

# **Enabling Learning: A Progress Report On The Enterprise Social Learning Architecture Task**

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## **Abstract**

This paper reports on the methodologies used and the findings of the research done by the Enterprise Social Learning Architecture (ESLA) Task into learning processes occurring in two diverse environments, tactical and strategic. The research focused on identifying factors that

enable and facilitate social learning and these factors are discussed in view of the preliminary architecture proposed by the research team. Factors that challenge or inhibit social learning are also briefly discussed. The paper concludes with proposed further research into social learning in the Defence Organisation.

## **1 Introduction**

Researchers are increasingly employing qualitative methods, specifically ethnography, to gain an understanding of social, organisational and information systems interactions [Myers, 1999]. This paper reports on the methodologies used and the findings of the research conducted by the Enterprise Social Learning Architecture (ESLA) team of the Defence Science and Technology Organisation. The ESLA task is a three-year research study investigating social learning within the Australian Defence Organisation (ADO).

Social learning refers to learning done in or by a group, an organisation, or any cultural cluster and includes:

- the procedures by which knowledge and practice are transmitted across posting cycles, across different work situations and across time; and
- the procedures that facilitate generative learning – learning that enhances the enterprise’s ability to adjust to dynamic and unexpected situations and to react creatively to them.

The immediate aim of this research is to understand the issues inherent in building learning, adaptive and sustainable organisations. The long-term objective, however, is to develop architectures that will support the development of information systems to guide and enhance organisational learning and facilitate knowledge management.

The data gathered by the research team suggests a tightly coupled relationship between systems thinking and effective social learning. The team has identified a number of processes and strategies that, when positively applied, facilitate social learning, knowledge management and systems thinking within the ADO. In this context, these processes and strategies are termed “enablers”; however, these same processes and strategies can act as inhibitors of social learning when they are not thoughtfully applied. The enablers generate an organisational environment that actively sustains and cultivates effective social learning and this environment both nurtures, and is nurtured by, numerous overriding organisational values that foster effective social learning.

The purpose of this paper is to use the ESLA findings to date to propose a preliminary architecture that organisations might use as a map to facilitate effective social learning for their staff. The discussion in this paper is narrowed to the factors that were identified to enable social learning within the study settings. These are represented in Figure 4.1.2. Other parameters such as environmental factors and overarching values that support social learning are not dealt with in this paper and are the subject of further research. However, they are represented in Figures 4.1.1, 4.1.3 and 4.1.4 to provide context for Figure 4.1.2 for the reader.

## **2 Description of Study Settings**

To date, the ESLA team has conducted three studies into social learning processes. Two of these studies were pilot studies, one in a single service tactical headquarters and one in a joint strategic headquarters.

The first Pilot Study for the Task was conducted over a six month period in 1998. The pilot study involved five field trips, four to 82 Wing Headquarters (HQ) at the Strike Reconnaissance Group (SRG) at Amberley Air Base in Queensland, and one to Darwin during the military exercise Pitch Black. The pilot study had two purposes: firstly to see if it was feasible to observe, understand and document social learning processes, particularly in command and control situations, and secondly to trial the use of ethnographic techniques for this purpose. As a result of this pilot study, two DSTO reports were produced documenting the study methodology and its findings: a client report in 1998, and a research report in 1999 [O'Neill, 1998; Agostino et al., 1999]. The findings have also been reported on in a number of publications, and were presented at the last International Command & Control Research & Technology Symposium in Rhode Island [Gori et al., 1999]

The second pilot study took place in a strategic environment, Command, Control, Communications and Intelligence Development (C3ID) Branch, at the Australian Defence Headquarters (ADHQ) and started in June 1999. This study was terminated after three months to allow for a fuller research study at the strategic headquarters of the Command, Control, Communications, Computing, Intelligence, Surveillance, Reconnaissance and Electronic Warfare (C4ISREW) Staff. At the end of the second pilot study, a task report was produced reporting on the methods used in that study, the findings based on fieldwork and survey, and the recommendations arising from those findings.

The C4ISREW study has been in progress for over nine months and currently the ESLA team is consolidating the research data and analysis in order to report on their findings. The C4ISREW setting was of particular interest as its personnel are distributed across different geographical locations, different services, and different functional branches and their outcomes are heavily reliant on the prevailing economic and political climate. Unlike SRG where the environment is very structured, the work environment in C4ISREW lacks the same degree of structure and has a much higher degree of ambiguity.

## **3 Evolution of the Study Methodology**

The methodologies used in the research studies evolved as the task progressed and the research moved from one study setting to another.

The methodology employed in the studies is based on ethnography. Ethnographers immerse themselves in the situation to gradually see and understand the key concepts that influence the setting being studied. The research team used ethnographic techniques in the form of field work which entailed observing the work taking place in different settings, and using directed questioning to clarify issues. Ethnography is ideal for providing information systems researchers

with rich insights into the human, social and organisational aspects of information system development and implementation.

Qualitative research techniques (of which ethnography is one example) are appropriate for studies in which context needs to be considered. They are used where a key aspect of the research is to analyse, or at least take into consideration, various aspects of the social process. The main body of techniques that fit these criteria falls under the domain of ethnographic approaches. Given the exploratory nature of the pilot study research at C3ID, as well as the importance of the context and the need to understand the social process of learning, ethnography was a useful methodological tool to adopt.

The ESLA team Found that on occasions a passing comment made by the ethnographer was interpreted by the personnel being observed as a statement reflecting the research findings. To move the focus from the research team a survey questionnaire was constructed and implemented. This had the effect of moving the focus of the research from 'what DSTO thinks' to 'what the C3ID staff thinks'.

Prior to the commencement of the research study the team members were thoroughly briefed on the principles and ethics of ethnographic research by Gitte Jordan (then from the Institute of Research and Learning associated with Xerox Parc) who helped to popularise the use of ethnography in industrial settings. Currently there are five researchers: one engineer, one social scientist, one workplace and interpersonal communication specialist, one science and information management/information seeking specialist and one researcher from an information systems/organisational studies background. The different perspectives, expertise and experiences of team members enrich the data and shape the kind of ethnography which takes place. Team meetings are held regularly to corroborate and consolidate the findings as the work unfolds, and to identify emerging key social learning issues.

Careful consideration is given to ensure validity of this research study. Therefore, the research study is subject to triangulation by data source (different times and places) and by method (observations, interviews, and, in one of the settings, a quantitative survey). While the SRG study was based almost entirely on ethnography and directed questioning, for the C3ID pilot study, the research team employed both qualitative and quantitative methods of data collection. As stated above, the qualitative methodology consisted of observations, unstructured interviews and a study of various organisational documents collected by the research team, and, the quantitative method used to complement these ethnographic techniques was a survey questionnaire.

This survey questionnaire consisted of three parts. PART A comprised a range of statements where personnel were asked to choose between several response categories, indicating various strengths of either agreement or disagreement with the statement. PART B, consisted of six 'open ended' questions inviting respondents to give a brief statement on each of them. And finally, PART C was designed to gather some demographic data. The response rate to this survey was 96.7%. The survey succeeded in moving attention from the researcher to the researched, and had the added benefit of validating the ethnographic research already conducted.

In this way, the reliability of the qualitative findings was validated by quantitative techniques [Bailey, 1982; Kidder, 1981].

In the C4ISREW study, in addition to observations, the team undertook extensive unstructured interviews with a sample of C4ISREW personnel. The method for selecting the interviewees was a stratified sampling to ensure that an adequate representation was achieved. The specific characteristics that were of interest were: branch and directorate (sub-branch) affiliation, gender, rank, whether military or civilian, work location, and duration of placement. The main advantage of this type of sampling was that it ensured that the relevant variables were represented. In total, 15 interviews were conducted and all the interviews were recorded and transcribed. The transcripts were then coded according to the thesaurus of terms specially developed by the ESLA team for coding of field observations and transcripts. The methodology used for the study is clearly evolving as the study progresses and the researchers have discussed methodological approach to this study at numerous seminars and special interest groups meetings. The research team is satisfied that their methodology is rigorous and their findings well triangulated and valid.

## **4 Findings of the Study**

The findings reported in this paper represent collective research results of the two pilot studies and that of the C4ISREW research. These findings are multilayered and allowed the research team to pinpoint a set of overarching values that facilitate effective social learning. In addition to this overall set of values, the research team was able to identify individual factors that support and enable effective social learning to take place. These factors fall into two categories.

The first category is referred to as *Enablers* and represents processes and strategies that, if present in an enterprise, can facilitate social learning. A more detailed discussion of these factors is carried out in section 4.2. The second category of factors refers to characteristics in the environment and provides a context in which the enablers operate. These factors form a basis for the development of a social learning architecture that will be discussed in section 4.1.

Other major observations derived from the research studies were the importance of members having a shared vision, especially in terms of understanding organisational systems and objectives. It was also found that effective work groups see themselves as interdependent on others outside their team, and when it comes to problem solving, they regard themselves as part of a larger, integrated entity requiring system thinking to achieve objectives. This finding seems to support views represented in literature that people working together on a joint enterprise for a sustained period form a community. They learn, and as they interact, over time they develop a shared practice and contribute to the intellectual assets of the organisation.

### **4.1 Proposed Social Learning Architecture**

There are numerous definitions of enterprise architecture and as John Zachman, one of the architecture gurus, points out we have not been very precise about the definition of 'Enterprise Architecture'. To some people, "architecture" is simply a high level description (model) of the

system to be built. To others, it is conceptual or logical as opposed to physical. To others still, "architecture" is "requirements" whereas to some, it is simply a set of "principles" [Zachman, 1999].

According to the Meta Group [1999], enterprise architecture provides organisations with the methods, processes, discipline, and organisational structure to create, manage, organise, and use models for managing the impact of change. It thus provides a collective knowledge about that system.

Chen, El-Sakka and Clothier's [1998] paper, based on context analysis for architecture practice, propose that the definition of architecture should derive from three critical roles of architecture: providing a picture of the existing systems, a blueprint of the future systems, and a roadmap of how to get there.

The development of social learning architectures has numerous advantages:

- it helps to enhance understanding of social learning concepts and aspects
- it helps to detect problems and inhibitors to social learning
- it helps to avoid risks by providing a disciplined approach
- it helps to clarify and prioritise requirements for effective social learning
- it provides guidance on how to implement social learning
- it facilitates promotion of social learning concepts to all stakeholders
- it helps future planning
- it contributes to operational cost effectiveness.

The social learning architecture is currently being developed at the higher levels of abstraction with the view of drilling down to more detailed levels as the work progresses. This is reflected in the following diagrams (Fig 4.1.1-4.1.4). The social learning architecture, as proposed at this stage of the research project, represents a map that an organisation can follow in order to implement effective social learning for its personnel. It also shows the relationships between individual factors and their structure. The social learning architecture comprises four different components, each dealing with different levels of relationships between factors (Figure 4.1.1), processes and strategies (Figure 4.1.2), the environmental context in which processes and strategies operate (Figure 4.1.3), and the set of values that underpins social learning (Figure 4.1.4). The enablers are the focus for this paper; the other factors will be the subject of future papers.

Figure 4.1.1

### FACTORS IN SOCIAL LEARNING

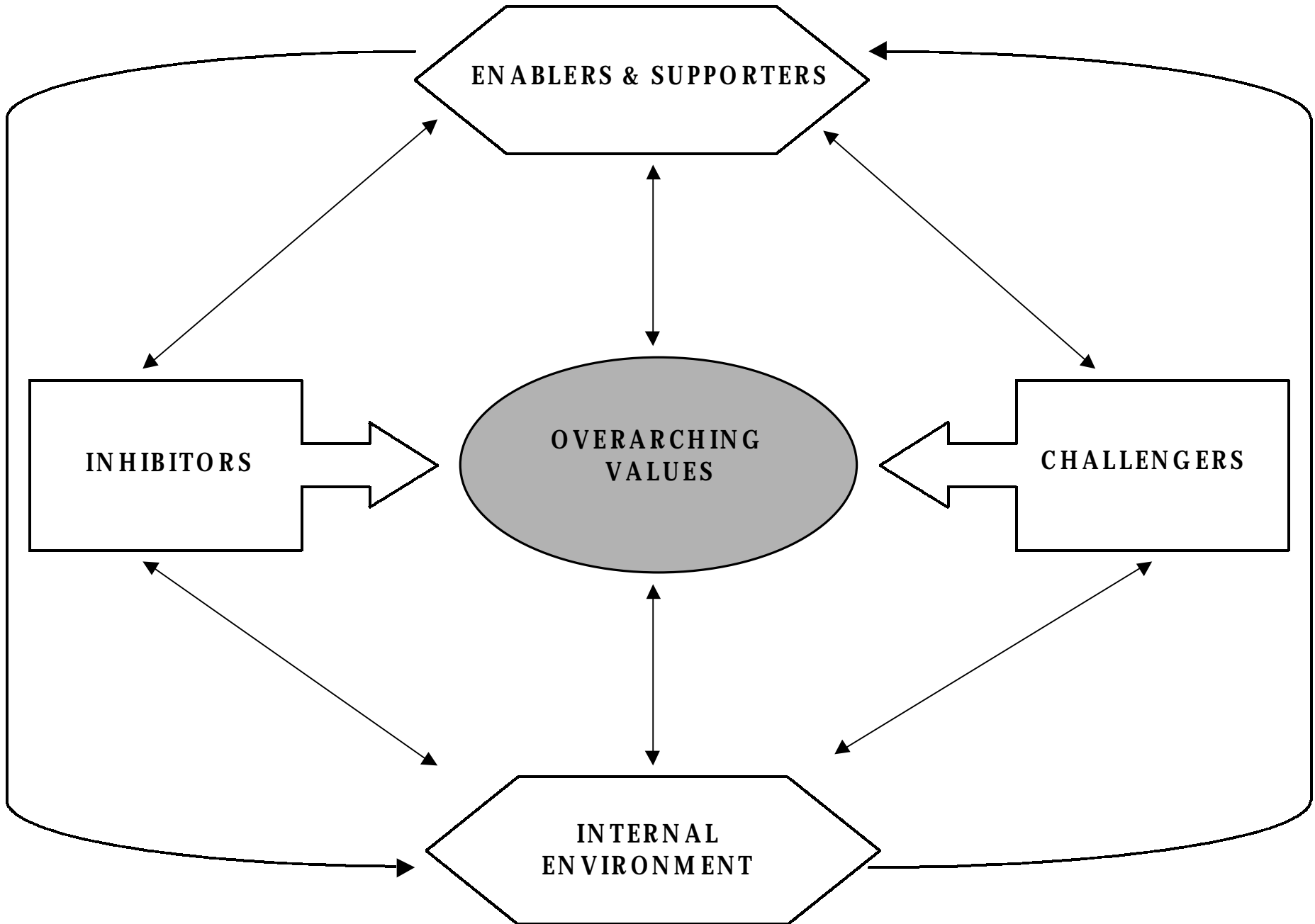


Figure 4.1.2 CATEGORIES OF ENABLERS POSITIVELY CONTRIBUTING TO AN EFFECTIVE SOCIAL LEARNING

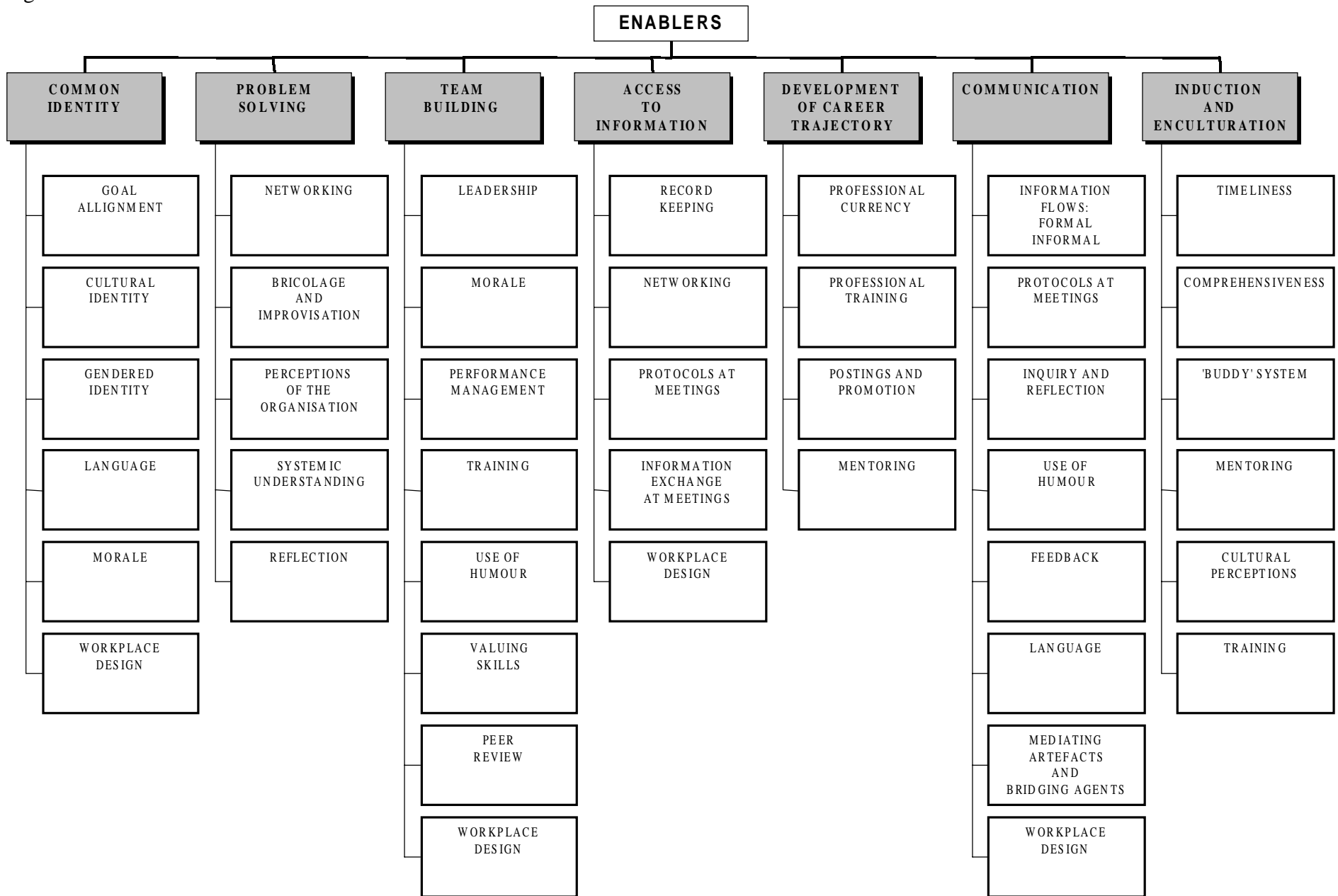




Figure 4.1.3

## FACTORS IN ENVIRONMENT THAT POSITIVELY CONTRIBUTE TO AN EFFECTIVE SOCIAL LEARNING

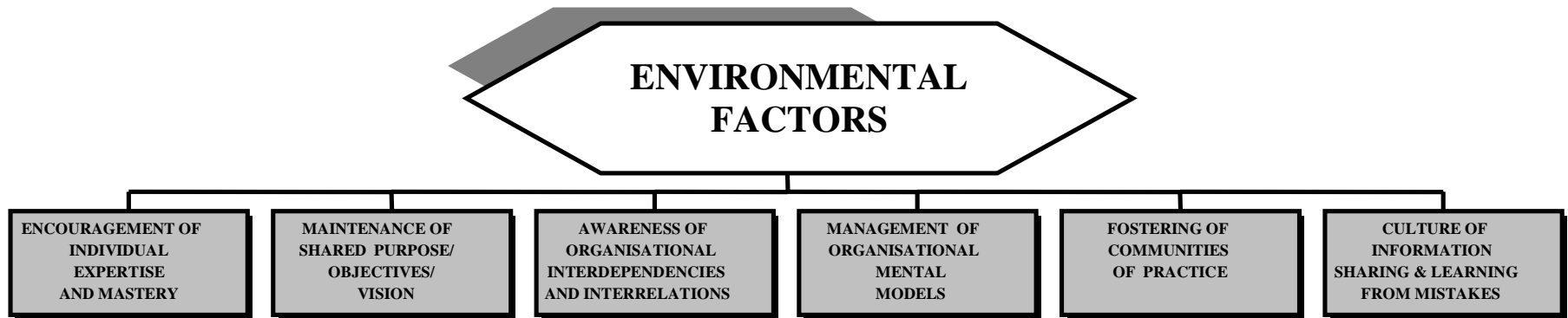
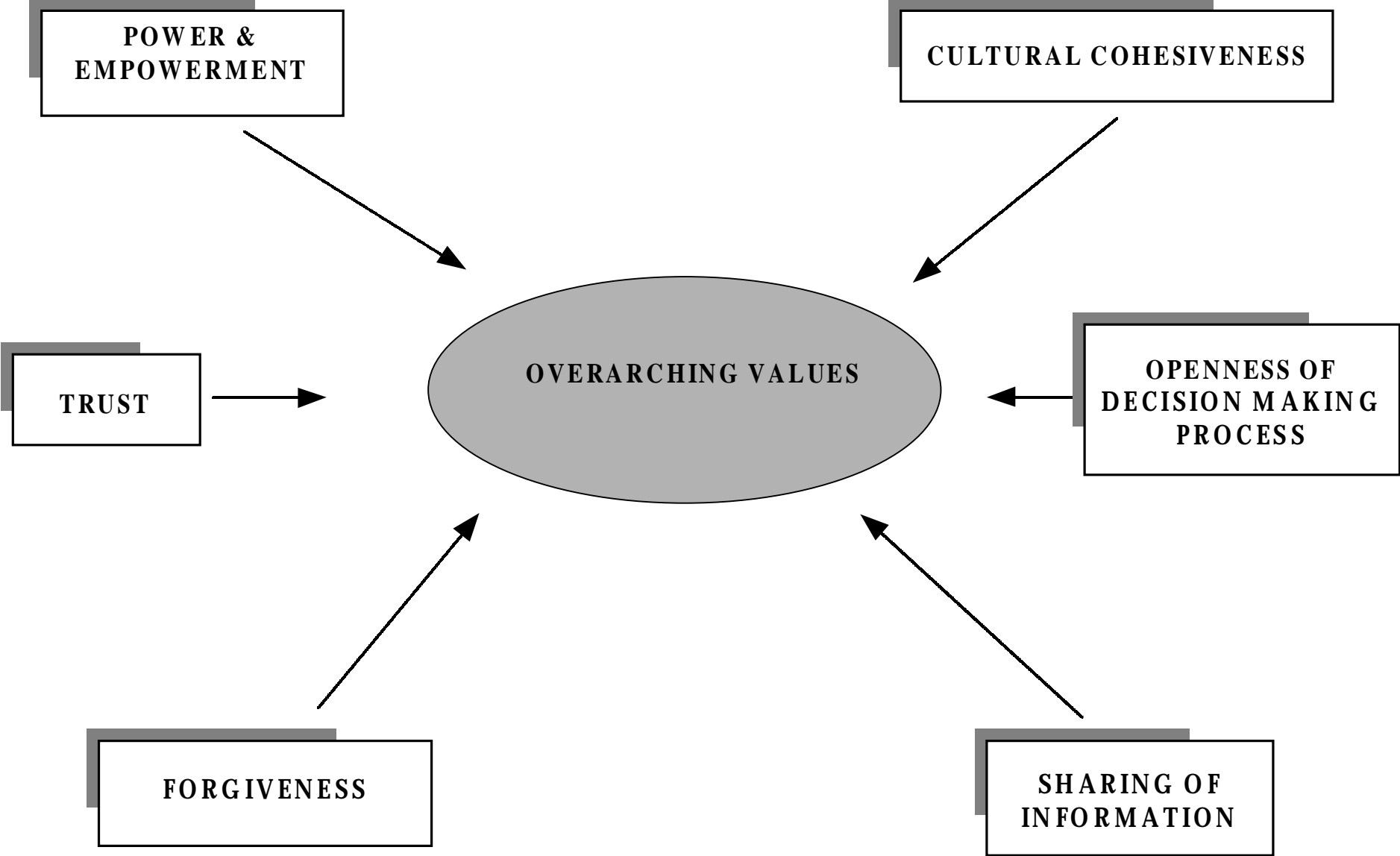


Figure 4.1.4 OVERARCHING VALUES THAT FACILITATE EFFECTIVE SOCIAL LEARNING



## **4.2 Enablers for Social Learning**

The enablers discussed in this section of the paper were identified from the data gathered so far and is by no means exhaustive. Further, the order in which they appear does not imply level of importance or value to social learning; however, each enabler was observed to have an impact on effectiveness of learning processes occurring in the settings under study.

### **4.2.1 Common Identity**

The ESLA team identified that a common identity can enable social learning to occur. As has been stated in section 1.0 of this paper, the data gathered so far suggests that systems thinking is tightly coupled with effective social learning. Systems thinking, according to Senge [1992] requires a shift of mind – from seeing ourselves as separate to seeing ourselves as connected to, and part of, the world (or any other system such as an organisation or organisational sub-unit). In the main, the research team found that this common identity is influenced by issues around goal alignment, cultural identity, gendered identity, language, morale and workplace design, and that all are integral to effective social learning. Whilst a common identity and its sub categories are presented as independent features in this paper, in reality they are complex, and are not mutually exclusive since more often than not they significantly impact on one another. Moreover, depending on what is happening within the organisation, such as during a restructuring phase, some of these elements become more important than at other times.

Goal alignment is an important value within the work culture studied, particularly in terms of social learning. At SRG, the team observed a strong goal alignment within the aircrew community. In contrast, at C4ISREW the research team found nothing uniform about the ways in which goal alignment takes place and that cohesiveness and work relationships varied in accordance to social positioning, influenced by hierarchy, civilian vis-a-vis military discourses, and rank. Doney et al [1998] claim that the extent of group cohesiveness relies on the extent to which a team's goals are clear and accepted and also on the degree to which all members adopt team behaviours. Since sharing knowledge, networking and teamwork all require a certain level of trust; trust itself becomes a matter that underpins all working relationships and goal alignment generally. The ESLA team found that trust rather than goal alignment becomes more important as working environments become more risky and uncertain.

Adding further complexity to the issues surrounding goal alignment and its impact on social learning is the existence of three distinct tribes within the areas studied: civilians, 'the joint forces tribe' (Army, Navy Airforce), and a 'mixed tribe' (military and civilians). Whilst the 'mixed tribe' is where each entity can develop and build on, it is in one's own distinct 'tribe' where promotion and advancement is likely to occur.

Cultural identity is another important enabler to social learning because, like common identity, it impacts on the extent to which one feels that they are part of the system or alienated from it. In a recent publication by the Defence Executive the military's key identity and cultural values are delineated as being oriented towards, "... professional excellence, ethics, courage and integrity,

fairness and respect, accountability, openness and trust, team spirit and loyalty, and equity". Increasingly the Australian military is being oriented towards peace keeping where the language, images and goals have taken on a distinct soft style of management all of which illustrate changes in the discursive processes surrounding service and vocation. Moreover, higher levels of education among the rank and file are also significantly changing the ways non-commissioned service people view their work marked by an increased questioning of authority.

There have been other significant cultural changes, which have also impacted on the sites researched. For instance, at C4ISREW, the ESLA team found that there appears to be a cultural shift away from the belief that only the traditional warriors should hold senior positions within Defence, which is emerging in tandem with a shift in the skills that are valued. The clash of old and emerging values and worker identity is also reflected in more traditional areas like the clash between civilians and the military and in gender equity. Moreover, the needs of family and the concerns over domestic issues are becoming much more openly visible. Perhaps in part this is because partners of military personnel are also becoming more vocal and demanding of their rights. The fact that senior members acknowledge that family needs are important demonstrates a shift in the overall understanding of the typical service member who traditionally had to prioritise his work above other commitments.

The clash of values that occurs as this cultural shift takes place threatens the extent to which staff feel that they are a part of the system and may result in higher levels of alienation, and thereby reduced common identity.

Gender identity, because of its relationship with common identity, was also seen to impact on social learning. The interviews conducted by the ESLA team with C4ISREW staff show that some see the military as a 'boys own' club. One statement pointing to 'a boys own army adventure' is quite telling of how some Australian Defence Force members perceive military work in gendered terms. Issues around male bonding, and masculinity are central here. The pressure to conform to dominant notions of masculinity not only denies the feminine, but also rejects 'other' masculinities that lie outside of the prevailing interpretation of 'maleness'. This has obvious implications for one's likelihood of identifying with others in the "system".

The researchers also found that women are not altogether unhappy in their workplace nor their gendered identity. The ESLA team found clear representations of military women's agency, where, rather than being completely overcome by patriarchal structures, women develop varied and sophisticated strategies which not only enable them to survive their workplace, but also empower them to bring about subtle, yet notable changes. Some women for example, silence their gender and take up with what have been typically deemed masculine traits. Watching them in action is powerful evidence of how so-called masculine traits are not masculine at all, but have been merely constructed in that way [Agostino, 1998].

Language is another important factor fundamental to the overall social learning processes. Language modifications reflect broader change and the social and political relationship between various members. At a C4ISREW re-organisation workshop for example, it was stated that the Defence Executive had chosen the term "staff" rather than "division" to refer to sections within C4ISREW because the latter is seen as connoting separation and division between sections

within the Branch. Language is also important in terms of creating a shared understanding among workers and their relationship to the wider organisation. Without a shared knowledge of the language specific to the organisation and overall administrative and work processes, individual personnel and the organisation as a whole are greatly disadvantaged. Thus learning the specific work related language is of central importance to broader social learning development.

Morale has been a significant focus in the overall study because the research team found evidence of low morale and that it was coupled with higher levels of alienation towards senior management. This has obvious implications for the broader understanding of a common identity and thus for social learning. However, given that the alienation towards senior management appears quite widespread in C4ISREW, it is possible that it actually creates an element of common identity amongst those suffering this alienation. Issues affecting morale involve the recent budget cuts for travel and training which have contributed to a level of cynicism among C4ISREW personnel. The overall complaint is that such duties take away from more pressing and important responsibilities. Other morale issues that have been raised include loss of control over the work people do, lack of career path, job insecurity, gender inequality, slow promotion and poor records management.

The ESLA team found that co-location is proving to be a particularly difficult problem in terms of accommodation, use of the secret net, network problems, and the negotiation of changes in individuals' power bases. Workplace design and proximity also raises another important issue because common identity can be threatened when workers are not working in the same location. For instance, many C4ISREW personnel interviewed by the ESLA team stated that they enjoyed the spontaneity of face-to-face discussion on work related issues as they crop up, and so this became problematic for them when teams are not co-located. The importance of workplace design to social learning is further discussed in this paper in sections 4.2.4 and 4.2.6.

#### ***4.2.2 Problem solving***

For knowledge workers, problem solving is a core activity, but importantly it is also one that fosters knowledge generation and thus social learning. Routine tasks can require an element of problem solving that fosters social learning because often they need to be done slightly differently in different circumstances. C4ISREW and the SRG staff both provided numerous examples of this. At C4ISREW, the gap between formal or routine procedures and the ways in which people actually do their work was highlighted many times. At SRG, no instance of flying an F-111 is ever quite the same. Deviation from standard procedures, and thus social learning, can also occur when those procedures are applied to a new situation. For instance, Australia is acquiring a defence satellite communication capability for the first time using merchant bankers and insurance brokers as part of the process. One C4ISREW desk officer (an officer in-charge of and a point of contact for a project), used interested parties from industry to assist with the project's marketing. The need to apply the rigours of the capability process was often stressed, but people were also told not to be process bound and to adapt the process to the circumstances.

Another class of problem solving that often also leads to knowledge generation and thus social learning is termed “bricolage”. The French word *bricoler* describes the activities performed by a handy-person as she/he performs a task with whatever “odds and ends” are at hand [Mileaf, 1995]. In much of the literature on learning, bricolage is used in the sense of the ability to make do with whatever is to hand [Levi-Strauss, 1966 cited in Brown and Dagnid, 1991], drawing on whatever organisational, physical or social resources are available. This perspective gives bricolage prominence as a means of problem solving as well as knowledge creation and learning, because it implies that bricolage can take place every time a task is performed.

If bricolage is accepted as a means of knowledge creation, it becomes important to ask how this new personal knowledge is transmitted into the wider community. The induction session on the capability process was one way. Personal networks were seen to be another because they play a pivotal role in the propagation of knowledge. Many people told the research team that, time permitting, they would pass information onto colleagues. Several times the research team was told that an officer’s personal list of professional contacts was something that would be passed on to their replacements in a good handover. As Davenport and Prusak [1998] claim, those who are in a position of ‘know-how’ share their expertise and contribute to problem solving, and in this way, these people can become a resource for others to draw upon.

Effective problem solving often requires a systemic understanding of organisational issues. The knowledge of what is allowable within the organisation, that is, the ways in which the formal rules can be bent, is an important and ongoing part of the learning process. This sort of knowledge can both empower people to solve problems and constrain the types of solutions that can be found, and is therefore likely to have an impact on social learning. The C4ISREW staff came into existence on July 1 1999 and, to address this, its senior management have expended a great deal of effort to define its roles and place within the Australian Defence organisation. C3ID management stressed the importance of thinking in terms of establishing the priority of individual projects and how it fits into the overall capability mix.

Individuals within C4ISREW are generally assumed to have the required skills and competencies to apply to problem solving within their work if, over their career, they have experienced an appropriate career trajectory (see Section 4.2.5). For desk officers especially, it is also important to have sufficient professional currency, that is, recent experience within a tactical or operational environment, together with the necessary skills implied for the positions and roles that have been held. For an F-111 pilot working on a reconnaissance project, for example, an indicator of their professional currency might be the number of hours they have flown over the last two years in the reconnaissance variant of the aircraft. For a desk officer in C4ISREW with a communications project, the indicator is that he had spent his last postings as an electronic warfare officer within a brigade.

Professional currency is important to desk officers for several reasons. It provides the individual with an actual understanding of the application area, of the likely user requirements with credibility and a personal network within the user community. It equips them with the knowledge and the contacts with which they can problem solve within the context of their work environment. Some degree of valid operational experience is also essential for civilians if they are to have sufficient understanding of the military to allow them to do their job.

For individuals, reflection is a powerful means of knowledge creation. Joint reflection, involving more than one staff member, is an opportunity for creating and sharing knowledge. With very few exceptions, most of the C4ISREW staff interviewed by the research team regretted that their high workloads meant they had insufficient time for reflection, either individually or as a group. More time for reflection would allow more social learning to take place within C4ISREW.

### **4.2.3 Team building**

Working together is essential to organisational success and for successful problem solving. Very few people work by themselves and achieve results by themselves. So the people who interact together and yet have different tasks and responsibilities need to understand what each of them are trying to do, why they are doing it, how they are doing it, and what results to expect. In this relationship of interdependencies, communication and trust play vital roles [Drucker, 1999].

“Team spirit” and “team cohesiveness” both seem important values within the work culture and work ethic at ADHQ. Nonetheless there is nothing uniform about this. As stated earlier, so-called team cohesiveness and work relationships vary in accordance to social positioning in this environment and are influenced by hierarchy, civilian vs military discourse, and rank. Indeed, during the C4ISREW interviews a strong indication emerged of a lack of cultural cohesion and team spirit. These indications were sometimes explicit and at other times they were implicit and was particularly an issue with staff who are either of low rank or remotely located. The attitude of ‘them and us’ was clearly prevalent as well as a feeling of being undervalued. They did not identify themselves as team members of a unit and often were not encouraged to operate in a co-ordinate way to support organisational goals. Also, some knew very little about what was going on in the rest of C4ISREW, let alone the rest of ADHQ. They seemed to be totally marginalised and saw themselves as anonymous workers far removed from the rest of the branch.

It would be unfair to say that teamwork and team spirit were nonexistent in C4ISREW. The researchers observed instances where teamwork was well-interknitted into daily work and where people worked collaboratively. Such teams were goal oriented and bound by achieving business results. There were not only teams in structure but in spirit. They were formed within individual directorates and were led and energised by a leader who saw his role as serving team members rather than just having the position of a leader. Members of these teams were co-located and made information (such as calendars, contacts, and computer work folders) available to one another. This not only contributed to knowledge sharing among team members and aided communication, but it also emphasised trust within the team.

The C4ISREW management undertook a number of team building exercises of a social and professional nature. The Branch Social Club plays an important role in providing a venue for people to mix together outside the usual work environment. The majority, although frowned upon by some higher authorities, saw a go-carting event that took place in early September 1999 as a good team building exercise.

A recently undertaken Team Management Index (TMI) provided insight and understanding into the preferred ways people operate and the roles they would feel most comfortable in. This allowed for the formation of teams where best synergy could be achieved by complementing each other's skills and preferred way of working. The team diversity allows for looking at problems and seeking solutions from a variety of perspectives. The TMI debrief itself carried out at the Induction Program in March 20000 seemed to really engage the attendees, and has generated a lot of discussion both on the day and since. This discussion, in itself, had a useful team building dimension.

Assessment, reporting and performance management form a significant part of the overall management of military personnel throughout their careers; however, it may have adverse impacts on team spirit and thus social learning. The outcome of a performance report often determines the prospects of one's career progression and the research team was told that a poor performance rating, at a critical point in a career, will severely reduce the prospects for promotion. This strong emphasis on individual performance management may influence a proportion of individuals to focus on achieving their individual goals at the expense of assisting their team achieve its goals.

What was interesting to note is that the performance management process is an "open" one where personnel have input into the final reporting. In terms of overall strategies for managing people it can help ensure that the process is not formulated only from the top down. It is people themselves that manage their performance and in this way they exercise some form of disciplinary power over themselves. This process has obvious positive implications for team cohesiveness and is likely to enable social learning.

The performance cycle is annual and some of the interviewees felt somewhat uneasy as their performance evaluation was due relatively early into a new posting cycle. The criteria and standards used in a performance appraisal should provide a focus for performance measurement and therefore must be clearly related to the individual's job. Many problems associated with performance appraisals stem from the fact that the criteria and standards neither provide a focus for performance measurement, nor are they clearly related to the individual's job. It was reported that often there was also a lack of clear communication about performance expectations. Some of the people we interviewed at C4ISREW were unclear about what is expected of them and what was stated in their duty statements. Furthermore, an annual performance appraisal appears to be too long to wait for recognition of good work and too late to correct a performance problem. In fact, numerous researchers, for instance [Morgan, 1989; Wood, 1989] explain that to maximise positive results, the appraisal process should be two way, it should facilitate and coach staff in doing their jobs effectively, and it should be frequent and informal. This way performance management can contribute not only to achieving organisational goals but also social learning. These factors can have adverse effects on team cohesion and thereby inhibit social learning.

Another team building/team cohesiveness issue that emerged from the interviews conducted at C4IRSEW was that people were appreciative of informal 'drop ins' by senior managers inquiring how they were doing. This 'roving management', as it was referred to, was said to contribute to better cohesion of teams, to promote system thinking, to help to focus on overall goals, and to



facilitate communication and feedback. However, often times these ‘drop in’ visits resulted in additional and unexpected tasks or duties asked of the employee to be performed. This was seen as an imposition, and it evoked feelings of being overpowered and led to lowering of morale.

The research team observed that humour was often used at meetings and assisted in uniting people around common themes. . For instance, when something is supposed to be funny one cannot retaliate by taking offence but rather must join in with the humour by laughing.

#### ***4.2.4 Access to information***

The easy availability of corporate information has a direct input into knowledge acquisition, and thereby, social learning. Information, therefore, is an important organisational resource which, if properly managed, can lead to improved decision making and increased productivity. The C3ID survey results indicate that only 58% of respondents agree that they can easily obtain the necessary information required for day-to-day decision making and 59% are familiar with record management processes at the Branch. These findings seem to support earlier observations made by the research team that records management and access to information contained in paper records poses a problem. Furthermore, the preference for accessing and transferring information electronically seems to be growing; 74% of respondents stated that electronic records within the Branch are more easily accessible than paper records. Clearly, the use of electronic tools for communication and decision making is prevalent at all levels in both C4ISREW.

The research team observed that general familiarity with records keeping procedures is quite poor and adherence to formal process is almost non-existent in C4ISREW. Some people have developed their own personal records keeping systems but there is little uniformity in these, and no adherence to file naming conventions and standards.

The issue of electronic records, particularly e-mail messages containing evidence of business transactions, posed problems not only in C4ISREW but also in Defence at large. Suffice to say that the Secretary of Defence, in conjunction with the National Archives of Australia, has recognised the importance to Defence of the guidelines put forward by the National Archives of Australia for permanence of records in both electronic and hard copy format.

The Tower Records Information Management recently has been replaced by the Defence Record Management System (DRMS) with the view that it will offer greater useability. Training on DRMS, initially offered to administrative staff only, has been extended to all personnel willing to attend such sessions. This initiative is a milestone in facilitating ‘know-how’ of records keeping and providing efficient access to information.

Personal networks from the previous postings as well as newly acquired contacts in the new environment play a vital role in knowledge construction and acquisition. Those who are in a position of ‘know-how’ shared their expertise and newcomers to the C4ISREW Staff often rely on these networks to gain insights into the complexities of capability development.

Apart from satisfying social needs, informal networks play a pivotal role in knowledge propagation. New knowledge often begins with the individual. Making personal knowledge available to others is the central activity of knowledge creating organisations. Through conversations people discover what they know, what others know and in the process of sharing, new knowledge is created. Technology such as e-mails, faxes telephones are invaluable aids in the process of knowledge sharing, but they are only supporting tools. Knowledge sharing depends on the quality of conversations, formal or informal, that people have. Webber [1993: 28] aptly describes the values of organisational conversations:

*For an accurate picture of how work really gets done in any company, don't look at the organisation chart. Map the company's conversation flows. Through conversations, knowledge workers create the relationships that define the organisation. Conversations – not rank, title, or the trappings of power – determine who is literally and figuratively 'in the loop' and who is not.*

Meetings are another means of accessing information and those that were observed in the settings studied varied significantly in format and the protocols in place. The meetings in SRG were seen to be more conducive to social learning than those at the joint environment. At SRG strict protocols were observed at briefings, such as allowing participants to discuss errors or problems encountered during missions without assigning blame or shame to individuals. As well as providing access to information, this facilitated the sharing of mistakes and the sharing of responsibility for solutions.

While meetings observed in the joint environment tended to have a basic structure, their purpose appeared to be more for information transfer rather than for information exchange or information sharing. The research team observed very little interactivity in the early branch meetings but as the managers' consciousness of these issues was raised, the team observed more attempts at making the meetings participative and learning forums.

The goals of Exercise Pitch Black, of flying missions safely and meeting targets, allowed for the centralisation of all information sources in the operations rooms. The information was available in a variety of formats as well as the means to access this information. In a multi-goal area, like the joint environment, it is not possible to centralise information resources to the same extent. This problem is exacerbated by geographical distribution of units within the organisation. Therefore, there seemed to be a greater reliance on personal networks and on obtaining information from people rather than from documents and centralised sources. In the joint environment, because of the geographical distribution and the architectural design of the workplace, the team observed that workplace design tended to inhibit social learning.

#### ***4.2.5 Development of Career Trajectories***

An individual's career trajectory describes the positions, roles and experience that they have accumulated, up to and including the position they currently hold. Whilst not excluding personal experiences outside of a work or training context, a well designed career trajectory generally equips an individual with the skills, experience, maturity and personal networks needed to

successfully fill a particular position or role. If one asks how an individual learns to be a Commanding Officer, the response generally is that, by the time a person reaches that position, they should already know how [O'Neill, 1998]. This answer assumes that these people have undergone an appropriate career trajectory. Appropriate career trajectories facilitate social learning because they provide a foundation of knowledge upon which the individual can become fully productive more quickly, and as a consequence they are more able to generate new knowledge.

C4ISREW was seen to use career trajectories implicitly when determining the suitability of a potential staff member for a specific position. They certainly assume that new members have, as a baseline, the knowledge and competencies required for their position. It is therefore assumed that new members will be immediately or almost immediately productive. At SRG, the career trajectories for members of the aircrew community is more explicitly structured, both in terms of learning to fly tactical missions and the roles and responsibilities required for the squadrons to function effectively.

Receiving the appropriate postings and promotions and professional training is, therefore, most important. Training courses are also important for the networks that subsequently develop. The research team observed that numerous individuals perceived a lack of accessibility to operational experience and a perceived lack of availability of funds for training. This may have direct impacts on the trust that C4ISREW staff have for management. Numerous researchers, for example, McCauley and Kuhnert [1992]; Argyris [1973], have found that a general trust in management was associated with professional development opportunities at work. The implication is that an employee's sense of trust is promoted when the supervisor provides career growth opportunities because it authenticates the supervisor's commitment to that employee's professional development.

A degree of mentoring may be an important element of one's career trajectory when individuals want to prepare themselves for specific roles in the future. This reliance on appropriate career trajectories was seen to equip C4ISREW with the necessary skills for them to do their job. However, it also created its own problems. As stated earlier, it was assumed that new staff would immediately be productive. However, without an immediate induction into the organisation, C4ISREW and its processes, and the details of their position, staff were left to their own devices and, to an extent they had to draw on the knowledge of their coworkers for some fairly basic information required for the job. One C4ISREW staff member described it as "very much ad hoc and through luck and meeting the right person and talking to your networker friends or peers that are in the area".

As they undertake a career trajectory, individuals acquire more than competencies and knowledge. They are enculturated into a community with its own identity and ways of perceiving the world. It certainly was obvious for SRG, where members of the aircrew community identified themselves as pilots and navigators. The effect is less pronounced in C4ISREW because staff there are working outside of their primary community. Junior staff members, in particular, are likely to develop a joint perspective.

#### **4.2.6 Communication**

Supportive communication climates are recognised as being positively linked to open and free exchange of information, constructive conflict management procedures, a high degree of worker involvement in solving organisational problems, and job satisfaction [Gibb, 1967]). Such a communication climate also encourages openness in supervisors but demands of them particular effort in their willingness to allow employees openly to express opinions, feelings and ideas [Larsen and Folgero, 1993]. Characteristics of a supportive communication climate include the existence of a culture of sharing knowledge, treating each other with respect, generally behaving in a cooperative and not competitive manner with each other, and breaking down cultural barriers arising out of inaccurate stereotyping. In the joint environment, the research team more often observed examples of behaviours that lead to a defensive communication climate than those that foster a supportive communication climate. Defensive organisational communication climates encourage workers to keep things to themselves and to make only guarded statements [Gibb, 1967]. Supportive communication climates can, therefore, be seen to promote a culture of sharing of knowledge and in turn they are likely to foster an environment for knowledge generation.

Favourable perceptions of an organisation's communication climate have been associated with higher levels of organisational commitment. Two elements of communication climate that are predictors of organisational commitment are participation in decision-making [Alutto and Acito, 1974]; [Guzley, 1992]; [Hall, 1977]; [Ivancevich, 1979]; [Patchen, 1970]; [Welsch & La Van, 1981] and participation in goal setting [Guzley, 1992]; [Hall and Schneider, 1972]. The survey data collected from C3ID staff on their perceptions of the extent to which they were able to participate in the decision-making process for the C3ID restructure indicates that they were not involved. Of those surveyed, 83% disagreed that the organisational change at C3ID was consultative at all levels and 65% said they were not invited to make a contribution to the organisational change at C3ID. Responses to other similar questions indicate that they perceive they can participate only in the case of their immediate supervisors (70%), not in the case of Senior Defence Management and 47% did not agree with the statement "Senior Defence Managers value my work-related opinions".

It was, however, interesting to note that further questions about being part of the decision-making process yielded very positive results. For instance, the vast majority of respondents agreed with statements about being encouraged to develop original ideas, about their ideas being well received, and their taking part in decision-making processes that affect their work.

An important element of generative learning is for organisational members to be able to engage in dialog which is open and is based on inquiry and reflection. A supportive communication climate is a prerequisite for such dialog and it requires learning how to recognise defensive patterns of interaction in teams that undermine learning [Senge 1992]. However, an additional and obvious requirement for such dialog is having the time to engage in it. As stated earlier, on numerous occasions, the research team encountered comments that there is little time to reflect, learn from experiences, whether they be successes or failures, and generally discuss work matters. The comments were often made with an indication of bitterness and overwork was attributed as a factor preventing people from setting some time aside for thinking and reflection.

In any organisation informal channels of communication are as vital as the formal ones and management often uses these informal channels to convey information 'unofficially' [Stoner, 1985: 386-387]. Informal groups and networks play an important role in any organisation. They perpetuate commonly held social and cultural values, and they enable concerns or problems of group members to be handled by the group. Informal groups satisfy human need for friendship and support. Most importantly, however, informal groups help their members to communicate about matters that affect them.

On numerous occasions it was pointed out that informal meetings (for instance, morning teas) provide an invaluable forum for exchange and transfer of information. In fact, these informal gatherings are preferred means for communication and exchange of views by many staff.

Similarly, since the prohibition of drinks over lunch, there is less and less networking between colleagues within the C3ID Branch. People do not mix as much and a lunch hour is often used to catch up on work. Apart from socialising, these lunch meetings provided a forum where people could talk informally about work and decisions were often made at these lunches.

*Studies have shown that managers get two thirds of their information and knowledge from face-to-face meetings or phone conversations. Only one third comes from documents. Most people in organisations consult a few knowledgeable people when they need expert advice on a particular subject. As we have said knowledge is what makes organisations go. Knowledge is not new [Davenport & Prusak 1998: 12].*

After talking to a number of people it is clear that the majority value personal communication more than any other means of communicating and sharing information. People, particularly those, who have been in the organisation for a long time, are an excellent resource for information and knowledge gathering. However, numerous individuals did explain that they make good use of electronic communication channels, especially when the task at hand could be carried out more productively by doing so. The reasons for using e-mails over personal communication were to give space, to give other team members a view of what was happening in "their world" and using e-mail to bypass the "Boss".

As has been explained in an earlier section of this paper, humour assists in uniting people around common themes and when something is supposed to be funny one usually does not retaliate. However, humour was frequently used for a different purpose during meetings by a member of senior management. This manager used it as a communication strategy for smoothing discussions that were becoming heated and this enabled him to stop the conflict from escalating whilst also enabling the two subordinates to save face. Willemyns et al [2000] have found such communication accommodation strategies are crucial to effective employee perceptions (of their managers) and therefore employee-manager relations.

As stated earlier in this paper, organisational goals are achieved by working with others and through people. In this relationship of interdependencies communication and trust play vital roles [Drucker, 1999], and so does a common language. According to Leonard and Straus [1997:

117], communication needs to be tailored to the receiver not to the sender. “In a cognitively diverse environment, a message sent is not necessary a message received. Information must be delivered in the preferred ‘language’ of the recipient if it is to be received at all.” The research team observed that in many cases the language used by people working within the same teams and by managers was inclusive thus giving people a sense of belonging and ownership. In other circumstances, particularly at the first reorganisation meeting, some managers although using the right words and rhetoric, alienated people by non-inclusive language. The principles of linguistic determinism and linguistic relativism [Hoijer, 1989] explain the phenomenon that the language used in a culture or sub-culture exerts a strong influence on members’ perceptions of reality and the world.

The issue of workplace design and its impact on team and network building, and on accessing information necessary to getting one’s job done, arose repeatedly during the study. Numerous interviewees were aware that physical location and proximity to each other had the potential to promote the transfer of pertinent knowledge. Indeed, the point was even made that in addition to more quickly obtaining answers to questions about particular tasks, an open plan workplace enabled one to tap into pertinent knowledge by overhearing others’ conversations. However, as Davenport and Prusack [1998] point out, co-location in itself does not guarantee the sharing of knowledge; a common training or experience, or at least a common language, is essential. Unless individuals are prepared to ask and answer questions of one another, or to even just chat with each other, the knowledge advantage provided by open plan workplaces will be lost. An example of this was brought to the research team’s attention when told that two workers had been co-located for three months before they realised that they were both working on the same project.

An organisational culture that recognises the value of knowledge and its exchange is a crucial element in whether knowledge work is successfully carried out or not. Such a culture provides the opportunity for personal contact so that tacit knowledge, which cannot effectively be captured in procedures or represented in documents and databases, can be transferred [Davenport and Prusack, 1998]. Webber [1993: 90] claims that “Conversations are the way knowledge workers discover what they know, share it with their colleagues, and in the process create new knowledge for the organisation”. In a culture that values knowledge, managers recognise not just that knowledge generation is important for business success but also that it can be nurtured with time, and space [Davenport and Prusack, 1998].

#### ***4.2.7 Induction and Enculturation***

Reports in the literature suggest that orientation of new employees is one of the most overlooked aspects of employee training [Cooke, 1998; Ganzel, 1998a,b; Tyler, 1998]. Like appropriate career trajectories, effective induction and enculturation programs facilitate social learning by providing a foundation of knowledge upon which the individual can become fully productive more quickly and as a consequence they are more likely to generate new knowledge.

Induction, or the perceived lack of it was, was a problem in C3ID and C4ISREW. The C3ID survey conducted in 1999 by the ESLA team indicated that only 33% of staff believed that they

received an adequate briefing regarding their duties and only 12% said that their induction was well managed. The remarks of many staff were consistent with the survey results.

Good induction is more than just an introduction to new job and workmates; it is a way of helping people find their feet. Attitudes and expectations are shaped during the early days of new employment and the issue of work satisfaction cannot be considered without examining more basic issue of work orientation [Dunford, 1992; George and Cole, 1992]. There are numerous advantages that come from good induction programs such as morale building, minimisation of misunderstanding when rules and regulations are clearly explained and good working relationships are established, reduction of anxiety, and reduction of inefficiency.

Although not everybody we interviewed was explicitly critical about the lack of job induction, some felt frustrated because often they had to labour to find obvious organisational information required for their work. This “discovery learning”, as it was referred to, was regarded as very time consuming and seemed to lead to poor morale, frustration, and it negatively influenced people’s perceptions about the organisation.

The need to improve the induction process was acknowledged by ADHQ staff and in March 2000 a two-day Induction Program took place for all of C4ISREW staff. One of the concerns during the Induction Program was “renewing” of the C4ISREW Staff. The emphasis was placed on the manner in which organisational subunits influence each other’s processes and products via the course of intra-organisational interaction. The renewal process would aim at building synergy between the Branches and Directorates in a way where the core business of each organisational component is unambiguous, and the effort used to produce it is not duplicated.

The Induction Program involved all of C4ISREW Staff and included all personnel, and was not just limited to the (relatively) newly arrived employees. This made the session a team building exercise for “all-comers”, and, possibly a useful heads-up for the old-timers in a climate of constant change and re-organisation.

Timing is one of the most important elements of employee job induction. If the employees have to wait for weeks to be introduced to the job and the organisation, they have been largely unproductive for that period of time. Ideally, the C4ISREW Induction Program should have happened earlier to be optimally effective. This was re-enforced by passing comments made during the Induction Program itself by some newcomers and ‘old-timers’. The subsequent interviews with numerous C4ISREW personnel indicated that although the C4ISREW Induction Program was good, it came far too late for many. Those who started in January had more than two months of trying to make a sense of the new environment on their own.

One of the issues that emerged from the interviews with C4ISREW staff was a relationship between meaningful and timely induction and subsequent job satisfaction. Also interesting was that those who were not properly inducted or enculturated into the organisation saw no need and responsibility to actually prepare any form of handover for anyone who may take over their position in the future. If synergy is to be built among individuals, Directorates, and Branches and if learning is to occur, a timely and comprehensive induction program would provide a solid ground to begin this process.

Although desirable, when a new posting cycle begins, it is not always feasible to conduct an induction program. In the mean time a “buddy” system could fill in the gap. Some interviewees mentioned that a colleague acted as a buddy when they first joined C3ID, and that they found this to be immensely useful to settling in a new job and to effective learning. A “buddy”, an experienced workmate who could answer most questions, would assist new members during the initial few weeks.

Another useful tool for all newcomers would be an induction pack for C4ISREW dealing with generic information about C4ISREW Staff and also more detailed information about the two Branches. Furthermore, this pack could include specific information about the individual directorates and the projects they are associated with. The Capability development is a complex program and such pack, available either electronically or in hard copy, would provide a ready reference source for all C4ISREW members.

### **4.3 CHALLENGES AND INHIBITORS**

All of the enablers discussed and their sub components can from time-to-time inhibit or challenge the everyday social learning practices in the sites studied. For example some of the personnel highlighted a definite sense of personal powerlessness within the organisation. Some of the specific difficulties employees have involve the long time-line built into the kind of work done in C4ISREW which often leads to a situation where there is no immediate outcome for the work done. Moreover, after years of work, a project can be scrapped without ever coming to fruition. Although this is an issue related to job satisfaction, the ESLA team found that it was also a marker for low morale. A number of exit interviews also testified to a deepened sense of powerlessness often resulting in personnel leaving the military and taking up work elsewhere. Interestingly enough, many of them return and join as Professional Service Providers.

Uncertainty over budget allocation also causes a sense of anxiety among some personnel and can inhibit or challenge work practices and social learning generally. Some interviewees spoke of feeling frustrated in that they often believe that no ‘real work’ gets done and no ‘real outcomes’ are evident. This contributes considerably to low morale especially when personnel consider that these nugatory work processes dominate day-to-day activities.

A further area, which inhibits or challenges social learning processes relates directly to the significant cultural changes that have taken place in the military in more recent years. In particular values surrounding the notion of vocation and service have been significantly re-tailored. A number of service members spoke with some regret over these cultural changes. In particular, many mentioned the ways in which traditional understandings of vocation have been eroded to the point where new recruits are less and less wedded to a service period of twenty years or more. Instead, it is more common to see people join the military for shorter periods, long enough time for them to acquire skills or attain tertiary qualifications, do their return of service, and then leave to take up work in the civilian world. This has an impact on how people view their jobs within the military and their long-term career aspirations. For some at least, the



change in military ethos and culture stands in the way of a more universal and unitary understanding of the military work.

## 5 CONCLUSIONS

The findings to date indicate that substantial social learning does occur within both the strategic and tactical elements of the Australian Defence Organisation that have been studied. In SRG, the team observed that there was a strong sense of shared vision and goal alignment. There was also a high level of trust that manifested itself in learning from mistakes rather than fault finding. The centralised nature of operations within SRG at Pitch Black facilitated social learning because people were able to interact more readily and had good access to information. Furthermore, SRG had well formulated career trajectories for learning to fly F-111 aircraft, and for learning to do the secondary duties needed for the squadrons to function effectively.

At C4ISREW, many of the organisational processes support social learning, but in some cases, social learning takes place in spite of the organisational processes and culture. The capability process is very complex, it is an unstructured domain that relies on input both from internal parties and from outside agencies. The outcomes of their work are dependent on vagaries of the economic and political climates. These factors can act both as challengers and inhibitors to social learning. In this environment there is still a reliance on the career trajectories and newcomers are assumed to have all the necessary skills and knowledge to fulfil their roles immediately. As a result, there has been a tendency to either omit induction or to begin it at a later stage. To counter this, people very quickly develop personal networks as a means of information sources. C4ISREW has been observed to work effectively at a small team level within the 4 directorates where trust tended to play integral part in the social learning process.

The studies to date have identified a substantial number of complex and interwoven factors that enable social learning. It has been the aim of this paper to draw attention to the enablers that were seen at these settings. These are:

- ◆ Common identity,
- ◆ Problem-solving,
- ◆ Team building,
- ◆ Access to information,
- ◆ Development of career trajectory,
- ◆ Communication, and
- ◆ Induction and enculturation.

As has already been stated, this collection of enablers is by no means exhaustive and their ordering does not indicate any priority. Under each enabler there is set of components that have been seen to underpin many of the enablers. An example is networking, which contributes to problem solving, the flow of information and, in the form of buddying for enculturation. Other similar common underpinning factors include language, training, and workplace design. Future

research will further probe the relationships between the enablers themselves, and between the enablers and their components.

An attempt has been made to formulate an architecture at this stage of the research. This architecture can serve as a starting point for an organisation to map and evaluate its performance against the criteria described in this paper. As the architecture becomes more mature, it should provide more detailed parameters that facilitate effective enterprise social learning.

Future research will need to also look at the other factors in the overall architecture. These include challengers and inhibitors, environmental factors and the overarching values that underpin enterprise social learning. Methodological issues will also continue to be evaluated and developed as the research progresses.

The next setting will be the Navy Headquarters of the Australian Defence Headquarters. Some ethnography will also be performed at Maritime Headquarters. It is hoped that the result obtained, from the operational and strategic single service settings, will both contrast with the joint environment of C4ISREW and aid the consolidation of the social learning architecture.

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