge Management and for Cultural Change.

Ongoing change is making people more weary and cynical of change. '*Ongoing change limits enthusiasm for adopting new processes'*. Perhaps it is not so much the change that is the issue, but the way it is perceived that change seems to make no positive difference. *'Change fatigue comes from no results not from the change itself*'. It is also felt that the reasons for change are not communicated, and that there is no consultation with the real stakeholders.

Another concern that was articulated was the root and branch nature of the change. Defence has ended up as having a *'volatile organization, process and structure'* with nothing left untouched on which to hang some continuity. This was articulated well by a senior civilian interviewee *'…. there is so much struggle and change. People are caught in the middle. There is so much anxiety. Most adopted reptilian instinct for survival. Individual's lifestyle – mortgage – at risk'.*

Learning

Knowledge improvement depends on the creation of a learning environment. Sufficient discussion centred round the issues of learning and training to create a section of the analysis for this topic.

A recurring theme amongst interviewees was that military training can stifle initiative or at least an innovative approach. For example, '*Much training is a disservice to people'* and '*Military Training does not encourage lateral thought'*. A comment about the Navy cultural change program was that '*Navy doesn't have a learning culture. Focus is on training'*, and with respect to the military as a whole '*There are no alternative learning paths; the focus is on training'* Another more acerbic comment about Defence was that '*It has a problem being a remembering organisation, never mind a learning one'*.

There are clear, direct and encouraging views about the future direction for training – Statements like moves for *'establishing coaching and short courses with mentoring roles encouraged'* and creating *'links to Personnel to work with Personnel planners. People ready to invest in people'* indicate that there is strong thought going into the future direction for some aspects of military training. This may be more visible for other ranks compared with officer training.

A lot of store for changing the culture and attitudes towards learning is being placed in the new Australian Command Staff College. *'Staff Colleges are the places that influence whole generations of thought. … [are the] key to the future of Defence'*.

Technology

The focus of the Knowledge Management study has been primarily on cultural and attitudinal issues. However, information technology has a vital role to play in providing an infrastructure to enable a more knowledge-based environment, as the following exemplar issues show.

If IT has a key role in providing an infrastructure in which knowledge management can flourish, then a sound information management policy is needed to inform the IT direction. Many people spoke of the need for some level of standardization.

A key part of knowledge management is to ensure that explicit knowledge is retained in documentary form and is available in the future. The traditional form of record keeping, via a file registry, manned by a professional staff, has broken down in much of Defence. It has largely been replaced by some notional reliance on a set of electronic files grouped in some way on a shared drive. These are not structured for any kind of permanent retention, nor are they handed over at the end of a posting with comments on file to animate the knowledge surrounding the information held in the documents.

Quite apart from the retention of this knowledge, there is an absolute requirement to retain this information and document and records management software has been acquired for use across the entire organisation. Its deployment has been slow, partly because of the issues of funding its installation and support, and also because of a set of learning and training issues. There is not a good deployed understanding of what is really required for good records management. There is more to this than learning key-strokes. It is much more to do with what is really needed to retain good records and how to achieve this in a new electronic environment. As one interviewee put it succinctly: there is *'No education in the responsibility, no education in business processes, no training in the product'*. There is a need to change attitudes, in the words of one officer *'to facilitate cultural change to get people to understand that reporting is part of business*.' There is a wide recognition of the urgency of the requirement.

Not surprisingly, there is much commercial focus on knowledge management software tools. Attempts in Defence to start a knowledge management program primarily based around technology have not been successful.

Recommendations

Recommendations fell into two major categories; specific and general. Interviewees made many specific recommendations a few of which are detailed in the paper. Drawing on the specific recommendations the study made a number of generic recommendations for action by the CKO.

The specific recommendations are put in the context of baseline findings, namely knowledge enhancers, constraints and initiatives, which are then followed by the recommendations (the KECIR analysis).

Cultural

The context for Cultural changes is given in the box below with specific recommendations in the following box.

Baseline Findings **Cultural/** *Changes*
Enhancers • Navy and Air Force change program • Shift in attitude towards need for strategic thinking a joint approach • Move in Air Force towards more networked organisation
Constraints • Change fatigue from no results, not change itself • Generational attitudes • Army does not see need for cultural change – claim have already undergone change
Initiatives • Australian Command Staff College (ACSC) role • Collocated HQ

Interviewees identified the role of the ACSC in fostering joint training as a current initiative for fostering positive cultural change in knowledge management. Similarly, the proposed establishment of the collocated operational headquarters would accelerate a joint approach to knowledge management.

Interviewees suggested the following recommendations.

Interviewee Recommendations **Cultural/** *Changes*
1. Support existing cultural change programs: CKO should identify with, and actively support, RAN and RAAF Cultural Change initiatives 2. Inject knowledge related values and beliefs into education and training **3.** Examine knowledge transfer in Networked versus Hierarchy contexts: Defence works both within strong hierarchies and in network structures. In order to understand the conditions which facilitate and prevent knowledge management more study and experimentation is required.

Organisational

In the Organisational recommendations for improving recruitment and retention, strong constraints against attracting and retaining knowledge workers were identified.

Baseline Findings **Organisational/** *Recruitment & Retention*
Enhancers • Defence claims it attracts brighter than average people
Constraints • Defence losing young creative potential knowledge workers • Maybe not emphasis on knowledge worker capability • Loss of knowledge through outsourcing at operational and tactical levels
Initiatives • Defence's People Plan

Recommendations reflected the need to develop a culture of expertise or knowledge that would be sustained by the career structure. There was also a concern that Defence was suffering a knowledge loss through outsourcing that was not sustainable.

Interviewee Recommendations **Organisational/** *Recruitment & Retention*
4. Develop recruitment strategy based on planned career expertise 5. Investigate long term consequences of outsourcing (what happens when no more military trained staff for outsourcing)

Learning

For the informal Learning category, the constraints of lack of reflection and inquiry are significant for Defence in that Senge (1990) identified the discipline of reflection and inquiry as essential for building learning capabilities in organisations. This discipline in turn contributes to a dynamic knowledge environment. No current initiatives were identified as directly fostering informal learning.

Baseline Findings **Learning/** *Informal*
Enhancers • Wargaming and experimentation • Messing system (not noted in Russell)
Constraints • Lack of reflection time • Lack of encouragement for rigorous intellectual approach
Initiatives

Interviewees made three recommendations to promote informal learning as a means to fostering knowledge management. It should also be noted that the Navy reform program is strongly based in the concepts of the learning organisation (Senge, Kleiner et al. 1999).

Interviewee Recommendations **Learning/** *Informal*
6. Provide mentoring scheme 7. Expertise location: establish systems to locate expertise which then facilitate the learning environment. 8. Give academics access to appropriate ADF executive working groups in order to promote analytical thinking and lateral thought

Technology

In the knowledge management subcategory of Technology, a number of constraints but no systemic enhancers were identified. While there was a general tendency to confuse and to classify knowledge management as an information technology issue, the lack of systemic enhancers indicates a gap and an opportunity for the CKO to move strongly into this area. There are a number of current initiatives whose success and failure provide some guidance in this area.

Baseline Findings **Technology/** *Knowledge Management*
Enhancers
Constraints • Belief that KM is purely IT issue • KM is a diversion • "Fix the IT and KM will be ok"
Initiatives • Library initiative for capturing knowledge of research librarians • Knowledge Management experiment at Air Force Headquarters (Autonomy and Teamspace) • Chat rooms (e.g. National Support Division) • Defence Matters Discussion forum • Access to External Web sites • Support Command Division Lotus Discussion

The recommendations support the suggestion that there is fertile ground for CKO initiatives.

Interviewee Recommendations **Technology/** *Knowledge Management*
9. Use KM technology in context of culture, strategy and organisational process 10. Encourage chat rooms and Notes based discussion groups with clear specific purposes 11. Develop a Yellow Pages (motivated in part by improved career management and the suggestion of competitive postings) 12. Build Enterprise Portals: to facilitate knowledge management 13. Build knowledge structures: to provide the knowledge infrastructure for knowledge management 14. Introduce collaboration tools e.g. discussion tools, joint authoring tools

Generic

While the specific recommendations are targeted at specific issues, the generic set of recommendations for action by the CKO were as follows:

- Conduct flagship experiments to build knowledge enabled working environments;
- Provide resources to set up environments in which communities of practice are likely to emerge;
- Identify with, and actively support single service Cultural Change initiatives;
- Re-establish culture of disciplined records management through a holistic approach ;
- Establish a study to assess the role of Defence educational establishments in imbuing students with a knowledge culture.

Conclusion

In conclusion, the paper has summarised the findings and recommendations of a knowledge management study for the Australian Defence Organisation. The particular findings are relevant for Defence organisations seeking to implement knowledge management strategies for building a flexible and innovative organisation. The KECIR way of analysis is offered as a viable tool for experimentation in determining the contexts for effective knowledge management programs in Defence organisations.

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