5 CHAPTER 5: RESULTS AND FINDINGS OF RESEARCH UNDERTAKEN IN THE DOD

5.1 GENERAL INTRODUCTION

Considering that the main focus for this research was driven by the fact that the DOD and specifically the management of the ICT function was in a process of major transformation, the expectations that guided this research were primarily centred on the necessity to develop an appropriate strategic ICT planning process for the DOD and the necessity to institutionalise an appropriate strategic ICT planning process in the DOD.

5.1.1 Research Objectives as a Background to Understanding the DOD in Context

An appropriate strategic ICT planning process had to be developed for the DOD, and as a result the expectation of DOD top management was that it should be undertaken with due consideration of a holistic approach. As such it had to also address the organizational implications related to the strategic ICT planning process. Given the fact that the DOD in its overall transformation required the application of appropriate scientific knowledge to the respective functions that included ICT management as the focus of this research, it provided the opportunity context for this case study. From this the lessons learnt during the implementation of the strategic ICT planning process in the SA DOD led to the establishment of not only a corporate planning process, but also to addressing other issues related to strategic ICT management in the DOD.

5.1.2 Approach to be Followed with the Presentation of the Learning Experience in the SA DOD

From a strategic ICT planning perspective all the guidelines had to be realised with the implication regarding the '*structured and appropriate process to ensure total systems and through-life systems management*' would focus on the planning part of the activities of the systems management life cycle process. To this end it was appreciated that the following would have to be done as commensurate with the framework for Action Research as initially described by Lewin (1948)[357]and further

[357] Lewin, K. 1948. *Action research and minority problems, in, Resolving Social Conflicts*. Edited by G.W. Lewin. New York: Harper. p.201-220.

advocated by authors such as Checkland and Scholes (1990)[358] and Stowell and West (1994)[359]. From these references action research is described by Rapoport (1970:499)[360] as contributing:

> *"… both to the practical concerns of people in an immediate problematic situation and to goals of social science by joint collaboration within a mutually ethical framework".*

To this end the five distinguishable phases of the iterative process to be followed as further described by Susman and Evered (1978)[361] following on the work by Lewin (1984:202-203) *op. cit*. was utilised to guide this research.

5.2 THE HISTORY OF THE DEVELOPMENT OF AN INFORMATION SYSTEM STRATEGY FOR THE DOD, INCLUDING CONTEXT, TIMELINE AND PERSONS INVOLVED

5.2.1 Establishment of the Contextual Timeline for the Research

From the literature study and the actual research undertaken a clear timeline emerged that was in fact a logical progression that took place as the research progressed. The establishment of the strategic ICT planning process for the DOD can therefore be described in terms of the contextual model for the strategic planning process as deduced from the relevant theory.

As an indication of the activities that were undertaken during the actual strategic ICT planning process the following timeline can be presented. This timeline provides some insight into the research cycles, the respective stages that the research went through, the activities that actually took place within the timeline and the involvement of the researcher in this research.

---

[358] Checkland, P.B. & Scholes, J. 1990. *Soft Systems Methodology in Action.* Chichester, England: John Wiley & Sons.
[359] Stowell, F.A. & West, D. 1994. *Client-Led Design: A Systems Approach to Information Systems Definition*. London: McGraw-Hill.
[360] Rapoport, R.N. 1970. Three dilemmas in action research. *Human Relations*, 1970, vol.23(6), p.499-513.
[361] Susman, G.I. & Evered, R.D. 1978. An assessment of the scientific merits of action research. *Administrative Science Quarterly 23(4)*, 1987, p.582-602.

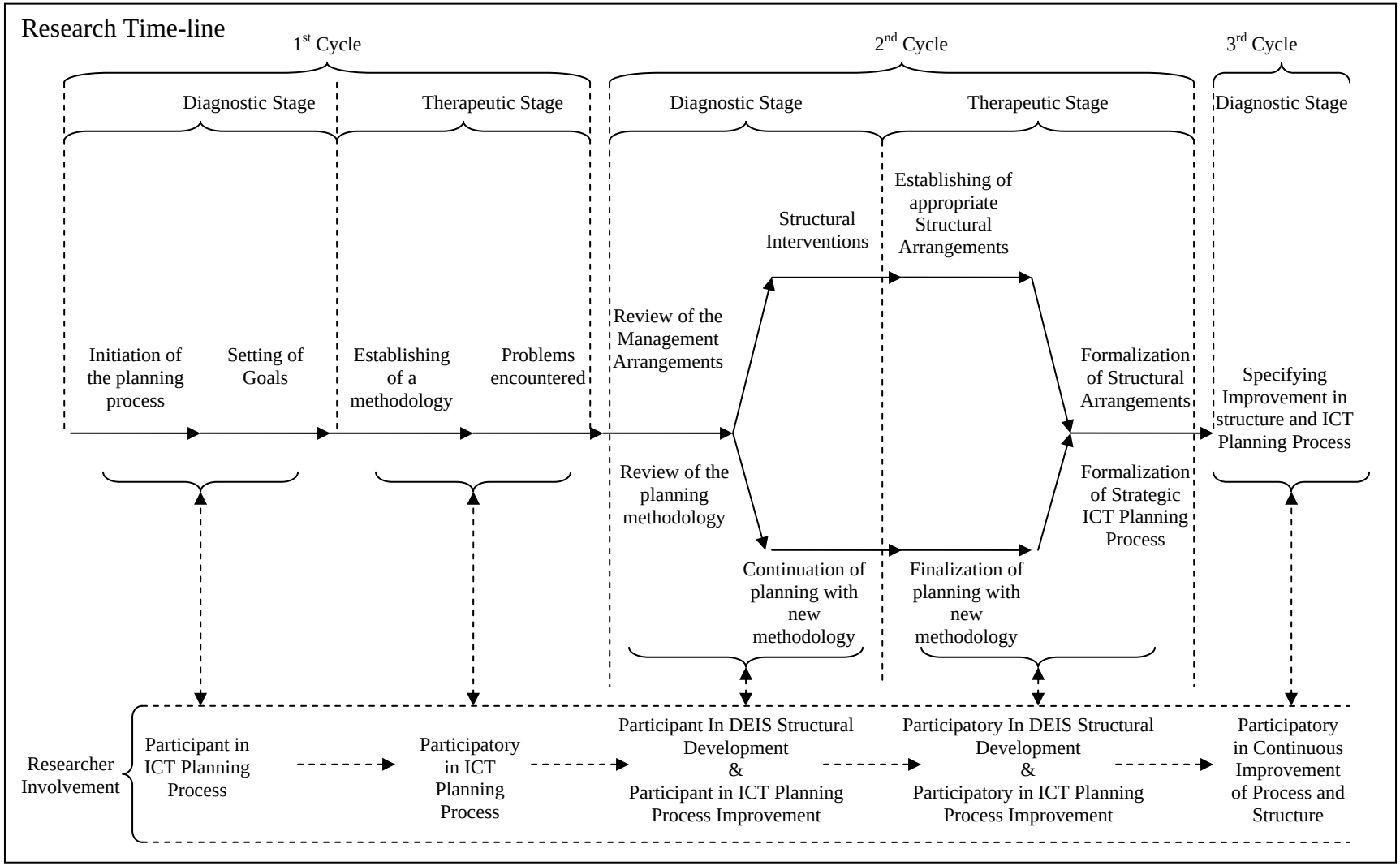

Figure 5.1: Timeline as followed during the research period where the focus was on the actual execution of the planning process, but with due consideration of the research methodology

5.2.2 Cursory Description of the Research Timeline

Given the requirement of Action Research to go through a cyclic repetition of a diagnostic stage followed by a therapeutic stage as indicated in the depiction above the research can now be described. The researcher was actively involved in a participant role during the diagnostic stage of the first cycle and in participatory role during the second stage, being the therapeutic stage of the first cycle.

During the diagnostic stage of the second cycle, where emphasis was placed on the improvement of the strategic ICT planning process, the researcher became somewhat more involved as a participant. This occurred with full cognisance of his involvement as a participant in the research as well as in his capacity as the functional authority for ICT management in the DOD. During the diagnostic stage of the second cycle where the effort was focused on the structural arrangements the role was initially that of participant. During the therapeutic stage of the second cycle relating to structural issues the role was participating.

During the third cycle which was finalised with the final approval of the ICT strategic direction and its enabling structural arrangements the role of the researcher was and still is participatory. The continuous improvement of both the strategic direction and the strategic ICT planning process with full consideration of its structural implications is now a standing objective for continuous improvement. The researcher in his capacity as functional authority oscillated between the participant and participatory roles with a clear distinction between the client and the researcher as maturity increased. As such the researcher served as the change agent for the establishment and institutionalisation of a strategic ICT planning process for the DOD. The following broad description can be provided within this context of the different steps that were taken to facilitate the formulation of the research paradigm as appropriate to action research.

5.2.2.1 Initiation of the Strategic ICT Planning Process for the SA DOD

With due consideration of the requirement to set the diagnostic stage for the research as presented by Blum (1995)[362], the requirement for an appropriate strategic ICT planning process for the SA DOD developed as part of the transformation of the DOD subsequent to the abolition of a non-representative government in the RSA. The intention was that there should be a centralised corporate ICT function within the DOD as opposed to the decentralised ICT management function that existed up to that point. As such the centralised organization would be charged with the responsibility to manage the Command and Management Information System (CMIS) of the DOD and would be referred to as the Command and Management Information System Division (CMIS Div)[363]. It thus created a centralised organization that had the mandate to ensure that defence information as a primary resource and as a commodity could be managed appropriately to ensure that the utilisation of information could contribute towards the continuous improvement effort of the SA DOD and Government as a whole. This organization would be responsible for the total CMIS system and its through-life management from strategic direction to disposal[364].

The following basic guidelines were approved by the DOD top management for the transformation of the ICT management function of the SA DOD as referenced earlier on in Chapter 2.

- The basic ICT management philosophy was based on the approach that ICT solutions would be managed within the context of a system of systems with through-life management of the system as a whole.

- A process approach to systems management would be followed with due consideration of the life cycle of such an ICT system.

---

[362] Blum, F. 1995. Action research – A scientific approach? *Philosophy of Science*, 1995, vol.22(1), p.1-7.
[363] South Africa. Department of Defence. 1998. *Department of Defence Transformation Design and Migration Plan with reference MOD/R/502/9/1 dated 9 February 1998*. Pretoria: The Department.
[364] South Africa: Department of Defence. 1998. *Provide Command and Management Information Services: Provide CMIS Services Core Document dated February 1998.* Pretoria: The Department.

- Structural arrangements would be such that there would be a direct correlation between the ICT system life cycle management process and the organization established to execute the function.

- Governance for the function would consist of National and Departmental Strategic Direction as well as the Regulatory Framework consisting of Acts of Parliament, Government Policy and Departmental Policy as appropriate to the national defence function.

- The ICT Solutions would have a client centric approach for ICT requirements management within the context of Information Systems as enabled by ICT.

- The elimination of the existing “stove-pipe” approach for ICT solutions as existed due to the decentralised nature of the ICT function in the SA DOD.

- ICT Planning and Budgeting would be centrally orchestrated and coordinated by the CMIS Division to ensure that rules of scale could be realised with due consideration of uniqueness and the nature of required ICT solutions.

5.2.2.2 Setting of Goals for the Strategic ICT Planning Process for the SA DOD

With the above-mentioned structural and organizational objectives in mind the CMIS Division was approved and established in April 1998 with the functional task for strategic ICT planning for the DOD centred in the Director Enterprise Architecture Planning (DEISA). This was by intentional design as this researcher was the instigator of this position due to the background in ICT management and theory gained during the completion of an Advanced Certificate in Information Systems Management (ACISM) at the University of Pretoria. During the initial years of this research this researcher also completed a Master’s degree in Information Technology at the University of Pretoria. This academic input provided the basis for the strategic ICT planning process as implemented in the SA DOD. As such this reference framework formed the basis for the diagnostic stage of the research.

5.2.2.3 Establishing a Strategic ICT Planning Methodology for the SA DOD

With this academic background and theory as the basis for departure it was considerate appropriate to follow an Enterprise Architecture Planning (EAP) approach as presented by Spewak and Hill (1992)[365] from the Zachman Framework (1987)[366] to support the strategic planning approach and methodology presented by Ward and Griffiths (1996)[367]. The decision to utilise an EAP approach was based on the fact that it in essence provides a "*... process of defining architectures for the use of information in support of the business and the plan for implementing those architectures*".

The strategic ICT planning methodology utilised by the DOD in the past was the Summit Methodology®[368] of the then Coopers and Lybrandt (Pty) Ltd. now IBM Business Consulting Services Methodology combined with the standard approach for strategic management as presented by many authors such as the model of Thompson and Strickland (2003)[369]. During the improvement of the process as part of the second cycle with the addition of definition by Thompson and Strickland (2003:291), provided a definition for a diversified organization that clarified the nature of the SA DOD as an organization and provided a better understanding of the nature and complexity of strategic ICT Planning due to the complexity of the organization. This improved understanding led to the realisation that the strategic ICT planning process could not be addressed in isolation of the structural implications that surrounded it. It was influenced by the definition of Thompson and Strickland (2003) *op. cit*. which reads a follows:

> "*.. Because a diversified company is a collection of individual businesses, corporate strategy making is a bigger-picture making exercise than line-of-business strategy making. In a single-business enterprise, management has to contend with only one*

[365] Spewak, S.H. & Hill, S.C. 1992. *Developing a Blueprint for Data, Applications, and Technology: Enterprise Architecture Planning*. New York: John Wiley & Son.
[366] Zachman, J. 1987. A Framework for Information Systems Architecture. *IBM Systems Journal*, 1987. vol.26, no.3.
[367] Ward, J. & Griffiths, P. 1996. *Strategic Planning for Information Systems*. New York: John Wiley and Sons.
[368] IBM Business Consulting Services. Summit Ascendant™: A Business approach to Information Technology (Summit Strategic Planning and Summit Development Methodology v8.0). 2003. Wayne, PA: IBM Corporation.
[369] Thompson, A.A. Jr. & Strickland, A.J. III. 2003. *Strategic Management Concepts and Cases*. 13th Ed. New York: McGraw-Hill.

industry environment and the question of how to compete successfully in it. But in a diversified company corporate managers must strategize for several different business divisions competing in diverse industry environments and craft a multi-industry, multi-business strategy."

The necessity to ensure alignment within the corporate environment of the SA DOD was apparent when considering the fact that centralised corporate ICT planning was an imperative that was considered essential to eliminate the pre-transformation decentralised ICT management approach that existed in the organization. The understanding of the necessity for alignment was obtained from the work of Jerry Luftman (1996)[370]. In addition, the understanding of Enterprise Architecture Planning as the prerequisite approach for strategic ICT planning was augmented by this researcher attending the Zachman Conference[371] in 2000.

The initial objectives for establishing an appropriate strategic ICT Planning Process as from the Performance Agreement of the Director Enterprise Information Systems Architecture (DEISA)[372] were:

- To ensure corporate strategic direction for the Department of Defence for the utilisation of ICT
- To ensure that the strategic ICT Planning Process was institutionalised
- Note: To ensure that the strategic ICT planning process was defined a core team of five members was established during 1998 to 2000 that was augmented by in-sourced Information / Information and Communication System and ICT consultants to assist definition of the EA that had to form the core competency to create sufficient critical mass.

---

[370] Luftman, J.N. 1996. *Competing in the Information Age: Strategic Alignment in Practice*. New York: Oxford University Press.
[371] United States of America. The Enterprise Architecture Forum. 2000. *Implementing and Managing Enterprise Architecture*. Scottsdale, Arizona: Barnett Data Systems and the Zachman Institute for Framework Advancement.
[372] South Africa. Department of Defence. 1998. *Performance Agreement between the C CMIS and the DEISA dated May 1998*. Pretoria: The Department.

5.2.2.4 Problems Encountered with the Strategic ICT Planning Process that Necessitated Review and Adjustment for the SA DOD

With the commencement of the Strategic ICT planning process it was found that an inordinate amount of money (±Rm 50 over a period of three years) was being spent on a process that would take approximately five to six years just to complete the Enterprise Architecture. The issue of scarce resources and the necessity of the SA DOD to have a corporate strategic defence direction for the utilisation of ICT sooner rather that later necessitated the review of the original approach that was based on planning by defining comprehensive architectures to the lowest level of decomposition for the entire SA DOD. In addition to this the original approach of decomposing the architecture definitions to the lowest level decomposition was proven during the second cycle as not being necessary for the purposes of strategic ICT planning, but essential for ICT solutions definition and specification. The intention was then reviewed by the strategic ICT planning team of the DOD and confirmed via the then CMIS Staff Council. The CMIS Staff Council is the management body that deals with the functional ICT management at corporate (defence) level. The focus was to ensure an appropriate and sufficiently holistic definition of Enterprise Architectures to ensure a firm baseline definition of the organization as a whole. This could then be utilised to drive the strategic requirement for ICT solutions centred on the information that flowed within the respective business processes.

To this extent the conscious and deliberate review of the strategic ICT planning process as part of continuous improvement – constructivist learning – focused on the following:

- The understanding that there is a difference between what is being required at corporate level to serve as strategic direction and the ability to decompose to the lowest level of definition.
- The fact that there is a large degree of autonomy that resides within the respective business units.
- The understanding that alignment is not an event, but rather an integral and continuous part of the strategic planning process.

- The fact that there should be collaboration with due participation of not only the ICT users of the DOD, but with the researcher as a participant observer.

The primary consideration for this change in direction was partially due to specific personal interaction between the functional area specialists and Samuel Holcman and John Zachman, whilst attending the Zachman Conference (2002)[373] in the US for the second time. The focus of the second attendance of the Conference – this time in workshop mode – was on the utilisation of the framework rather than on getting to know the framework and its approach. The first occasion of personal interaction with Zachman and Holcman was between the researcher and the DOD Lead Enterprise Architect and focused on improving the understanding of the Zachman Framework to facilitate its application as a part of the strategic ICT planning process. This initiated the therapeutic stage as presented by Blum (1995)[374] of the research with due consideration of the hermeneutic implications between the organization and its structural arrangements and the actual strategic ICT planning process.

5.2.2.5 Review of the Management Arrangements to Ensure Successful Achievement of the Goals of the Strategic ICT Planning Process

From reviewing the process and the ability to actually execute that, the necessity to improve the organizational and structural arrangements became evident. This constituted the formalisation and continuation of the therapeutic stage as described by Blum (1995) *op. cit.* of the research as appropriate to the structural arrangements that surrounded the actual strategic ICT planning process. The focus therefore shifted to ensure that there was alignment between the ability to do strategic planning within a corporate environment that was receptive and conducive to the strategic ICT planning process. The review and alignment was performed as a dynamically iterative process reflectively performed with due consideration of the construct of strategic corporate defence direction and the structural requirements to ensure effective and efficient institutionalisation of the strategic ICT planning function. Participation by the strategic ICT planners of the DOD

[373] United States of America. The Enterprise Architecture Forum. 2002. *Implementing and Managing Enterprise Architecture*. Scottsdale, Arizona: Barnett Data Systems and the Zachman Institute for Framework Advancement.
[374] Blum, F. 1995. Action research – A scientific approach? *Philosophy of Science*, 1995, vol.22(1), p.1-7.

in departmental forums such as the DOD Planning Forum, the Defence Budget and Planning Committee (DPBEC) as well as in the Defence Secretary Board (DSB) and the Military Council (MC) as capped by the Plenary Defence Staff Council (PDSC) contributed to alignment. Alignment was focused on corporate ICT strategy with business unit ICT strategies and with the respective business strategies as appropriate to corporate management and business unit management.

To ensure that this objective could be realised the primary task fell to this researcher – the GITO – and the C CMIS as supported by staff officers within their respective organizations. In addition to this the structural approach and the definition of management arrangements and mechanisms was also collaboratively integrated into the greater DOD organizational design by the same two individuals serving as part of the greater Department of Defence Organizational Development Work Group (DODW). The dialectic relationship that existed between the GITO and the ICT System Manager (C CMIS) was maintained throughout the diagnostic phase and the therapeutic phase of the second cycle.

5.2.2.6 Structural Interventions Required to Enable the Strategic ICT Planning Process

The sustainment of the core competency to ensure appropriate strategic ICT planning and management in the SA DOD became the more important driver as the planning process progressed. This imperative led to dynamic organizational interventions required to ensure appropriate management arrangements and structures for the ICT function in the SA DOD. This occurred along the same timeline as indicated but slightly ahead of other functional transformation projects. The structural improvement of the ICT management function actually ensured a basis of understanding and definition that contributed towards the restructuring of the DOD corporate environment. This can be compared to the aspects related to Giddens' Structuration Theory (1984)[375] where the social system was influenced by "*recurrent human action and interaction*". This part of the institutionalisation of the ability to do strategic ICT planning within the DOD as a comprehensively collaborative endeavour with full cognisance of the requirement for

[375] Giddens, A. 1984. *The Constitution of Society: Outline of the Theory of Structuration*. Cambridge, MA: Polity Press,.

alignment, was approved as part of the DODW by the Minister of Defence during April 2006[376].

It is clear that this research was conducted as an Action Research initiative that was driven by practice from an existing academic reference framework and evaluated in terms of appropriate theory. The method was interventionist with a balance being sustained between the researcher and the clients given the respective roles of either being participant or being participatory. This was expanded towards interaction regarding the structural arrangements with the greater DOD as part of the DODW when considering the interaction between the researcher and the study subjects as well as the relationship between the researcher and the defence corporate environment.

5.2.2.7 Establishment of Appropriate Structural Arrangements for Appropriate Strategic ICT Management (Including Planning)

To ensure that an appropriate strategic ICT planning process itself can be institutionalised the prescribed Defence policy framework and processes were followed by the researcher in his capacity as the DOD DEIS (ICT) functional authority. These policies and procedures related to the strategic ICT planning process are in the process of administrative approval within the DOD. The resultant DEIS Strategic Direction consisting of the DOD Information Strategy, the DEIS Framework as a descriptive definition of the DEIS and the DICTA as the strategic direction for CMIS and Services, is currently being utilised for the formalisation of the CMIS implementation plan of the DOD. The understanding that the strategic direction as appropriate to the DEIS as opposed to the CMIS and Services should be descriptive in nature as opposed to being prescriptive, was the result of a continuous collaborative process as confirmed during the process of approval for the DEIS Framework. It was initially confirmed during discussions in the Joint Operations Staff Council as one of the sub-structures of the PDSC in May 2005[377] and August 2005[378] respectively. The Joint Operations Staff Council is a

[376] South Africa. Department of Defence. 2006. Ministerial Directive: *DOD Organisational Restructuring under reference MOD/C/518/3/1 dated May 2006*. Pretoria: The Department.
[377] South Africa. Department of Defence. 2005. *Minutes of the Joint Operations Staff Council of May 2005*. Pretoria: The Department.

functional staff council focusing on operations at the same organizational level as the DEIS Board. The management of ICT solutions is already in process in accordance with the DEIS governance as approved.

5.2.2.8 Formalisation of Structural Arrangements to Institutionalise the Strategic ICT Planning and Management Function

To facilitate the effective utilisation of the strategic ICT planning process and its resultant strategic direction for the DEIS the specific management arrangements and mechanism have been approved by the Minister of Defence in terms of the work done by the DODW and has been expanded upon, specified and captured in policy. To this end an implementation instruction has been ratified by the Chief of the SANDF and the Secretary for Defence in May 2006[379] and is in the process of implementation. The recommendations and supporting definitions for management arrangements and mechanisms were collaboratively work-shopped within the DOD between all role players and stakeholders as appropriate. Such discussions took place with due consideration of the dialectic relationship that exists between the Defence Secretariat and the SANDF. To date the refocus of the previous management arrangements has been formalised in policy and is in the process of being institutionalised. The result is that the function of strategic ICT planning in the DOD can now be managed with due consideration of both the governance as well as appropriate structure and capacity. The focus is now on continuous improvement and enhanced alignment to realise the defence and objectives in accordance with national governance.

5.2.2.9 Review of the Strategic ICT Planning Methodology for the SA DOD

The above process constituted the formalisation and continuation of the therapeutic stage of the research as appropriate to the actual strategic ICT planning process. This change took place and is still taking place as a standing objective within an organization that in

---

[378] South Africa. Department of Defence. 2005. *Minutes of the Plenary Defence Staff Council of August 2005*. Pretoria: The Department.
[379] South Africa. Department of Defence. 2006. *DOD Implementation Instruction 10/06: The Implementation of the Defence Enterprise Information Systems (DEIS) Management Arrangements and Mechanisms as part of the Comprehensive Instructions to Guide the Management of the DEIS Function in the DOD with reference SD/GITO/R/501/9 dated 7 April 2006*. Pretoria: The Department.

itself required change. The primary functionaries for this initiative are the GITO and the C CMIS in collaboration with all role players and stakeholders, both internal and external to the DOD. As such the process followed to institutionalise the strategic ICT planning process conforms to the realisation of the five principles for Action Research as presented by Davison et al. (2004)[380].

5.2.2.10 Continuation of the Strategic ICT Planning Process of the SA DOD

With due consideration of the necessity to ensure that the environment is conducive to the execution of the strategic ICT planning process the reviewed process was continued with full consideration of the ability of the researcher to communicate in the language of the organization. This was brought on by an inability of the organization to reconcile itself with the theoretical approach, but required a practical approach to corporate strategic ICT planning that fitted with the respective functional and structural framework. The fact that these frameworks were changed was in no small part due to the improved understanding of the intention, the integrity accepted by the organization due to formalised structures and the ability to demonstrate value to the organization as a whole.

The full collaboration without diminishing functional authority also provided focus for the strategic planning process and with the improvement of structural arrangements that were commensurate with defence structural arrangements, allowed the project to be brought to its logical conclusion. This conclusion was reached with the departmental (corporate) formalisation (approval) of the following documents that descriptively serves as the Defence Enterprise Information System Strategic Direction. To this end the strategic direction for the DEIS consist of the DOD Information Strategy[381] that focuses on defence information as a strategic resource and a commodity, the Defence Enterprise Information System Framework (DEIS Framework)[382] that provides focus, context and construct for the Defence Enterprise Information System Plan (DEIS Plan) and the

---

[380] Davison, R.M., Martinsons, M.G. & Kock, N. 2004. Principles of Canonical Action Research. *Information Systems Journal*, 2004, vol.14, p.65-86.
[381] South Africa. Department of Defence. 2003. *DOD Information Strategy v2.1 (JSUP/CMIS/R/516/1) dated 15 Sept 2003*. Pretoria: The Department.
[382] South Africa. Department of Defence. 2005. *Defence Enterprise Information System Framework v1.2 (DS/GITO/C/516) dated 15 August 2005*. Pretoria: The Department.

Defence ICT Architecture (DICTA)[383] that serves as the long-term descriptive definition for the utilisation of ICT to enable information management and information utilisation solutions.

5.2.2.11 Finalisation of the Strategic ICT Planning Process of the SA DOD

The formalisation as ratified by the Plenary Defence Staff Council was as a result of both the execution of the strategic ICT planning process and the establishment of appropriate management arrangements and mechanisms. To this end the focus was on the client-researcher agreement that was established and maintained throughout the project and the dynamically iterative nature of the strategic ICT planning process in combination with the organizational change imperative driven by the requirements of the organization and the strategic ICT planning process.

The fact that the process was theoretically sound as presented, as perceived and as accepted by the researcher and the organization as a whole including the study subjects, was further enhanced by the fact that the changes that were brought about was not only in theory, but actually implemented as part of the on-going process of action research. The presence of a continuous process of learning by all parties involved and by the organization as a whole to the point where there is full acceptance of the strategic ICT planning process, management arrangements, structures and mechanisms and that the implementation planning for the DEIS was done in accordance with the DEIS SD as part of DEIS Governance.

5.2.2.12 Formalisation of the Strategic ICT Planning Process of the SA DOD to Ensure Institutionalisation

The formalisation of the Strategic ICT planning process is in the process where a set of comprehensive instructions is being formalised and approved. The DEIS implementation plan is being formalised and capacity aligned to managed the execution of the DEIS SD. In addition to this the next cycle of continuous improvement in accordance with the

[383] South Africa. Department of Defence. 2003. *DOD Directive: Development, Promulgation and Maintenance of Departmental Level Policy in the DOD with reference POL&PLAN/00001/2002 (Edition 1) dated December 2003*. Pretoria: The Department.

approved approach is being initiated. This will be performed within the same construct of action research as directed by the principles of project management to ensure that there is full configuration management of all the variables that will influence the ability to enhance the utilisation of ICT within the DOD.

During the strategic planning session of the DOD conducted from 21 June 2006 to 23 June 2006 in Pretoria and attended by the corporate managers and business unit managers (all Service and Division Chiefs) the process of alignment to ensure that the strategic ICT planning process for the Defence Enterprise Information Systems to ensure alignment with strategic defence (business) planning was confirmed as follows during a presentation by the GITO – the author/researcher.

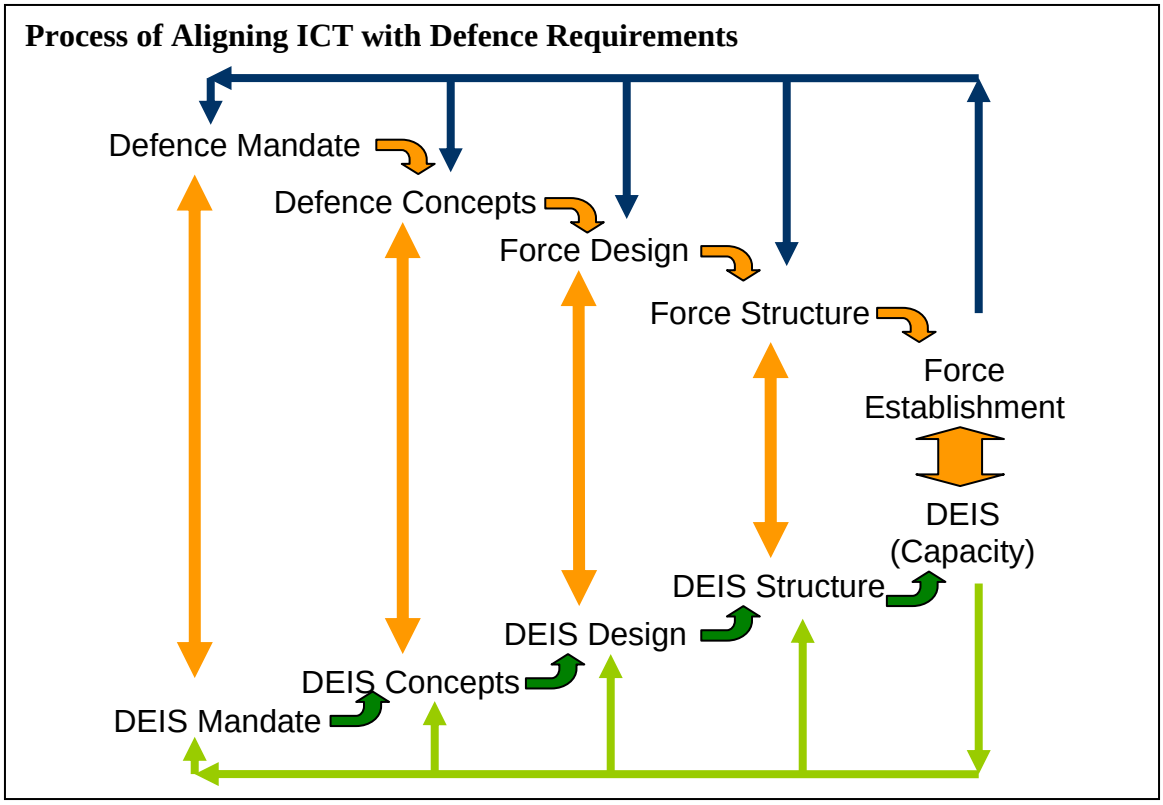

Figure 5.2: Process of aligning strategic ICT Planning for the DEIS with Business Strategy as appropriate to the Defence Function

With due consideration of the requirement to implement the strategic direction there is a causal relationship between the strategic direction and the DEIS Master Plan that provides specific definition of the ICT solutions that are to be provided to the DOD. To this end the following construct can be provided as approved during the DOD Strategic

work session referred to above. It is essential to notice that the allocation of responsibilities for ICT solutions is spread over the centralised system management function as appropriate to the C CMIS as the primary ICT system integrator and the respective budget holders/authorities as representative of the respective Services and Division. It is confirmed that the Services and Divisions function as the Semi-autonomous Business Units of the DOD.

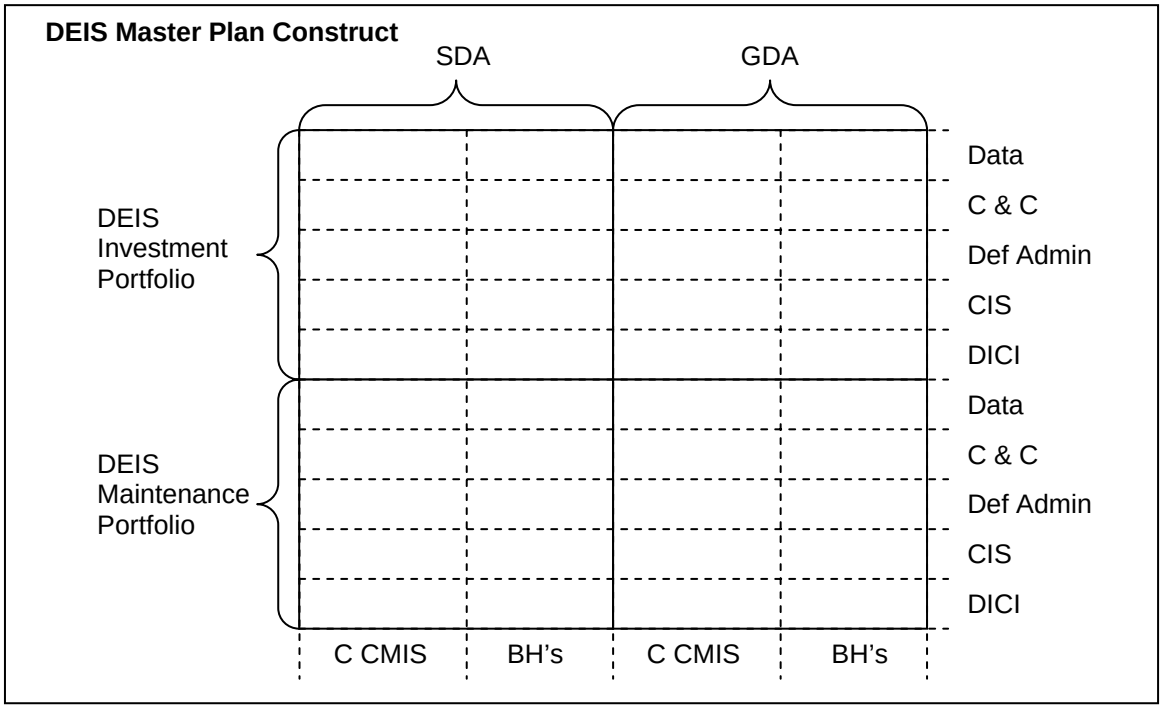

Figure 5.3: DEIS Master Plan Construct to Provide a Corporate Framework for DEIS SD Implementation

The requirement for structural arrangements can once again be reflected upon as being relevant to the ability to execute the strategic governance and as such influence the management arrangements and mechanisms. To this end structure in the Strategic ICT plan serves to define the total requirements, whilst at the same time indicating responsibility as a centralised and corporately common function (C CMIS) or a decentralised and unique function (Budget Holders (BH's)). It further serves to provide clarity on whether it is an existing capability that requires sustained improvement or whether it is a totally new requirement given the target ICT solutions architecture. To this end it addresses all the components of the Defence Enterprise Information System (DEIS.

5.2.3 Specifying the Improvement in Structural Arrangements and the Strategic ICT Planning Process of the SA DOD

To ensure that the structural arrangements will not only facilitate the execution of the strategic direction within the policy framework for the DEIS, it can be confirmed that the governance and therefore structural arrangements are aligned with the through-life management responsibilities as also confirmed during the DOD strategic planning session. This can be presented as follows as confirmed during the strategic planning session.

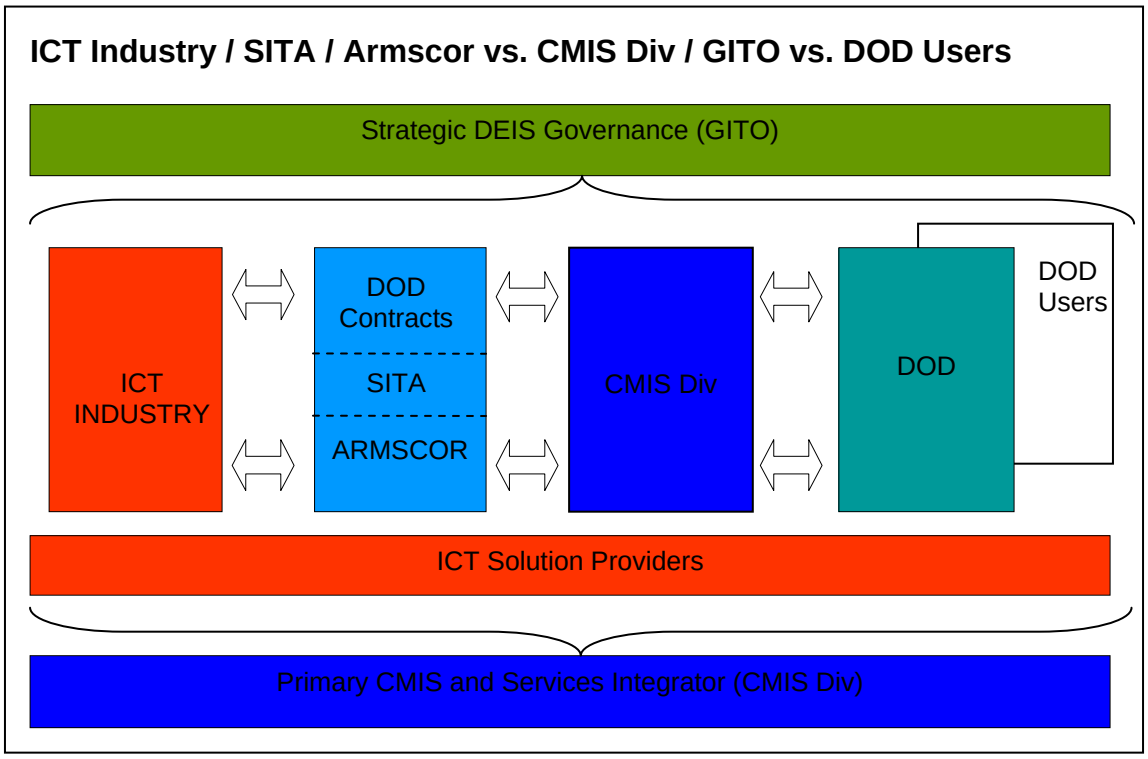

Figure 5.4: Rational Supply Chain for CMIS and Services Management in the DOD

Given that the DEIS refers to the total enterprise ICT solution the clarification of roles and responsibilities throughout the total life cycle was resolved. To this end the users are responsible for identifying the requirement as facilitated by the ICT specialists being the GITO as the functional authority and the CMIS Division as the system manager. The SITA/Armscor/DOD contracts and the ICT Industry provide solutions to the DOD. The primary responsibility for identification of ICT requirements resides with the actual users with the implication that the transverse or common solutions will be centrally managed at

business unit level. Corporate governance as per the mandate of the GITO will therefore impact on both centralised system and decentralised or diversified functional responsibilities. Contracting mechanisms and arrangements given the DOD approach towards DEIS management is a centrally coordinated function with full collaborative participation by all users environments and ICT system owners. The responsibility to manage the system as previously indicated was again confirmed during the DOD strategic planning session referenced above.

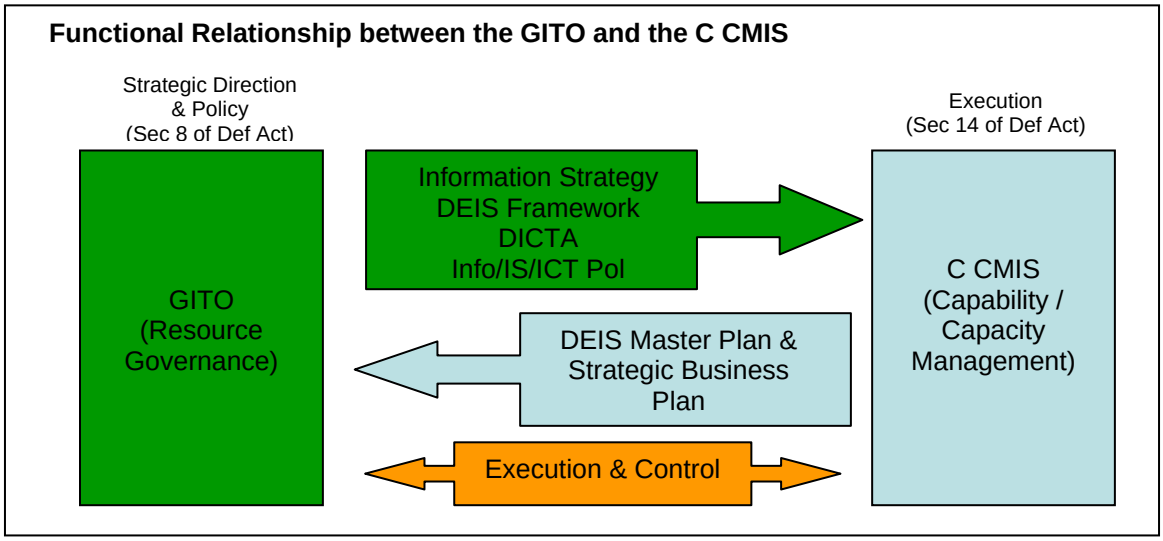

Figure 5.5: Functional Relationship between GITO and the C CMIS as the Primary ICT System Integrator

Regarding the ICT management function the roles and responsibilities are combined in the GITO and the C CMIS. The combined responsibility of the GITO and the C CMIS addresses ICT solutions management for the whole DOD with full recognition of the fact that there might be ICT related solutions that are coordinated between the DEIS and prime mission equipment such as the respective weapon systems of the DOD. To this end there is full participation by strategic managers at corporate level under the auspices of the GITO as the functional authority for ICT in the DOD. There is also full participation in the CMIS Management Committee as an ICT operations management forum for the whole of the DOD under the authority of the C CMIS as the primary ICT systems integrator. The GITO manages the DEIS with its systemic and corporate implications while the C CMIS manages the CMIS and Services with its product and user system management implications. The C CMIS responds to the strategic DEIS governance (direction and policy) by formulating the ICT master plan that will guide the realisation

of the policy in accordance with aligned strategic business plans throughout the enterprise DOD. ICT management is a fully collaborative function given the respective roles and responsibilities of role players and stakeholders.

In addition to the DEIS Board and the CMIS Management Committee that have user participation and collaboration the Joint Information Systems Management Board provides the functional mechanism for ICT management within the DOD in response to user requirements, ICT considerations and DOD strategic direction and policy. This can be presented as follows as presented and finally approved at the DOD strategic planning session referenced above.

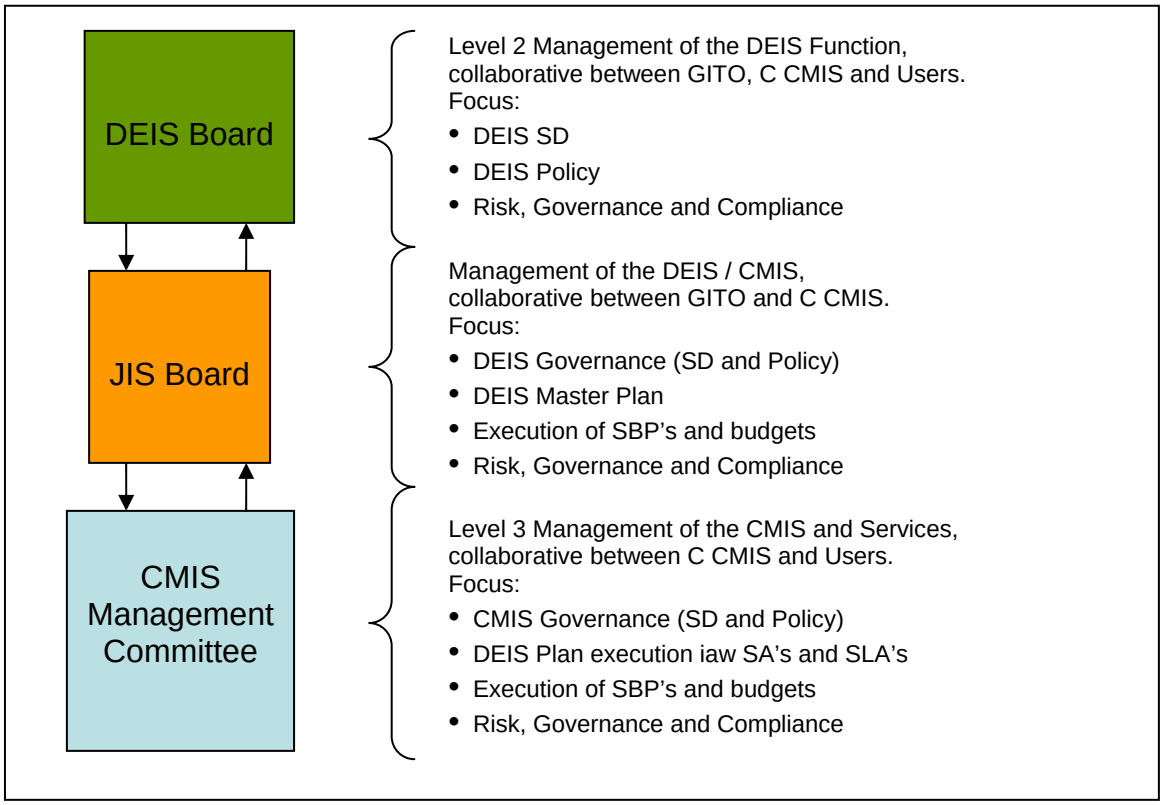

Figure 5.6: DEIS Management Arrangements and Mechanisms

From the final decision taken by the DOD during its strategic planning session of 21 to 23 June 2006 it is clear the following are considered as essential for strategic ICT planning in a diversified organization.

- There is an appropriate strategic ICT planning process that has continuous alignment with business as its core that can be implemented for diversified organization.
- Participation and collaboration within a clearly defined, approved and implemented allocation of responsibilities is essential.
- Management arrangements and mechanisms should reflect the respective responsibilities as appropriate to the diversified organization at both corporate and business unit level.
- Formalisation and institutionalisation is directly dependent upon formalised strategic direction and policy from both a corporate and a business unit perspective.
- Effective and participative change management is an essential element to establish an appropriate strategic ICT planning approach throughout the diversified organization.
- Corporate coordination of requirements and solutions as well as resource management is essential to realising strategic ICT direction and policy as forthcoming from the process and managed via the structural arrangements and mechanisms.

5.3 CONCLUSIONS FROM THE FUNCTIONAL RESEARCH

5.3.1 Functional Conclusions on the Establishment of and Appropriate Strategic ICT Planning Process for the DOD as a Diversified Organization

With full cognisance of the process followed to ensure that an appropriate strategic ICT planning process was institutionalised within the DOD the initial focus was on the actual process itself. To this end the complexity of the DOD necessitated an Enterprise Architecture Planning approach to ensure that firm planning baselines were established to guide the interpretation of function to define ICT requirements. The complexity of the organization, however, provided the opportunity for realising strategic system guidelines such as standardisation and interoperability. This should not be considered as

contradictory to uniqueness and 'transverseness' of ICT solutions and the ability to allocate responsibility within the diversified organization. The utilisation of an appropriate Enterprise Architecture Planning process that is commensurate with the complex nature of the organization served to establish firm baselines for both ICT solutions and its management. The fact that the same baselines were used for business definition and improvement as for ICT management ensured greater alignment and enhanced the potential realisation of the utility of ICT.

The requirement for formalised responsibilities given the nature of the Defence Enterprise Information System necessitated the establishment of very specific structural arrangements and mechanisms to ensure that the strategic ICT planning process could be institutionalised to the point where execution can be guided by the strategic direction within the construct of an approved regulatory framework. These structural management arrangements and mechanisms were found to be essential for the function of control that allowed and enhanced the requirement for continuous improvement and alignment. With strong emphasis placed on collaboration within the DOD and as appropriate to joint operations with other military (security) entities this approach clarified roles and responsibilities to the point where unique functions and transversal functions can be managed appropriately at corporate and executing level. This serves to focus effort and eliminate functional omissions where people ascribe all responsibility to others, but where that is the opinion of everybody.

In addition to the control function as a feedback mechanism for review and continuous improvement alignment required that it be managed as an integral part of every step of the strategic ICT planning process. This should be read in conjunction with the fact that business drives the requirements for ICT and therefore the ICT solutions and services. Appropriate participation between the ICT fraternity and the business managers are therefore essential with full consideration of the required relationships between corporate management and business unit management. From a planning perspective this contributes to the management of risk performance and compliance as a collaborative function given the standardisation of methodology and plan.

To ensure that institutionalisation can be effected and collaboration enabled by effective communication throughout the organization is considered an imperative. As such the ability to manage change throughout the organization is essential, given that it is an essential element of strategic management. To this extent the DOD has come full circle from the intention to establish and institutionalise an appropriate strategic ICT planning process for the DOD as a diversified organization to ensure that there is alignment between the intended strategic change for business and the ICT strategy. The ability to sustain and continuously improve the competitive advantage of the military without negating the requirement for performance and compliance the realisation of the potential utility of ICT towards this continuous improvement is heavily dependent upon collaboration. This puts greater emphasis on the structural arrangements to manage contextual issues of the strategic ICT planning process.

The final conclusion can therefore be made in relation to the statement made by Ward and Griffiths (1996:120-121)[384] that indicates that the attempts to develop corporate IS/ICT strategies as opposed to Strategic Business Unit IS/ICT strategies are not always successful. This is confirmed by the explicit statement of Ward and Griffiths (1996:121) that states that "*Unless the corporation is essentially a single business unit company the task is almost impossible*". To this end it can be considered that the recipe for success does not necessarily reside on the process, but in the structural arrangements and its interaction with the process that includes both corporate and business unit management. Care should however be taken to ensure that corporate management does not become prescriptive as opposed to descriptive as it would negate flexibility and the ability to exercise mission command at operational level. 'Orchestration' at corporate level becomes the primary focus.

5.4 PRESENTATION AND ANALYSIS OF FUNCTIONAL RESEARCH

5.4.1 Utilisation of the Construct to Present Action Research Information

[384] Ward, J. & Griffiths, P. 1996. *Strategic Planning for Information Systems*. New York: John Wiley and Sons.

When due consideration of the critical action research approach and the frameworks developed to reflect such research the following presentation of the research can be made. This is done with due consideration of the fact that according to Lado and Wilson (1994:702)[385] the emphasis for undertaking research of this nature is placed on the ability to develop high level competencies. Scarborough, 1998[386] indicates that these are embedded in the members of the organization as was also the findings of this research. As such the focus of this research is on issues such as culture, routines, learning and the ability of the above to lead to competitive advantage.

The focus placed on competitive advantage is also considered to be the firm focus of strategic management when considering the notion of establishing core competency as a means to enhance or contribute towards competitive advantage according to Prahalad and Hamel (1990)[387]. The reason why this is considered important for this research is that the task of strategic management and therefore planning should be performed by competent individuals that perform optimised tasks that require optimised processes whilst functioning in an optimised organization. According to for example Muffatto (1998)[388], Nordhaug (1998)[389], Rothwell and Lindholm (1999)[390] and Simpson (2002)[391], the ability to develop taxonomies and theoretical frameworks are considered imperative to support the development of competencies and thereby contribute towards competitive advantage. The above-mentioned research and argument provide the basis for this research as important and contributing towards the existing reference framework.

As a precursor to the establishment of core competencies within the DOD and specifically to transform its strategic ICT planning function, it was decided that the

[385] Lado, A.A. & Wilson, M.C. Human Resource Systems and Sustained Competitive Advantage: A Competency Based Perspective. *Academy of Management Review*, 1994, vol.19:4, p.699-727.
[386] Scarborough, H. Path(ological) Dependency? Core Competency from and Organisational Perspective. *British Journal of Management*, 1998, vol.9, p.219-232.
[387] Prahalad, C.K. & Hamel, G. 1990. The Core Competency of a Corporation, *Harvard Business Review (68:3)*, 1990, p.79-91.
[388] Muffatto, M. 1998. Corporate and Individual Competencies: How do They Match the Innovative Process? *International Journal of Technology Management*, 1998, vol.15:8, p.836-853.
[389] Nordhaug, O. 1998. Competence Specificity in Organisations. *International Studies of Management and Organisations*, 1998, vol.28:1, p.8-29.
[390] Rothwell, W.J. & Lindholm, J.E. 1999. Competence Identification, Modelling and Assessment in the USA. *International Journal of Training and Development (3:2)*, 1999, p.90-105.
[391] Simpson, B. 2002. The Knowledge Needs of Innovating Organisations. *Singapore Management Review (24:3)*, 2002, p.51-60.

process for strategic ICT planning should be defined and tailored towards the intricacies of the DOD. The decision by the DOD as part of its transformation approach of establishing a centralised function to managed defence information and its enabling enterprise information system, initiated the establishment of the relevant core competency. This centre of excellence was intended to function within the principles of project management to ensure that an appropriate methodology would be developed for strategic ICT planning for the DOD. During the development of the methodology it became apparent that the tailoring of the process and the structural issues surrounding the strategic ICT planning process should be addressed collaboratively to ensure the successful institutionalisation of the function. This approach provided the basis for this research and the specific research methodology. From this perspective the researcher can consider the theoretical base for this research with the core competency being expanded and improved upon as the research continues in parallel with the transformation process. Lawler and Ledford (1992)[392] also indicate the requirement and necessity for alignment which in this study is expanded to an enterprise perspective as opposed to specifically the HR function as from Lawler.

5.5 PRESENTING THE DATA FROM THE RESEARCH

When considering the approach presented by Kim (1993)[393] with reference to the creation of competence as "*competence-in-the-making*" combined with structuration theory as presented by Giddens (1984)[394], then the basis for constructivist learning has been established. The focus of this action research is based on this approach towards learning. The applicability of this approach lies in its ability to deliver recursive definition and review of the continuously developing organizational learning process. This in turn leads to the potential emphasis on the nature of the organization and its influence on the establishment of an appropriate strategic ICT planning process within the diversified organization.

---

[392] Lawler, E.E. & Ledford, G.1992. A Skill-Based Approach to Human Resource Management. *European Management Journal*, 1992, vol.10:4, p.393-391.
[393] Kim, D. 1993. The Link between Individual and Organizational Learning. *Sloan Management Review*, 1993, vol.35:1, p.37-50.
[394] Giddens, A. (1984). *The Constitution of Society: Outline of the Theory of Structuration*, Polity Press, Cambridge, MA.

To ensure that the correct focus is retained for this action research the following five principles will be addressed. The *Summary of the Action Research Proj*ect can therefore be presented as follows in accordance with the model of Lindgren, *et al.* (2004) *op. cit.* as concluded in Chapter 5.

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**
Research Sites and Competency Management System: The research environment was primarily centred on the DOD as a whole and more specifically on Defence Headquarters in the Ministry of Defence. The Defence Secretariat and the SANDF Headquarters were the primary role players in this research. The participation in this research took place at corporate level of the DOD (Levels 0 and 1) for sanction and mandate, level 2 being the interface between corporate management and business unit management. Participation of level three participants being responsible for execution and the management of the CMIS (ICT System) was realised as a system of checks and balances to ensure that the strategic direction is actually executable. External research was conducted at the University of Pretoria and augmented by other training and learning opportunities as taken from formal courses by participants in this research. Formal and informal discussions with representatives in the ICT industry also influenced this research.		
Activity 1: Initiating the Strategic ICT Planning Process for the DOD		
Diagnostic Stage: Post-Apartheid South Africa required a complete review of the DOD, including its ICT management function, as it was clearly not aligned with the new constitution. This referred to its mandate, its governance, structures and capacities to ensure optimal utilisation of resources with maximised output given the new focus for defence as provided by the relevant regulatory framework. As such it was decided to transform the ICT management function to ensure that a process approach towards ICT systems management can be established and institutionalised with an enterprise perspective. Therapeutic Stage: The transformation exercise conducted in the DOD with the full participation of Deloitte and Touche as external transformation facilitators from 1996 to 1998 resulted in the establishment of a centralised organization referred to as the Command and Management Division (CMIS Division) that had the centralised corporate responsibility to ensure that ICT was managed in	Researcher – Client Agreement: This agreement was formalised with the formal establishment of the CMIS Division. With the appointment of the DEISA the client was the DOD as a whole and the agreement was reached on the approach to be followed to ensure that appropriate ICT solutions and services will be provided to the DOD in accordance with its design principles, functions and requirements. To this end the researcher for the establishment was the DEISA being tasked to establish and institutionalise the strategic ICT planning function for the DOD. Cyclical Process Model: Given the imperative for continuous improvement and the fact that the DOD was an established organization with existing but decentralised and non-standardised outdated processes, the requirement for a sound theoretical approach that could be practically implemented necessitated the performance of all five action research phases. This demonstrated by the fact that the definition of the strategic ICT Planning process	Transparency of Competence-in-Stock: It was clear that no single individual in the organization had all the knowledge in hand to ensure a comprehensive and appropriate approach towards strategic ICT planning given the nature of the task at hand. Real-time Capture of Competence-in-Use: This was demonstrated by the establishment of a core competence within the DEISA organization to be developed as a centre of excellence for the function of strategic ICT planning in the DOD. Interest Integration as Competence-in-Making: This aspect was addressed by formal courses in ICT management with strong emphasis placed on strategic management of ICT for not only members of the core team, but also of relevant users to ensure improved quality of collaboration. In addition to this structured and unstructured sessions were conducted as a progressive approach towards not only defining the strategic ICT planning process for the DOD, but actually

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**
accordance with the expectations and guidelines as indicated above. One of the directors – Director Enterprise Information Systems Architecture (DEISA) – within this centralised organization had the functional task of institutionalising the strategic ICT planning process as appropriate to the DOD.	would be subject to departmental ratification being heavily dependant upon comprehensive collaboration. Guiding Theory: The post description of the DEISA confirms the intention of the DOD to ensure that the strategic ICT Planning process would be firmly based on an Enterprise Architecture Planning approach, with full cognisance of the total ICT systems and through-life management. To this end the initial approach was influenced by Ward and Griffiths and Spewak and Hill within the existing approach of the Summit Ascendant process. The DEISA at this stage had been exposed to this work as part of formal training that culminated in an M.IT from the University of PTA with strong emphasis on informatics. Change through Action: The performance agreement between the Chief of the CMIS Division (C CMIS) as the ICT System Manager and the DEISA as well as the Performance Agreement between the C CMIS and the Secretary for Defence and the C SANDF clearly indicates the imperative to instruction to ensure the institutionalisation of an appropriate strategic ICT planning process for the whole of the DOD. In addition to this collaboration throughout the process of institutionalisation had to be established and confirmed as a precondition for ratification in accordance with defence policy.	utilising the understanding gained through use of the process under development in a dynamically iterative manner to ensure continuous improvement. This is in conformance to the requirement to address all five basic action research phases even though it did not always take place in exactly the prescribed sequence. Flexible Reporting as Contribution to Competence-in-Making: The fact that a DOD CMIS Staff Council was established with the IS Planning Forum serving as a subordinate mechanism for the ICT management function necessitated regular feedback in terms of the formal business plan for the DEISA from a performance and compliance perspective.
Activity 1: Summary of learning through reflection: The whole approach towards managing the Defence Enterprise Information Systems (DEIS) as a strategic capability of the DOD was dependent upon the ability to manage the Information system referred to as the Command and Management Information System with full consideration of its systemic implications and components. To this end the contextual construct already utilised by the DOD was also adopted. The		

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**

components that comprises the systemic approach towards DEIS management consists of: *Strategy and Governance*, *Culture*, *Organization*, *Competency*, *Facilities*, *Processes*, *Equipment*, *IS* and *ICT*, *Finances* with the focus on *Performance*. This breakdown will be utilised to guide and indicate the learning experience as forthcoming from this research that can be indicated as follows with due consideration of the focus of this research.

Value to the Organization

Strategy and Governance:

The approach of the DOD had to be re-focused on managing defence information as a strategic resource and as a commodity.

Cognisance had to taken of the causal relationship that existed between the ICT management function, its strategic direction, the policy that guided it and the capacity required to execute the function.

Balance had to be established within the ICT system to support all functions of the DOD and not some more than others.

Culture:

A common culture had to be established that would accommodate the common focus on defence information as well as the respective organizational cultures. This was achieved by emphasising defence information rather than the organizational functions which in turn allowed the organization to still retain its original service and division culture, but focused on the management of information and its enablers from a centralised and corporate perspective.

To ensure collaboration it was necessary to implement an Information Systems Planning forum with the express intention of participation by functional ICT/user specialists from the user environment.

Organization:

Participation and collaboration with full consideration of the respective roles and responsibilities of the Services and Divisions within the DOD had to be ensured to incorporate the semi-autonomous nature of the Services and Divisions.

Competency:

Formal plans had to be put into place, approved and executed to ensure that the organization could build up sufficient capacity to perform the ICT function in the DOD.

Conscious decisions regarding own capacity, in-sourcing and out-sourcing had to be made and formal arrangements and mechanisms put into place to execute the contracting model.

Facilities:

Appropriate facilities had to be acquired to accommodate the centralised corporate functions and to support the requirement to manage the continuous and dynamically interactive interaction that would be required throughout the process of establishing an appropriate strategic ICT planning process that had to be

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**

sustained between the ICT system managers and the users.

Processes:

The ICT management processes that had to be established and institutionalised had to deliver solutions that would be commensurate to actual user requirements given the nature of the organization. It therefore had to reflect a distinct client orientation.

Equipment:

General office equipment had to be made available as appropriate to such a collaborative function as corporate ICT management. This required formalised plans and resources.

IS and *ICT*:

Appropriate planning tools had to be acquired to enable and support the methodology that was to be established. This had to be done with due consideration of the current tools in use.

Finances:

Planning and budgeting had to be done with full performance and compliance considerations as for any other budget holder in the DOD. Capital investment would be corporately orchestrated.

Performance:

Formal performance agreements had to be established to guide the activities towards the objectives of the organization as opposed to any other interpretation that could lead the endeavour to establish an appropriate strategic ICT planning process for the DOD.

Value to Scientific Theory

Strategy and Governance:

To this end alignment was much wider than ICT strategy with business strategy and ICT policy with business policy. All the components of the systemic approach towards management had to be aligned throughout the organization.

Even though the processes and procedures might be simplistic in their activities the ability to integrate and coordinate the function throughout the organization would be far more complex than just the mechanistic performance of tasks.

Culture:

The diverse culture of the semi-autonomous business units as commensurate to their respective lines and business and levels of maturity had to be augmented

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**

with a corporate culture.

Organization:

To ensure corporate management of the ICT function a centralised approach was adopted to ensure a single nodal point to act as the functional authority that would manage the utilisation of ICT in the DOD.

Structural arrangements had to be designed and formalised with full consideration of organizational design principles and procedures as appropriate to the organization as a whole. It required compliance to the general principles guidelines used for all organization restructuring. It was part of the bigger transformation initiative and had to be managed as such. There were no short cuts and transparency was essential.

Competency:

The diverse nature of skills had to be focused and enhanced as a positive and conscious action. To this end a core competency had to be established that would serve as a continuously improving centre of excellence.

The more mission-critical the skills required, the smaller the probability of out-sourcing.

In addition to this a core competency had to be established that would be representative of all the disciples involved in the implementation of an EAP approach towards ICT systems management.

Processes:

The fact that the organization and therefore ICT functions as a system of systems required the establishment of an appropriate management process with a clear definition of a conceptual systems construct for the Defence ICT system.

Due to the complexity and pervasiveness of an EAP approach proper and very formalised methodology would be required to not only manage the establishment of a strategic ICT process, but also the actual utilisation of the process to define the strategic direction for ICT for the DOD.

The processes that had to be established and institutionalised had to have implicit and explicit integrity with due consideration of the requirement for continuous improvement to facilitate re-use and an extended life within the organization.

The processes had to reflect both theory and practice.

IS and *ICT*:

The relationship within the ICT management function and organization as relevant to being both solutions provider and user had to be managed appropriately. This meant that the focus could not be singularly focused on enabling the ICT system managers with ICT, but that the focus actually was on delivering solutions to the functional users of ICT of which the ICT management organization was a specific user group.

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**
Performance: A formal plan had to be put into effect that was monitored at defence level with full transparency at corporate and business unit level to ensure participation and performance to plan.		

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**
Activity 2: Setting of Goals for the Strategic ICT Planning Process for the DOD.		
Diagnostic Stage: With the establishment of the CMIS Division and the DEISA the department also took the conscious decision that it would follow an EAP approach to support strategic ICT planning. As such the first tasks at hand for the DEISA was to establish a structure and recursive methodology that could guide the process. This was due to the fact that the existing methodology was considered inappropriate as it focused on the ICT solutions to a large extent and did not necessary analyse business as an integrated function. The contention was that if business was being integrated then the same basic 'blueprints' used for business life cycle management should be utilised for information system optimisation. It was believed that this would improve alignment between the information systems and the business system and therefore ensure that implementation and the rest of the ICT life cycle could be managed with due consideration of the same set of environmental issues that influence the organization. To this end the following goals were set as from the DEISA Performance Agreement of 2000: Goal 1: To compile a business plan that is subject to defence policy for the development of the strategic ICT planning function. Goal 2: To establish an appropriate strategic ICT planning methodology and process for the DOD as an Enterprise.	Researcher – Client Agreement: This agreement was formalised between the DOD and the DEISA in terms of the establishment of the CMIS Division. The performance agreement and the internal processes of the DOD prescribed full collaboration with and participation by all user groups related to the utilisation of information and ICT. In addition to this the fact that all Functional ISMPs had to be approved by the respective function/process owner necessitated full consultation by all role players and stakeholders. All of the project teams made up of contracted consultants were under direct command of the DEISA and facilitated via the core team. Cyclical process: In terms of the initial approach to be followed the business analysis process was to be performed by the respective project teams that consisted of contracted consultants. User representatives were allocated to each project team to ensure user participation. Guiding Theory: The theoretical basis for this part of the research was centred on Summit Ascendant process of IBM, the Acquisition (VB 1000) process as practiced by the Armscor of the RSA, the strategic ICT planning process as presented by Ward and Griffiths (1996) and the Zachman Architecture Framework (1987) as presented by Spewak and Hill (1992). This was augmented by an understanding of the organization as a system with due consideration of the fact that ICT	Transparency of Competence-in-Stock: Even though the respective role players and stakeholders all had their respective functional skills, these skills were not necessarily focused on a standardised strategic ICT planning process. It was also not always visible what the respective skills were and therefore the sustainment of growth and continuity was a big issue given the establishment and utilisation of a standardised strategic ICT planning process for the DOD. Real-time Capture of Competence-in-Use: The continuous efforts and development of the core team in interaction with the project teams and user group representatives and their users, resulted in a number of users also attending formal Information Systems training such as the ACISM course. The IS planning forum served as a continuous workshop for the development and continuous enhancement of supporting process and procedures. Interest Integration as Competence-in-Making: Given the nature of the EAP approach and the fact that it combined a number of disciplines into a single comprehensive albeit immature strategic ICT planning process, there were various opinions that were more semantic in nature than varying in principle. Most of the issues revolved around the participation, and ensuring that relevance of participants were sustained.

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**
Goal 3: To ensure that appropriate participation and collaboration would be effected throughout the development of the strategic ICT planning process and methodology as well as for the utilisation of the process to deliver strategic ICT plans. Goal 4: To ensure that appropriate skills and staff capacity would be established to perform the strategic ICT planning function. Goal 5: To establish appropriate tools to support the strategic ICT planning function for the DOD Therapeutic Stage: Goal 1 (Policy and Plans): The business plan was formulated with due consideration of the approach as was determined from the existing theoretical framework and an understanding of the scope and volume of the work to be undertaken. To this end the strategic value chain of the DOD was utilised to identify the DOD processes that would have to be interrogated. A schedule of activities was compiled to serve as the overarching plan to guide the definition of architecture from which the CMIS Strategic Direction would be developed. Funds were allocated with an initial amount of approximately Rm 28 being allocated for the function in year 1 and then decreasing over the next three years. The original estimate was that it would take four years to deliver corporate strategic direction for the CMIS and Services. Goal 2 (ICT planning methodology and process): The basic approach was a combination of the processes used by the SITA (previously InfoPlan),	management can be considered a *fragmented adhocracy* as presented by Whitley (1984) when referring to research in such an environment. Change through Action: The changes that took place during this phase of the research were that there was a continuously increasing understanding of the complexity of strategic ICT planning in an organization with the diverse nature of the DOD. In addition to this the fact that collaboration and participation was not only desired, but essential to the process came to light at every step of the process. The development of skills and establishment of a common reference framework and approach towards strategic ICT planning was the greatest change imperative. This was appropriate to the user environment, the approval and ratification process stemming from internalisation and institutionalisation imperatives. The necessity for structure to ensure repeatability and alignment was starting to become an extremely important issue.	Flexible Reporting as Contribution to Competence-in-Making: The whole "chain-of-command" and therefore reporting and approval were established initially to run from the project teams to core team under the direction of the DEISA, with the DEISA reporting back to the CMIS Staff Council as the functional corporate management forum for ICT in the DOD in parallel to the other functional staff Councils or Boards of Services and Divisions, to the DSC for final ratification. With the introduction of new participants and decision makers into the process a continuation of the change management process to establish the strategic ICT process was necessary.

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**
Armscor, an academically accepted strategic ICT planning process and the EAP. Goal 3 (Participation and collaboration): To ensure sufficient participation and collaboration all the user groups (Services and Divisions) in the DOD was to be involved in the process with full collaboration and participation in workshops, the IS Planning Forum of the DOD, the CMIS Staff Council and the Defence Staff Council. In addition to this all other functional staff mechanisms and process owners would be involved to sign off on the Functional ISMPs that would be combined into a single corporate plan. Goal 4 (Skills and capacity): An initial core team of architects was established with the focus on strategic architecture, business architecture, information systems architecture, data and information architecture and ICT architecture. These were augmented with a team of consultants that were contracted via the SITA with business analysis skills to perform the business architectures. The intention was to interrogate the respective business architectures to define a Functional ISMP for each function in the DOD in accordance with its value chain and structural complexity. These would then be aggregated into a departmental ISMP. Training was provided to the core team in addition to the existing skills that they possessed through the Advanced Certificate In Information Systems Management (ACISM) course that was presented in collaboration with the University of Pretoria. Attendance by the researcher and the Chief		

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**
Architect of the Zachman Conference on EAP in 2000 added to the core competency. Goal 5 (Tools): The initial tools utilised was the KBSI Toolset (IDEF range) for business process modelling. This tool was augmented by normal MS spreadsheets to capture the architectural artefacts and then store them on a repository of IBM's Enabler Blue. This was an inadequate solution.		

Activity 2: Summary of Learning through Reflection. With due consideration of the systemic issues related to the management of the Defence Enterprise Information Systems and the respective goals that relate to this research the focus of this stage was on the ability to establish and sustain collaboration and participation by users, ICT system managers, academia through formal and informal interventions as a process of continuous improvement. The following can be presented as concluded from this stage of the research.

Value to the Organization

Policy and Plans:

The business plan for the strategic ICT planning function had to be sufficiently comprehensive and had to reflect the total scope of the plan to be executed.

The involvement of all relevant role players and stakeholders as well as the value to be realised for the respective recipients of the resulting strategic plans had to be clearly indicated, lobbied and delivered upon.

Funding had to be obtained as it was not necessarily forthcoming from the user (business units) budgets. This had the implication of requiring corporate funding for the corporate strategy with sufficient structural arrangements to perform the function.

Process:

The fact that the interpretation of business and its processes/functions were to be conducted in collaboration with the respective functional authorities created a firm basis for alignment of solutions to requirements.

Participation and Collaboration:

The establishment of a core team to serve as a centre of excellence for the DOD with continuous improvement through formal and informal interaction with the user environment, academia and other functional area experts provided a solid basis for continuous improvement. Sharing knowledge under full configuration management became an absolute imperative.

The definition of functional requirements for ICT solutions necessitated that the core team had to be augmented by functional area experts with a clear

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**

definition and understanding of the respective roles and responsibilities.

Skills and Capacity:

There had to be a certain minimum understanding and knowledge base – practical and theoretical – for the establishment of an enterprise-orientated strategic ICT planning approach given the range of skills required to manage the function at corporate level. This should include the ability to focus on strategic, business and ICT issues with due consideration of requirements for structure and capacity.

Regular workshops of both the core team and the core team augmented by the functional user experts had to be conducted to ensure a system of checks and balances with due consideration of theory and practice.

Tools:

Strategic ICT planning enabling tools should cover the total life cycle of the business system and the information system.

The strategic ICT planning tools should be able to manage an extremely large volume of organizational and planning data under full configuration management with appropriate data access for architects, users and systems developers/ integrators.

Comprehensive ICT planning tool support is required to facilitate and enable the strategic planning process.

Value to Scientific Theory

Policy and Plans:

The business plan for the strategic ICT planning function had to be widely communicated to ensure that there was appropriate acceptance and approval of the intention with clear objectives that started at corporate management level.

A formal business model for the DOD as a whole had to be developed and approved by corporate management with full participation of Service and Division Chiefs at business unit level to ensure appropriate management of the function.

Functional Information System Master Plans and Strategic ICT Business Plans had to be defined for each Service and Division as this approach still reflected the decentralised approach with limited corporate management. A corporate strategic ICT Master Plan and Strategic ICT Business Plan presents a descriptive definition of strategic intent.

Process:

The initial approach and process required full participation and collaboration of all users, ICT planners and contracted consultants. All of these had different opinions on what the process should be and how it should be applied. The formalisation of these in terms of concept, principles, framework and the intended application of the above must be clearly communicated.

The decision to follow an EAP approach for ICT systems planning was due to the complexity of the organization and the requirement for configuration

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**

management over planning information. The processes utilised before did not allow for the degree of definition required to ensure a top-down approach for integration that commenced by interpreting the strategic intention of the organization and the functioning of the organization in its endeavour to realise its strategic intention.

Participation and Collaboration:

There has to be a clear, prioritised and agreed-to programme for planning that is approved by all role players and stakeholders to ensure appropriate collaboration and allows for performance in accordance to an approved plan.

Regular communication sessions, both formal and informal, had to be conducted to ensure full transparency and involvement of all role players and stakeholders. This was related to participation in the strategic ICT planning process and for the approval process at both business unit level and at corporate level.

Resource contributions including human resource and finances had to be clearly defined and approved at corporate level to ensure that sufficient and appropriate resources would be available as and when required.

Skills and Capacity:

The participation resulted in a continuous process of development where a progressive approach towards improvement of skills and capacity was followed.

A formal and informal process of change management had to be conducted even though it is not deemed essential that each activity of each improvement cycle as required for Action Research should slavishly follow in sequence. Sometimes it became appropriate for some steps to be skipped and not necessarily in sequence. The situation will dictate and flexibility is essential. This increases the requirement for configuration management both over the process and the use of the strategic ICT planning process.

Tools:

In the process of considering tools that would be appropriate to enable and support a comprehensive enterprise architecture approach towards strategic ICT planning it is essential that it has ease of use for both the architects as well as the functional users.

The ability to integrate the architectural artefacts and manipulate the primitive architectural artefacts into composites for design purposes is an imperative. This is due to the fact that the ICT system life cycle commences with the corporate strategy and should be able to address all the functional processes in the organization with due consideration of roles and responsibilities.

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**
Activity 3: Establishing a Methodology for Strategic ICT Planning in the DOD.		
Diagnostic Stage: The nature of diversity in the approach towards the establishment of an appropriate strategic ICT planning process was driven by the fact that the Defence Enterprise Information System was previously managed in a decentralised manner. This not only led to different planning approaches that ranged from just buying hardware and software as and when required to having some kind of an Information Systems Master Plan (ISMP). In some instances the ISMP was only representative of a single function such as for example the Logistics Information Systems Master Plan of the SA Air Force. In most instances such Master Plans were representative of physical ICT solutions that could be compared to ICT procurement schedules. In terms of applications and higher order systems management there was a formalised structure, the Board for Computer Information Systems (BCIS), that resorted under the Logistics function of the DOD. The problems that were encountered were primarily centred around: The non-integrative nature of strategic planning. The fact that planning was very much decentralised and performed by and for each business unit, being the Services and Divisions. The fact that strategic planning was mostly focused on user specific functional applications and enabling technology. Duplication of solutions and information	Researcher – Client Agreement: The management arrangements and mechanisms as well as the functional arrangements that were put in place were utilised extensively to ensure that the process was developed, implemented and institutionalised. Cyclical process: The approach towards developing the strategic ICT planning process was based on a continuous improvement process as being dynamically iterative with full participation of all role players and stakeholders. This involved all levels of the organization as appropriate to the analysis of the business, the definition of architectures and artefacts, the logical design of appropriate solutions and the presentation of Functional Information System Master Plans. Guiding Theory: The theory that was initially utilised was beginning to be augmented by theory on social systems as well as organizational renewal and change management. Change through Action: The progress and the process of continuous review and interrogation to ensure that an appropriate process could be developed, implemented and institutionalised brought about the reality that the process was not the exclusive domain of the CMIS (ICT) functionaries that this time was largely centralised. It also became urgent to establish a functional language that bridged the technical gap between the ICT specialists and the user	Transparency of Competence-in-Stock: There was an initial establishment of a basic competency and reference framework that was developed through some common training (external and internal) regarding the nature of ICT, the training being both formal and informal in nature. Real-time Capture of Competence-in-Use: The enhancement and organizational expansion of the strategic ICT approach and methodology was facilitating by ensuring user involvement in the collaborative management (improvement and utilisation) of the strategic ICT planning process. This expanded sufficient understanding and competence in the DOD as a whole to the point where the utilisation of the EAP approach was understood to be wider than just for the management of the ICT system. In the process Standard Operating Procedures (SOPs) were established to support the strategic ICT planning process as supported by an EAP approach. Interest Integration as Competence-in-Making: The establishment of a wider understanding of the potential value of the EAP approach that commences with business and its strategic intent that could then be extrapolated across a number of different organizational uses served to continuously expand the methodology. As such the establishment of the strategic ICT planning approach, methodology, processes and procedures served to influence greater organizational change

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**
infrastructure. A non-integrated ICT solution given the convergence of technology and the requirement for functional integration between the respective DEIS components. Decentralised contracting for ICT solutions support. An absence of a comprehensive policy framework that could guide the utilisation of ICT from a corporate perspective. The absence of appropriate management arrangements and mechanisms to ensure corporate yet collaborative management of the ICT function in the DOD. The fact that the emphasis was on the information system as opposed to being driven by the requirement for defence information to be managed as a strategic resource and a commodity. Therapeutic Stage: To ensure that the corporate approach towards establishing a strategic ICT planning process the emphasis was guided by the overall strategic ICT management process with the emphasis being placed on information as a strategic resource and a commodity. To this end the following was established to guide this phase of the process and the research: Issue 1: There would be an approach based on total systems management under full configuration	environment. The emphasis was to focus the user on the functional system requirement, whilst the technical solutions are being developed by the ICT specialists in full collaboration with the users.	in the DOD. This resulted in for instance the corporate decision that no organizational renewal would be considered if not supported by approved business architecture. Flexible Reporting as Contribution to Competence-in-Making: The fact that control over the execution of the strategic business plans and the involvement of the budget authorities in the DOD was managed at corporate level by means of the DSC via the CMIS staff Council and other Councils and Boards as relevant to the Services and Divisions ensured that the improved knowledge base was captured and continuously improved. This led to the identification and formal addressing of certain issues of interpretation of existing theory related to the way in which the theory should be applied to achieve results. This was with the increased understanding of organizational complexity that influences the general approach of strategic ICT planning given the specific nature of the organization.

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**
management with through-life management. Issue 2: There would be a single standardised strategic ICT planning process that can be utilised and sustained that would guide the overall management of the CMIS and Services. Issue 3: There would be appropriate management arrangements and mechanisms to ensure full collaborative management of the defence Command and Management Information system and Services. Issue 4: There would be a single DOD Information Systems Master Plan to guide the management of Information Systems and the utilisation of ICT in support of these systems. Issue 5: There would be appropriate structure and capacity that is commensurate with the ICT management function to ensure the appropriate utilisation of resources and delivery of ICT solutions.		

Activity 3: Summary of Learning through reflection. Given the nature of actually establishing a process by moving from the "what" should be done to "how" it should be done, the following can be presented as forthcoming from this research for this phase of the research.

Value to Organization

Policy and Plans:

It was essential to establish of a comprehensive regulatory framework that would guide defence ICT-related policy for and within the DOD with due consideration of both corporate and business unit level implications.

A formalised planning process had to be established within the DOD to ensure that all activities as well as resource allocation and utilisation could be managed in a well-coordinated and orchestrated manner within the DOD to ensure integrated output as relevant to the ICT function.

Formalised guidelines for planning had to be provided from a corporate level to all budget authorities that had an ICT function.

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**

Process:

The strategic ICT planning process had to ensure cognisance of both corporately common and transverse solutions as well as of solutions that might be unique to specific user environments.

Participation and Collaboration:

The establishment, implementation and institutionalisation of the processes and policies had to be collaborative in nature with continuous and specific communication of the strategic ICT process and its deliverables through all the appropriate organizational mechanisms. Ratification of all decisions had to be done at corporate level subsequent to functional approval in appropriate forums.

Skills and Capacity:

The establishment and continuous improvement of appropriate skills and capacity had to be managed as a progressive task to ensure that the developing strategic ICT planning process could be adequately performed and sustained within the DOD.

The ability to identify environmental and sometimes statutory roles and responsibilities external and internal to the DOD played a key role in the ability to define, attract and sustain skills and capacity.

Tools:

The ability to support the developing strategic ICT planning process and the eventual expanded functional application of appropriate toolsets was considered an imperative, even though the development of the requirement for such a toolset took place in parallel to the development of the planning process.

Project management and configuration management of strategic ICT planning data was a strategic issue especially in view of the requirement for re-use.

Value to Scientific Theory

Policy and Plans:

The ability to capture the strategic ICT planning approach, methodology, processes and procedures in approved policy as part of the defence (enterprise) regulatory framework becomes an imperative to ensure institutionalisation in the organization.

The fact that a multitude of suppliers provide solutions to the DOD necessitated that the DOD be the primary system integrator at user system level which in turn led the requirement to establish a formal business and contracting model for the ICT management function in the DOD. This became relevant on all levels of the systems hierarchy as appropriate to the DEIS over its total life cycle.

Process:

Clear guidelines for the management of ICT and ICT management activities as appropriate to unique and transverse or common tasks and responsibilities had to be provided to facilitate the activities of both corporate and business unit management. This was driven by the specific nature of the DOD as a diversified

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**
organization. The establishment of a top-down approach to support integration by design was required with physical integration of solutions taking place from the bottom-up as built. This provides the ability to continuously ensure vertical and horizontal alignment between the ICT system components as well as between business and the information system with full consideration of its systemic implications. *Participation and Collaboration*: The dialectic relationship between corporate interests and business unit interests had to be managed dynamically with delegations forming an imperative part of comprehensive ICT management. It serves to guide the allocation and execution of roles and responsibilities whilst at the same time contributing towards and ensuring structure. *Skills and Capacity*: The establishment of a business-orientated vocabulary that could bridge the technical ICT vocabulary and the normal military/business vocabulary had to be established to ensure appropriate understanding and acceptance. *Tools*: The ability to maintain ICT planning tools had to be addressed as an imperative with full consideration of the out-sourcing model utilised within the DOD.		

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**
Activity 4: Problems Encountered with the Strategic ICT Planning Process of the DOD		
Diagnostic Stage: As indicated from the previous stage (activity) the problems encountered relate to the ability to institutionalise the strategic ICT planning process rather than the process itself. The ability to ensure collaboration for alignment with the DOD Strategic Direction and the DOD policy framework became a serious obstacle for the requirements to workshop the process as well as the resultant DEIS strategic direction. The ability to obtain buy-in from the users and the system management with full sanction by corporate and business unit managers became in essence the focus of the problem. Up to this point it was largely considered an academic exercise. The problem was that the DOD had to follow the ICT Strategic Direction once approved. This was effected by the need for formalised structural arrangements and mechanisms that would be representative of corporate initiatives and related representatives whilst at the same time including business unit management in the decision making process. Therapeutic Stage: The following was addressed during this stage of the research: Issue 1: The establishment of appropriate DEIS management arrangements and mechanisms became an imperative that had to be managed in parallel with the strategic ICT planning process to facilitate participation and collaboration. Issue 2: This had to be done with due consideration	Researcher – Client Agreement: It was considered appropriate that the lead from a defence perspective had to be balanced between the C CMIS and the GITO. The problem was that the GITO functions were only partially performed by the C CMIS. This placed the C CMIS in an awkward position where he/she functioned as both 'player' and 'referee'. As indicated in this report the decision was taken to separate the GITO and the CMIS Division to ensure that a dialectic relationship could be established that would be based on formal collaboration with specific structural arrangements. This was ratified by the DSC and the Council on Defence under the Chairmanship of the Minister of Defence. Cyclical process: The development of the structural arrangements and mechanisms was the result of dynamic interaction between the GITO and the C CMIS that commenced with the development of specific concepts that would guide the structuring. This was a process that lasted for a period of approximately three years and started whilst the strategic planning process was still an integral part of the centralised CMIS Division. In parallel to this the participation of both the C CMIS as the primary CMIS System integrator and the then Director Enterprise Information Systems Architecture in the DOD Organizational Development Work Group (DODW) subjected the design and approval of the structural concepts to	Transparency of Competence-in-Stock: The existing body of knowledge as collectively represented in the DODW with the full participation of corporate business renewal services drew on vast expertise. Real-time Capture of Competence-in-Use: The existing knowledge about organizational structuring in combination with the functional knowledge of ICT management led to synergy being reached with due consideration of not only functional, but also structural arrangements. This reached a point where even though the rest of the organization, in particular some of the other resource management functions, were still vigorously debated, the structural arrangements regarding the Defence Enterprise Information System and its managements were concluded. Interest Integration as Competence-in-Making: The fact that the focus in this particular instance could be retained on the management of the ICT systems and services function within the DOD, ensured integration. In addition to this the further studies undertaken ensured that a balanced and academically sound approach towards very practical issues could be sustained. This not only resulted in the formalisation of appropriate structural arrangements to facilitate strategic ICT planning, but also enhanced the understanding of the nature of the function to the point where it contributed towards the approval of the DEIS SD

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**
of unique ICT solutions and common or transverse ICT solutions and/or services. Issue 3: This led to the development of models and frameworks that guided the participation in the process, the allocation of roles and responsibilities with due consideration of the nature of the DOD as a diversified organization, and the delegation of powers and functions in accordance with the corporate management paradigm of the DOD. Issue 4: In addition to this the dialectic relationship between the Defence Secretariat and the SANDF functions had to be sustained to ensure compliance with the national regulatory framework.	DOD scrutiny. This is a process that was reiterative and dynamic in nature with the continuous system of checks and balances being centred on not only the ability to manage the Defence Information System, but the ability to actually function as an integral part of the DOD with due consideration of corporate management and business unit (Services and Divisions). In addition to this the constant validation of progress was tested at Defence Staff Council level as well as at functional staff council level. Guiding Theory: The basic theory for this phase of the research was augmented by the work of Mintzberg (1998), Pearce and Robinson (2003), Thompson and Strickland (2003), as well as Ward and Griffiths (1996). Issues pertaining to alignment were guided by for instance Luftman as well as Lewis, Goodman and Fandt (1998). Aspects regarding change management as forthcoming from Lewin (1951) and Bjorkman (1989) contributed towards enhancing the understanding. Change through Action: The changes that were brought about were due to the fact that there were appropriate forums within the DOD where the increased understanding could be communicated and enhanced. This ability to discuss the problems not only the problems encountered, but also the proposals for improvement as well as requirements for integration and alignment of structural options in parallel with the opportunities increased buy-in. This acceptance and	as the results of applying the strategic ICT planning process. This went a long way towards effectively managing the issues of change to internalise and institutionalise the strategic ICT planning process and much more in terms of the ICT management function. Flexible Reporting as Contribution to Competence-in-Making: Participation by the GITO in the executive and corporate management forums with a clear ability to interact at functional systems management level established the 'connect' between corporate management and business unit level management. It further enhanced the ability of users to interact with the DEIS management at both corporate and business unit level related to strategic governance and solutions management. This flexibility within formalised structures contributed to structural integrity which in turn can now be extrapolated to systems management.

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**
	participation greatly enhanced the formal approval and ratification process. The increased academic training of the two primary participants, being the GITO – this researcher – and the C CMIS who embarked on an MBA course ensured that the issues could be addressed from both an academic as well as a practical perspective.	

Activity 4: Summary of Learning through Reflection. In view of the fact that this was the initial stages of the research and the fact that it was driven by the practical establishment and institutionalisation of an appropriate strategic ICT planning process the following can be presented as concluded from this research:

Value to Organization

Policy and Plans:

It was necessary to establish a firm understanding and definition of the external governance that impacted on the organization as a whole and its implications on the organization in its internal functioning.

The ability to guide the activities indicated above was resultant from the ability to define and formalise the function within the overall process given the nature of the solutions. This was in compliance to the DOD approach of systems and process management.

Process:

The processes that would guide the establishment, utilisation and sustainment of lines of command throughout the organization had to be formalised and institutionalised.

The separation of those system components that would be corporately common as well as those that are functionally unique to a specific user group could also be defined with due consideration of the nature of the organization as guided by specific business considerations such as value for money, efficiencies, and effectiveness.

The functional ICT management processes as well as structural arrangements had to be formalised to guide the formalisation of roles and responsibilities for all structural arrangements within the framework of the ICT structural context.

Participation and Collaboration:

Participation for the purpose of an expanded knowledge base as well as for purposes of corporate alignment of the structural management arrangements formed part of the corporate DOD Organizational Development Work Group (DODW) initiative.

Skills and Capacity:

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**

Specific ICT management skills had to be developed with due consideration of centralised and decentralised ICT management activities given the nature of the DEIS.

Change management efforts had to include the institutionalisation of the dialectic relation that existed between the Defence Secretariat and the SANDF to ensure that the respective functions could be performed as a system of checks and balances.

Tools:

The volume of architectural artefacts necessitated sustained configuration management over all architecture data.

The ability to integrate a comprehensive set of tools became an imperative as the process that commences with strategic architecture through business architecture to logical ICT solution target architectures required a combination of tools. These tools comprised of business analysis tools and system analysis and design tools.

Value to Scientific Theory

Policy and Plans:

A formalised policy framework was required to ensure that the corporate perspective for managing ICT could be extrapolated across all business units to create a basis for strategic ICT planning that could accommodate both common and unique requirements.

Functional delegations had to be formalised regarding the management of the DEIS for both corporate and business unit management.

Process:

From the above a value chain could be compiled for the ICT management function and this could in turn be utilised to define a “concept of operations” that could be utilised to guide the interaction with the user environment and serve to guide the management arrangements and responsibilities for the function.

Participation and Collaboration:

With a clear understanding of the higher order nature of the organization as appropriate to both corporate management and business unit management as well as the relationships between these respective environments a clear understanding of the nature of the corporate relationship as appropriate to the ICT management function should be established.

This interpretation of roles and responsibilities given the nature of the organization and the nature of the information and communication systems drove the formalisation of such roles and responsibilities as far as delegations and structural arrangements are concerned.

Skills and Capacity:

Appropriate understanding based on a formalised policy framework for the enterprise had to be established to guide the development of skills and capacity

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**
throughout the enterprise covering both corporate and business unit ICT management. *Tools*: The requirement for the utilisation of tools by all role players and stakeholders necessitated the establishment of a utilisation model for an Integrated Enterprise Architecture Solution (IEAS).The requirement had to accommodate the requirement for Enterprise Architects to produce architectures, the ability of users to approve and utilised specific strategic and business architectures, the requirement for IEAS specialist ICT support and the required infrastructure to ensure its accessibility across the distributed diversified organization. The establishment of corporate meta-models to guide design imperatives in accordance with organizational concepts and constructs became a necessity to serve as a common framework.		

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**
Activity 5: Review of the Management Arrangements for the Strategic ICT Planning Process of the DOD		
Diagnostic Stage: The management arrangements as was in existence since the inception of the corporate ICT management function and commensurate structural arrangements had as a basic point of departure the focus to ensure that all defence ICT systems were managed from a holistic perspective from strategic conception to disposal. As such the CMIS Staff Council functioned as the single point of interaction for the complete function. The next issue that was contrary to the dialectic nature of the DOD was the fact that there was no separation of duties and responsibilities as appropriate to the functions of the Secretary for Defence and the C SANDF. This inhibited the separation of direction and control over execution from the execution itself, a factor which ran in the face of "civil oversight over the military". In addition to this there was no separation of function in terms of corporate management versus business unit level management or as for the DOD managing ICT within the Services and Divisions. Therapeutic Stage: The remedy for this was: Issue 1: To ensure that there was sufficient definition of the roles and responsibilities as appropriate to the functions of the Secretary for Defence and the C SANDF. Issue 2: In addition to the roles and responsibilities it was deemed and indeed agreed within the ICT function as well as within the rest of the DOD that	Researcher – Client Agreement: Once again the mechanisms that were used revolved around discussions between the then DEISA and the C CMIS. It needs to be mentioned that the DEISA was at that stage working for the C CMIS. The fact that there was a common agreement between these two individuals that was guided by the same set of principles was due to the underlying logic that existed with due consideration of the ICT management function and the nature of the organization as taken from the regulatory framework. Sanction for the development was provided by the Minister of Defence via the Defence Staff Council (DSC) in response to work done by the DODW. Both the functional area specialists as indicated were functioning as full members of the DODW. At this stage the C CMIS was also a full member of the DSC. Cyclical process: In as much as the process of defining the appropriate structures was concerned there was a constant discussion between the C CMIS and the researcher who at this stage had already started the actual research and thus served to actively participate from a practical as well as a research perspective. The principal (C CMIS) was aware of this situation and actually approved the topic of study from a DOD perspective. The definition of the solutions was a progressive build-up of facts that led to concept and construct as eventually approved and ratified. This period of	Transparency of Competence-in-Stock: The nature of the wider collaboration was dependent upon a number of role players and a constant system of checks and balances. As such the collective knowledge of the organization was not necessarily reliant upon existing theory, but largely on the skill to apply such knowledge from theory into practice. This became evident from the increase in understanding that led to improved synthesis of the solution for structural reform of the ICT function in the DOD. Real-time Capture of Competence-in-Use: The expansion of the overall organizational competence was due to the fact that all the relevant forums utilised for either discussion or approval or simply for information, served as points of aggregation and integration of different views and perspectives. This approach increased the level of understanding within the organization and allowed the freedom of movement that was required to actually bring a new structural approach and design to fruition. This new understanding was subsequently reflected in the formal policy framework of the DOD. Interest Integration as Competence-in-Making: The fact that all users, role players and stakeholders was either directly affected by the refocusing of the ICT management's structural arrangements necessitates collaboration and participation. This is a prerequisite and was constantly managed actively. In addition to this vertical integration

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**
there should be a separation of duties regarding the management of the Defence Enterprise Information System as appropriate to the nature of the organization between the GITO and the C CMIS.	constant definition and review continued for approximately two years and was approved in 2006 as indicated above. Guiding Theory: The guiding theory that influenced this part of the research was largely based on systems theory as presented by Sage and Rouse (1999), organizational design as from Robbins (1997), process-centred organizations as from Hammer (1996) and once again change management as from Lewin (1951) The implications for the diverse organization was guided by Thompson and Strickland (2003). Additional reading augmented all of the mentioned referenced works. Change through Action: The continuous involvement of the researcher in his capacity as the DEISA in collaboration with the functional authority for ICT (referred to as CMIS in the DOD prior to this stage) and the constant consultation with role players and stakeholders throughout the organization in structured and unstructured session, formal and informal discussions resulted in a continuous process of unfreezing, change and refreezing. The down side of this was that it added to the structural instability that resulted from the overall transformation and constant change of the DOD.	throughout the organization was effected via the approval mechanism (forums) that function within and between corporate and business unit level management. Flexible Reporting as Contribution to Competence-in-Making: With due consideration of the process and activities indicated above the dynamic iterative cycle of review and continuous improvement necessitated that the nature of the issues to be resolved had to be addressed by the respective forums. In addition to this the participation in forums that were by nature multi-disciplinary added to the collaboration and the system of checks and balances. As such the fact that members of ICT related forums had for instance two roles to play, that of ICT user requirements management as well as functional involvement to ensure compliance to other functional disciplines such as financial management, HR management, etc. As such the whole network of interaction was mobilised towards the objectives and issues of ICT management in the DOD. This assisted in expanding and improving the competence base of the DOD.
Activity 5: Summary of Learning through Reflection The main issue for the successes achieved with the establishment of appropriate structural arrangements and mechanism were centred on the following when considering the functional requirement of the job and the dialectic nature of the relationship between corporate management and execution as appropriate to the business units. Value for Organization		

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**
Policy and Plans: The GITO as the functional authority for ICT was responsible for corporate management of the ICT function and the C CMIS was responsible for the ICT systems and its integration across the organization as a whole. The strategic ICT direction (DEIS SD) would be derived from the focus for information management as reflected in the DOD Information Strategy, the Information Systems approach and the contextual functionality as presented in the DEIS Framework to guide the DEIS Master Plan. Corporate sanction was required for the establishment and institutionalisation of these arrangements and structures. *Participation and Collaboration*: The relationship between the GITO and the C CMIS is one of full collaborations that are two sides to the same coin but with different viewpoints. *Skills and Capacity*: Structural arrangements related to the management of the ICT function had to be formalised for corporate management of the DEIS Governance, the management of the ICT product system (referred to as the Command and Management Information Systems or CMIS) in collaboration with the users and the management of the relationship between the GITO and the C CMIS as being representative of the total life cycle management of the DEIS throughout the DOD. *Tools*: An appropriate Integrated Enterprise Architecture Solution toolset had to be acquired and implemented with full consideration of the systemic implication of such a tool such as policy implications, training implications, maintenance and support implications, etc. <u>Value for Scientific Theory</u> *Policy and Plans*: Strategic management had to address issues of DEIS Policy, Strategic Direction, ICT Solutions management as reflected in the respective strategic business plans at both corporate and business unit – services and divisions, and control aspects related to risk, performance and compliance management as appropriate to these foci. *Process*: The operations management of the systems and the keeper of the ICT related standards is the C CMIS in his capacity as primary systems integrator. Such standards would, however, be guided by the strategic focus for the utilisation of ICT as provided by the GITO and the demands of the user environment. The DEIS Strategic Direction (DEIS SD) therefore consisted of three primary components being the DOD Information Strategy that provided the corporate strategic intention of the DOD towards information management and the change to be effected over time; the DEIS framework as the corporate definition (contextual construct of the DEIS) to serve as a corporate guide for the DEIS Plan, and the Defence Information and Communication Technology Architecture		

<table>
<tr><th colspan="3">SUMMARY OF ACTION RESEARCH PROJECT</th></tr>
<tr><th>Research Activities</th><th>Practice (Praxis)</th><th>Theory (Theoria)</th></tr>
<tr><td colspan="3">that presented the ICT timeline for the utilisation of ICT within the DOD.

The composition of the DEIS SD provides the flexibility for the causal relationship that exists between the three foci for managing the DEIS from a systemic perspective to be managed dynamically given the nature of the solution. It also facilitates sustainment in terms of the specific corporate focus towards information management. This allows for continuous improvement of the organizational maturity regarding information management. If one has to be changed, it does not automatically follow that they all have to be changed.

Participation and Collaboration:

Corporate management (the GITO) was responsible for providing strategic governance consisting of strategic direction and policy for the enterprise for the ICT management function. The GITO was also responsible to ensure appropriate resource allocation (money) for execution of the Defence Enterprise Information Systems Master Plan (DEIS Plan) and ensuring that there was sufficient capacity and structure across the enterprise to facilitate the execution of the DEIS governance.

Skills and Capacity:

Structural arrangements related to the management of the ICT function and the strategic ICT planning process is the key success factor to institutionalise the process and not merely the design of a strategic ICT planning process.

Full collaboration and participation of all relevant role players and stakeholders is essential to institutionalisation.</td></tr>
<tr><td colspan="3"><u>Activity 5.1</u>: Identification of Required Structural Interventions</td></tr>
<tr><td><u>Diagnostic Stage</u>: This stage was characterised by a thorough investigation of the regulatory framework as appropriate to defence and the implications thereof on the management of defence information, defence information systems and the utilisation of ICT to enable the system and information as a resource.

<u>Therapeutic Stage</u>: This stage was characterised by the increased understanding of the nature and implication of the appropriate regulatory framework and defence-</td><td><u>Researcher – Client Agreement</u>: The agreement was confirmed by the establishment of the GITO as approved by the Minster for Defence as part of the capacity of the Defence Secretariat. As such the GITO – this researcher – reported directly to the Secretary for Defence and was included in the corporate management team of the DOD.

<u>Cyclical process</u>: Once again the process followed was dynamically iterative with due consideration of the participation of relevant role players</td><td><u>Transparency of Competence-in-Stock</u>: The same skills were in evidence as relevant to the function of structuring with due consideration of the task at hand.

<u>Real-time Capture of Competence-in-Use</u>: This was a constant process of discussion and review to ensure that there would be alignment with the general direction of the transformation of the DOD as appropriate to the management of the DEIS.

<u>Interest Integration as Competence-in-Making</u>: The process was managed around the increased understanding and the ability to define those concepts and constructs that were necessary to ensure understanding, acceptance and approval of the new designs.

<u>Flexible Reporting as Contribution to Competence-in-Making</u>: The standard mechanisms were utilised with full participation from both a functional and a</td></tr>
</table>

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**
related strategic direction towards the management of the DEIS. It was also characterised by the following: Issue 1: The formalisation of the GITO function to ensure the separation of the corporate responsibility for managing the DEIS from the functional responsibility for managing the CMIS as the primary system integrator. Issue 2: The formal participation of users in the Corporate DEIS Board to management the DEIS at corporate level in collaboration with the DEIS management (GITO and C CMIS). Issue 3: The establishment of a corporate management mechanism to ensure corporate management of the DEIS as a system with full collaboration between the GITO and the C CMIS as the functional authority and the primary ICT system integrator. This resulted in the establishment of the Joint Information System Management Board (JIS Board). Issue 4: The establishment of an ICT operations focused management mechanism that functions at business unit level to ensure ICT systems management and integration with full	and stakeholders. The involvement of the Organizational renewal functionaries became more prominent to ensure adherence to DOD policy for structuring. Guiding Theory: The guiding theory revolved around the theory as indicated for activity 5 with the addition of the strategic ICT planning process as developed from Ward and Griffiths and indicated in Activities 1 – 4. Change through Action: The same dynamic participation in DOD functional, structuring and executive forums occurred as previously described.	user perspective to ensure a balanced approach that would be focused on delivery of the required systems and services.

<table>
<tr><th colspan="3">SUMMARY OF ACTION RESEARCH PROJECT</th></tr>
<tr><th>Research Activities</th><th>Practice (Praxis)</th><th>Theory (Theoria)</th></tr>
<tr><td>participation of users. This resulted in the establishment of the Command and Management Information System Management Board (CMIS Board).

Issue 5: Ensuring that there was full collaboration between the ICT-related management forums and business management forums.</td><td></td><td></td></tr>
<tr><td colspan="3">Activity 5.1: Summary of Learning through Reflection. The following issues were derived from this stage.

Value for Organization

Policy and Plans:

The ability to exercise control relates to corporate risk management, performance management and compliance management for the DEIS Function.

Participation and Collaboration:

Collaboration between the users and the DEIS solutions managers had to be established to ensure that it would remain two sides of the same coin with a clear distinction between the respective roles and responsibilities.

Skills and Capacity:

The GITO had to be structured to accommodate corporate strategic direction of the DEIS, corporate DEIS policy and the ability to exercise strategic control over the function in terms of intention, resource allocation and utilisation and the delivery of ICT solutions.

The CMIS Division had to be structured to be compliant to its CMIS solutions management function.

Users had to be capacitated to manage their respective requirements and also to be in a position to utilise the CMIS and services provided.

Tools:

The requirement for general management/administrative tools as part of the Defence Common Information System (CIS) became a necessity, with commensurate user training.

Value for Scientific Theory

Policy and Plans:</td></tr>
</table>

<table>
<tr><th colspan="3">SUMMARY OF ACTION RESEARCH PROJECT</th></tr>
<tr><th>Research Activities</th><th>Practice (Praxis)</th><th>Theory (Theoria)</th></tr>
<tr><td colspan="3">There had to be full participation between the users and the DEIS solution managers to ensure that solutions were aligned with the strategic intention of the DOD and with appropriate requirements, given considerations for sustainability, rules of scale, effectiveness and efficiencies, and relevance.

Process:

The processes that had to be established had to ensure alignment between the process related to managing the DEIS and the appropriate structural arrangements and mechanisms throughout the organization.

Participation and Collaboration:

The differentiation between the DEIS and the CMIS revolves around the fact that the DEIS has a corporate systemic implication for ICT management and therefore a more requirements-orientated approach, whilst the C CMIS has a product system management implication and therefore a solutions management implication.

Skills and Capacity:

General management skills as appropriate to all participants had to be developed to ensure appropriate execution of the respective strategic business plans at both corporate and business unit levels.</td></tr>
<tr><td colspan="3"><u>Activity 5.2</u>: Establishment of Appropriate Structural Arrangements</td></tr>
<tr><td>Diagnostic Stage: Subject to the intention to separate strategic corporate management of the DEIS from the physical management of the CMIS and services the nature of this relationship had to be resolved. This had to be done by primarily the GITO and the C CMIS with full participation of relevant role players in the DOD. This also had to be done with due consideration of both corporate commitments and business unit level commitments as well as the interaction required to manage the relationship between these responsibilities.</td><td>Researcher – Client Agreement: The establishment of the GITO and the separation of the new management arrangements and mechanisms were formalised via the DODW and the DSC and finalised in its new construct in terms of the Ministerial Directive of May 2006.

Cyclical process: The same dynamically iterative process as was utilised up to this point was used to ensure full participation by all those who should be involved. It was, however, apparent that the cycles became fewer and the time for discussion decreased. This was</td><td>Transparency of Competence-in-Stock: The competency that existed the same as for the whole of Activity 5.

Real-time Capture of Competence-in-Use: The competency that was added to the existing competency in real-time was related to the ability to interpret the existing theory and the nature of the organization and preset it as n concepts and constructs that would be and were actually utilised to guide the review and formalisation of the management arrangements and mechanisms as appropriate to the DEIS management function and the nature of the DOD.

Interest Integration as Competence-in-Making: This was done through the ability to establish sufficient consensus to obtain approval via the form management mechanisms such as the CMIS Staff Council. The CMIS Staff Council was renamed and refocused towards corporate DEIS management and its supporting sub-structures (forums and responsibilities) were defined and formalised. The newly established DEIS Board is functioning within the new paradigm and is in the process of institutionalisation as part of the</td></tr>
</table>

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**
Therapeutic Stage: During the formalisation of the new approach towards the management of the DEIS the following issues were addressed: Issue 1: Formalisation of the regulatory framework as relevant to the management of the DEIS from a defence perspective. Issue 2: The establishment of the process that would be utilised for managing the DEIS. Issue 3: The formalisation of a concept of operations that would guide the management and allocation of responsibilities towards managing the DEIS. Issue 4: Differentiation of the concepts of the DEIS as being the systemic defence enterprise information system and the CMIS being the product system that was the focus for primary systems integration as a part of execution. Issue 5: Clarification of roles and responsibilities for the GITO as the functional ICT authority for the DOD and the C CMIS as the primary system integrator of the ICT (CMIS) systems. Issue 6: Involvement of both the	directly due to the fact that there was an improved understanding of the intentions of the initiative, the issues surrounding the initiative, the options and implications of the proposed options and the commitment towards overall improvement of the DOD of which the optimisation of the DEIS management function was a component. Guiding Theory: The theory as indicated already was utilised, but was expanded by the increased understanding of the issue at hand. Change through Action: The changes were brought about by the continuous interaction and communication with role players and stakeholders. The final contribution towards the change was the fact that a formal report was presented that was transformed into a decision brief for approval by the C SANDF and the Secretary for Defence which was followed by an implementation instruction for the DOD as a whole. This captured the change in policy and made it enforceable. This does not imply that the current management arrangements and mechanisms will not be subjected to continuous improvement.	Defence management mechanism. Flexible Reporting as Contribution to Competence-in-Making: The standard interactions with full participation of both the CMIS manager and the GITO with their participation in corporate and executive management arrangements and forums with full participation of both users and executive managers facilitated reporting according to the nature of the issues at hand.

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**
GITO and the C CMIS had to be clarified within the construct of functions and responsibilities within the DOD given the dialectic relationship between the Defence Secretariat and the SANDF. Issue 7: Inclusion of the management arrangements and mechanisms for the DEIS as part of the Defence Policy Framework. Issue 8: The formalisation of the focus and mandate of the management arrangements as appropriate to the DEIS Board, the Joint Information Systems Management Board and the CMIS Management Board.		
Activity 5.2: Summary of Learning through Reflection. The following was concluded from this stage: Value for Organization *Policy and Plans*: The same systemic model that is in use to address all structural arrangements within the organization had to be considered appropriate for the ICT solutions as it ensured that all aspects of the organization in its ability to utilise the ICT solution would be addressed. This had to be done with due consideration of the respective lines-of-business of the Services and Divisions. The same processes as was utilised for the management of all other policy related issues was to be used for ICT related policy issues given the nature of management arrangements within the DOD as a diversified organization. The same Enterprise Architectures utilised for managing the DEIS and its enabling ICT solutions would be utilised for business optimisation and renewal. *Participation and Collaboration*: Communication in all its formats should be utilised as appropriate to contribute towards establishment, implementation and institutionalization of the DEIS		

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**
Management function. *Skills and Capacity*: The requirement to expand the use of Enterprise to business improvement necessitated the expansion of EAP related skills to other functional areas. *Tools*: The ability to expand the use of Enterprise Architecture to functional uses other than for the management of the DEIS became a corporate imperative. As such the requirement for the utilisation of architectures for business development became DOD policy for organizational renewal. This is in the process of being expanded to include performance and compliance management throughout the DOD. Value for Scientific Theory *Policy and Plans*: The DEIS Regulatory Framework had to be interpreted from a systemic perspective where not only the technical solutions are addressed, but also all the systemic implication of the respective components of the solutions. This comprehensive perspective was particularly appropriate to corporate management. *Process*: The utilisation of standardised DOD processes and practice for ensuring appropriate strategic management of the DEIS function throughout the organization was a prerequisite. Do not change normal practice unless it is necessary due to the specific nature of the function. *Skills and Capacity*: General and specialist management skills required to manage the DEIS had to be addressed with full consideration of the external and internal issues and the requirement to ensure alignment between the DEIS and the organization.		

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**
Activity 6: Review of the Strategic ICT Planning Process and Methodology of the DOD		
Diagnostic Stage: In parallel to the process of reviewing the management arrangements and mechanisms the process of ensuring that the actual strategic ICT planning process continued. To this end the focus was on alignment to ensure that the definition and interpretations as forthcoming from the planning process could be aligned with the Defence Strategy. Even though there was interpretation of the environmental issues and direction during the process of formulating the DEIS Strategic Direction as it was now officially called, the necessity to departmentally prioritise and schedule the initiatives required a formal alignment activity for this to happen. Therapeutic Stage: The further improvement of the strategic ICT planning process was dependent on the ability of the responsible functionaries to participate in the DOD forums that had the task to manage the Strategic Directing function for the DOD. To this end the following considerations were appropriate: Issue 1: Identification of the relevant forums and mechanisms to manage and integrate/align DEIS governance (Strategic Direction and Policy). Issue 2: Ensuring participation in these forums to participate in the strategic business planning process to ensure that essential elements for the DEIS SD were captured in the Business Strategy. Issue 3: Ensuring sufficient collaboration of the	Researcher – Client Agreement: The full participation of the GITO and the DEIS Strategic planners within the DOD to ensure that the DOD strategic planning process would include the DEIS function as an integral part of the Defence SD was formalised by the formal participation of the DEIS SD personnel in the Defence Planning Forum and the Defence Budget and Planning Committee. This established and contributed towards the institutionalisation of the GITO as the functional authority for the DEIS in the DOD. In addition to this the GITO is a full member of the DSC that is the corporate management body of the DOD. This is augmented by the fact that the DEIS Board is the formal functional management forum at corporate level within the DOD. In addition to this the specific functional relationship between the GITO as the functional authority and the C CMIS as the primary integrator of the CMIS was formalised in the Joint Information Systems Management Board (JIS Board). This had the added implication of managing the horizontal system optimisation by design at the corporate level through the DEIS Board in support of higher structures and the vertical integration and interface between the corporate and business unit level in the JIS Board. Cyclical process: The holistic enterprise DEIS management imperative as well as the fact that the DEIS was managed from a total life cycle	Transparency of Competence-in-Stock: The competency was expanded to cover the issue of organizational integration and management at corporate and at business unit level. In addition to this the ability to execute the strategic ICT planning process was internalised and institutionalised within a core group of strategic ICT planners that served as the DOD centre of excellence on this subject. Real-time Capture of Competence-in-Use: With the establishment of the structural arrangements and the formalisation of the strategic ICT planning process the competency-in-stock was made explicit. This is confirmed by the specific procedures that were formalised for the strategic ICT planning process as part of defence policy and procedures. Interest Integration as Competence-in-Making: The participation of the DEIS strategic planning and policy functionaries in DOD planning and policy mechanisms as well as CMIS management forums sustained the interest and participation. From this perspective it also sets up the ability to exercise strategic control over the implementation and constant improvement of the SD. Flexible Reporting as Contribution to Competence-in-Making: The expansion of involvement in defence management structures to include the participation of to the strategic DEIS planners and

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**
defence strategic planning fraternity in the DEIS related SD to ensure common purpose. Issue 4: Establishment of a formal working relationship within the DOD with due consideration of participative forums to ensure participation and commitment.	perspective and related process, demanded a dynamic yet iterative approach towards sustaining the DEIS SD. This is confirmed by the design principle and characteristics of strategic management that requires constant alignment with the environment for the DOD as a whole. Guiding Theory: The existing theory referenced to this point as well as this particular research, has resulted in this specific interpretation of the theory. To this end the interpretations and application of such theory as appropriate is being formalised as official policy in the DOD. The issue of alignment is guided by the work of Luftman (1996) and business management perspectives as from appropriate theory. This ensures that the further enhancements of the process as practised, will continue to enhance the process and the understanding and application of relevant theory within practice and vice versa. Change through Action: The changes related to continuous improvement where effected by means of formalised participation in strategic business planning forums as well as corporate management forums by the functional authority for the DEIS being this researcher in his capacity as the GITO.	policy experts in such forums and mechanisms has created a broader basis of interaction. In turn this has enhanced interaction and the ability to address specific issues.
Activity 6: Summary of Learning through Reflection. The following specific issues could be taken from this phase. Value to Organization *Policy and Plans*: The autonomy of the respective services and divisions could not be decreased regarding their specific ICT solutions requirements as it had a strong correlation with their core business.		

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**
It was essential that the existing ICT (CMIS and Services) capability not be reduced during the process of CMIS enhancement or renewal as this would decrease the ability to function. *Process*: Issues to be addressed in the Information Strategy that focused on defence information as a resource and a commodity focused the provision of ICT solutions. *Participation and Collaboration*: Even with respect to the core business of the services and divisions there were certain functions that were generic to the enterprise. This had the implication that the potential for far more integration and standardisation of ICT solutions were possible than was generally accepted by the services and divisions. The perceived threat to autonomy placed greater emphasis on collaboration and participation. The representatives of respective services and divisions to the DEIS Board had to have sufficient seniority and had to be formally appointed by the respective chiefs of services and divisions. This had to be accompanied with appropriate delegation to represent them at corporate level. *Skills and Capacity*: The CMIS Division therefore was a joint organization with representatives of all user groups on its staff. Value to Scientific Theory *Policy and Plans*: There had to be specific management arrangements within the Services and Divisions that were operating at business unit level to ensure that an appropriate approach towards requirements management for such a business unit would be reflected as being commensurate with their respective lines-of-business. The focus of corporate DEIS management had to be on being descriptive whilst the services and divisions as serviced by the CMIS manager as the prime system integrator had a prescriptive approach towards the management of the CMIS. *Process*: The ability to standardise across services and divisions had the implication that a common culture had to be established regarding those specific functions that were considered unique, but found to be common. The common functions required a formal identification of the value chains for purposes of comparison of all the services and divisions as well as for the enterprise as a whole. Issues to be addressed in the Information Strategy that focused on defence information as a resource and a commodity revolved around the provisioning thereof.		

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**
Participation and Collaboration: The GITO as the functional ICT authority for the DOD was confirmed as a full member of the corporate executive management team. The need for feedback to and from the respective management forums of the services and divisions become an ever-increasing activity that was required to ensure full transparency and configuration management between corporate management and business unit level management.		
Activity 6.1: Continuation and Finalisation of Planning with New Process and Methodology		
Diagnostic Stage: The ability to sustain the strategic ICT planning process within the DOD was dependent upon the ability to continuously improve its definition and utilisation. To this end the ability to manage it became an imperative. Therapeutic Stage: The following issues were resolved: Issue 1: Establishing increased user involvement towards the formalisation of the DEIS Master Plan as a prescriptive definition of the CMIS and Services. Issue 2: Formalisation of strategic budget and planning guidelines for the implementation of the DEIS SD as part of the Accounting Officer's Budget and Planning Guidelines to all Budget Authorities in the DOD. Issue 3: Improved participation in national governance for the DOD through increased involvement in the current Defence Review and White	Researcher – Client Agreement: With the formalisation of mandates of the GITO and the C CMIS as well as those of the users and the participation and roles in responsibility in management arrangements and mechanism the researcher – institutionalised. The final part of this agreement is to make the findings of this research available to the DOD and the National Defence College as part of the corporate reference framework. Cyclical process: The cyclical process as presented by this research and the process of implementing an appropriate strategic ICT planning process in the DOD has now moved into its sustainment and continuous improvement phase. This is to be performed with the same rigour and discipline as was applied to this process of development and reflected in this research. The discipline of the project management approach that is a fundamental dynamic for management	Transparency of Competence-in-Stock: The competency relating to the strategic management and strategic planning for ICT solutions in the DOD is based on sound theoretical principles, captured in formalised theory and exercised within appropriate structural arrangements. Real-time Capture of Competence-in-Use: The emphasis will now be placed on continuous improvement and enhancement of the capacity of the DOD to continue to increase its proficiency in relation to managing its ICT solutions. This will be done through full collaboration of users and solution providers in all processes, management arrangements and mechanisms as appropriate. Interest Integration as Competence-in-Making: The formalised and institutionalised processes, structures and mechanisms will ensure continuous improvements as long as the management paradigm that has been established can be sustained and improved upon. This will be dependent on the nature, skills and motivation of future incumbents as well as the interaction and willingness of the organization to accommodate such interactions. Flexible Reporting as Contribution to Competence-in-Making: The formal participation and improved involvement to make a contribution towards the organization as a whole is enabled by the total and appropriate involvement of ICT functionaries in the workings of the DOD. This provides sufficient flexibility to ensure that issues can be appropriately addressed to ensure that the systemic implication of strategic ICT management can be sustained.

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**
Paper of Defence as well as the DOD Strategic Business Plan.	on the DOD will ensure this rigour. Guiding Theory: The existing theory as appropriate, given the diversified nature of both the organization and the discipline, will be sustained as the DOD is an organization that functions on the basis of continuous interaction with industry and academia to ensure appropriateness that is based on sound theory and practice. New advances in theory will be part of the continuous improvement regime. Change through Action: Change will now be centred on continuous improvements with due consideration of the relationship between the function and organization as well as the environment within which it operates. This will in turn be managed within the regulatory framework of the DOD as guided by corporate governance.	

Activity 6.1: Summary of Learning through Reflection. With full consideration of the relationship between the DEIS SD and the DEIS Master Plan being descriptive definition of strategic intent and the strategic prescriptive definition of the CMIS and Services the following issues followed from this stage of the research.

Value to Organization

Policy and Plans:

The CMIS budget and planning guidelines have to form part of the regulatory framework to ensure that it can be enforced. To this end it should cover the total system and its life cycle to ensure that the full life cycle management of the CMIS is included. This includes disposal of obsolete and or redundant ICT solutions.

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**
Process: The primary issue for the optimisation of the CMIS was to ensure that the Defence Information and Communication Infrastructure were optimised given the nature of ICT deployment, maintenance and utilisation. *Participation and Collaboration*: There has to be a clear set of guidelines for the management of the CMIS that clearly establishes the roles and responsibilities for managing the total CMIS with due consideration of common or transverse requirements as opposed to unique requirements. *Skills and Capacity*: The combination of general management skills and ICT management skills given the nature of responsibilities and relationships for managing the DEIS in alignment with the strategic business intention had to be institutionalised. *Tools*: ICT tool integration and utilisation had to be accommodated. <u>Value to Scientific Theory</u> *Policy and Plans*: The Primary Systems Integrator for the CMIS as the product system of the DEIS had to be managed as a prescriptive definition of the ICT solutions required as in accordance with the DEIS SD. To this end the keeper of ICT standards and specifications is the C CMIS as the primary system integrator.		

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**
Activity 7: Formalisation of Structural Arrangements and Strategic ICT Planning Process and Methodology		
Diagnostic Stage: The review and re-alignment of the management arrangements that are now commensurate to the DEIS management function and corporate strategic management of the DEIS is now being reflected in the functioning of higher order defence management and arrangements. Therapeutic Stage: As part of the continued formalisation the relationships between DEIS related processes and structural arrangements are being aligned through the standardisation of corporate management functions as opposed to business unit management for the services and divisions.	Researcher – Client Agreement: Once again the respective requirements for the process as capture in the process management mechanisms as well as the requirements for integration into corporate management established a clear and distinct mandate for the management of the function. Cyclical process: The process of continuous improvement in accordance with for instance the processes for problem solving, change management or even Action Research will be followed. This is in accordance with the strategic management approach and policy of the DOD. Guiding Theory: Additional theory regarding continuous improvement methodologies or frameworks such as the Balanced Score Card presented by Kaplan and Norton (1992) or an Business Excellence model or even appropriate maturity models can augment execution of the strategic ICT plan. Change through Action: The changes will be brought about by the requirements for change that could come from either the internal or the external environment. As such these changes can be initiated by either users if ICT solutions, managers of ICT solutions, Executive managers at either corporate level or at business unit level or any other party that might be a stake holder of a role player in either matter related to defence of matters relating to the science.	Transparency of Competence-in-Stock: To this point the competency was largely focused on the improvement and management of structural arrangements and the strategic ICT planning process itself. Real-time Capture of Competence-in-Use: With the extended involvement of the DEIS management in DOD issues and vice versa the dynamic and hopefully constructive learning process as appropriate to double loop learning will be realised and sustained. Interest Integration as Competence-in-Making: The dynamic two-way learning and therefore the potential improvement of function related to the total defence function will add to the continued optimisation of the organization. This will spill over as a causal relationship that continuously improves with the main parties involved being the DOD, government and civil society. Flexible Reporting as Contribution to Competence-in-Making: This will be done via all the relevant mechanisms and structural arrangements available to the DOD given the total chain of command. As such it provides the conduit to address issues.

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**
Activity 7: Summary of Learning through Reflection. One of the implications of having established a standardised approach towards strategic ICT management within the DOD is that it can now form the basis for the expanded implementation via statutory mechanisms such as the GITO Council and the SITA into the reset of government. To this end it needs to be formalised within the DOD and then expanded. Value to Organization *Policy and Plans*: The formalisation of the structural arrangements had to be done with due consideration of defence policy for structuring. The relationships between the DEIS management function and the corporate management arrangements and mechanisms had to be clearly defined and explicitly stated in formalised constitutions for such forums. The chairmanship of such forums had to conform to the functional dialectic separation of roles and responsibilities as appropriate to the Defence Secretariat and the SA National Defence Force. *Process*: The processes as appropriate to strategic Direction for the DEIS, the management of DEIS related policy, ensuring structure and capacity commensurate to the functions to be performed by all role players and stakeholders had to be formalised and institutionalised within the DOD. Requirements of management could be augmented under command (management) of the GITO with in-sourced resources. *Skills and Capacity*: The skills and capacity for strategic ICT planning as appropriate to DEIS management was confirmed as an inalienable function of the DOD. The core skills had to be own internal capacity. *Tools*: The Defence Information and Communication Infrastructure had to be optimised to ensure the appropriate utilisation of all ICT planning tools – general and specialised tools. Value to Scientific Theory *Policy and Plans*: The GITO was established as the functional authority for ICT in the DOD and the C CMIS as the System integrator, whilst the users focused on functional ICT requirements management and utilisation.		

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**
Participation and Collaboration: Full participation in the corporate processes under the chairmanship of the GITO had to be finalised, formalised and institutionalised to ensure that all role players and stakeholders could and would be participating in the relevant management arrangements and mechanisms.		

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**
Activity 8: Institutionalisation of Strategic ICT Planning Process and Structural Arrangements		
Diagnostic Stage: The focus of the DOD is very much on optimising the information systems as required for the DEIS. This does, however, take the organization to the next step that is focused on defence information as a strategic resource and a commodity. Therapeutic Stage: This stage has been initiated as follows: Initiative 1: The focus in the Defence Review and the White Paper on Defence that changes the emphasis of matter from the ICT in support of the DEIS to that of Defence Information. Initiative 2: placing formal emphasis on the ability to leverage appropriate information to the DOD as a whole to enhance decision making as a conscious decision. Initiative 3: To ensure that this change in strategic intention for the defence information management function can be institutionalised.	Researcher – Client Agreement: The appointment of the GITO to the Defence Staff Council and the fact that he/she serves as the functional authority for Defence Information Management as supported by the DEIS and enabled by ICT formalised participation in corporate executive management. As such he/she is part of the strategic corporate planning process and ensures that this function is performed with full collaboration of all role players and stakeholders at corporate and at business unit level. This does not detract from the fact that the ICT function is managed at business unit level given the responsibility for requirements and solutions management. Cyclical process: In accordance with the formalised policy the total management process as appropriate to the DOD and the DEIS as a function of the DOD is management in accordance with the national planning timeline of government. Guiding Theory: The guiding theory at this stage consists of theory and internal policy that interprets theory, combines it with practice and formalises the application thereof for the DOD. Change through Action: Change as a fundamental imperative for strategic management is a continuous and dynamic process that has specific checkpoints built into the process for formal	Transparency of Competence-in-Stock: The competency related to the ICT management function is guided by the ability to manage information, the Information and Communication systems of the DOD and is enabled through the utilisation of technology. Real-time Capture of Competence-in-Use: The continuous review of policy within the DOD as an expression of the combination of theory and practice is an ongoing process that is being expanded from a core team to the immediate users, ICT functionaries to the User decision makers and has the intention to change the organization from a technology-orientated organization to a systems-orientated organization and finally to an information-orientated organization. This is in accordance with the corporate strategic intention and partially as a result of this research. Interest Integration as Competence-in-Making: The ability to coordinate at all levels of the organization and therefore vertically and horizontally within the organization and its dynamic interaction with the ICT industry and academia, sustains interest trilaterally in all of these areas of interaction. Flexible Reporting as Contribution to Competence-in-Making: This is a process that requires appropriate process and structure as has now been institutionalised within the DOD.

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**
	review and improvement. Change is then managed in terms of formalised plans with appropriate resource allocation.	

Activity 8: Summary of Learning through Reflection. Given the fact that at this point in time the strategic ICT planning process had been established, it was formalised in terms of policy with the first formalised strategic direction for the DEIS approved. The focus during this phase is therefore purely on continuous improvement of the ability to manage ICT, to ensure its structural management given the nature of the organization and the ability to leverage the potential utility of DEIS function towards the continuous improvement of the DOD in the execution of its mandate.

Value to Organization

Policy and Plans:

Higher order participation by the GITO and review and refocus of the White Paper on Defence and the Defence Review has ensured that the process of ensuring national functional and political direction for the department of defence is done with full collaboration of the DEIS function.

Process:

The ability to generalise the process for further expanded utilisation within the wider government is considered a prerequisite for such expansion.

Participation and Collaboration:

Full participation by respective and appropriate DEIS / CMIS / ICT functionaries in external government structures is required and has been formalised.

Extended participation and collaboration with industry and academia is considered a necessary activity to ensure objectivity and access to a greater body of knowledge.

Skills and Capacity:

All skills and capacity within the DOD now require continuous improvement with an additional focus to expand the skills base throughout the rest of government. With this in mind expansion throughout the rest of government should be done with due consideration of the considerable skills that already exist within government, industry and academia as a whole.

Tools:

The full set of tools required for Enterprise Information and Information Systems management has to be acquired, implemented and supported to ensure appropriate utilisation thereof.

Table 5.1: Summary of Action Research Project

5.6 PRESENTATION OF A CONCEPTUAL FRAMEWORK FOR STRATEGIC ICT PLANNING IN DIVERSIFIED ORGANIZATIONS

From the findings of this research as actually experienced during the institutionalisation of an appropriate strategic ICT planning function in the DOD and its corresponding structural implications, a framework can be constructed. This framework is devised with due consideration of its appropriateness to scientific and practical value.

5.6.1 Issues of Alignment Relevant to the Setting of Strategic ICT Objectives for the Diversified Organization.

Irrespective of the fact that there might be stronger or more direct ties between some business units and the group or enterprise management, than required or practiced for other business units, the planning cycles can be described as follows as emanating from this research.

- Cycle 1: Formulate the Business Strategy for the corporate level which will provide the first indications of strategic ICT intent with due consideration of the nature of diversity and the implications thereof.

- Cycle 2: Formulate the Business Strategy for each of the respective Semi-Autonomous Business Units with more specific guidelines as appropriate to the respective business units with due consideration of unique implications for ICT solutions in support of unique business requirements.

- Cycle 3: Formulate the Corporate ICT Strategy with due consideration of strategic business intent.

- Cycle 4: Formulate the ICT Strategy for each of the respective Semi-Autonomous Business Units as a collaborative effort to ensure integration and inter-operability within the context of performance and rules of scale.

- Cycle 5: Effect and confirm formal alignment of all strategies as follows even though alignment is an integral part of each of the phases:

- Each semi-autonomous business unit with Corporate Strategy.
- Ensure alignment between the ICT strategy and the relevant business strategies of the respective semi-autonomous business unit.
- Each semi-autonomous business unit ICT Strategy with Corporate ICT Strategy.
- Between semi-autonomous business unit ICT Strategies.

With due consideration of the findings of this research specific models can be compiled to ensure that the lessons learnt are incorporate into the strategic ICT planning process as a more comprehensive ICT planning process can be performed in accordance with the systemic requirements, the process should be performed as a dynamically iterative process, to ensure continuous review and improvement. This cyclic nature can be represented as follows:

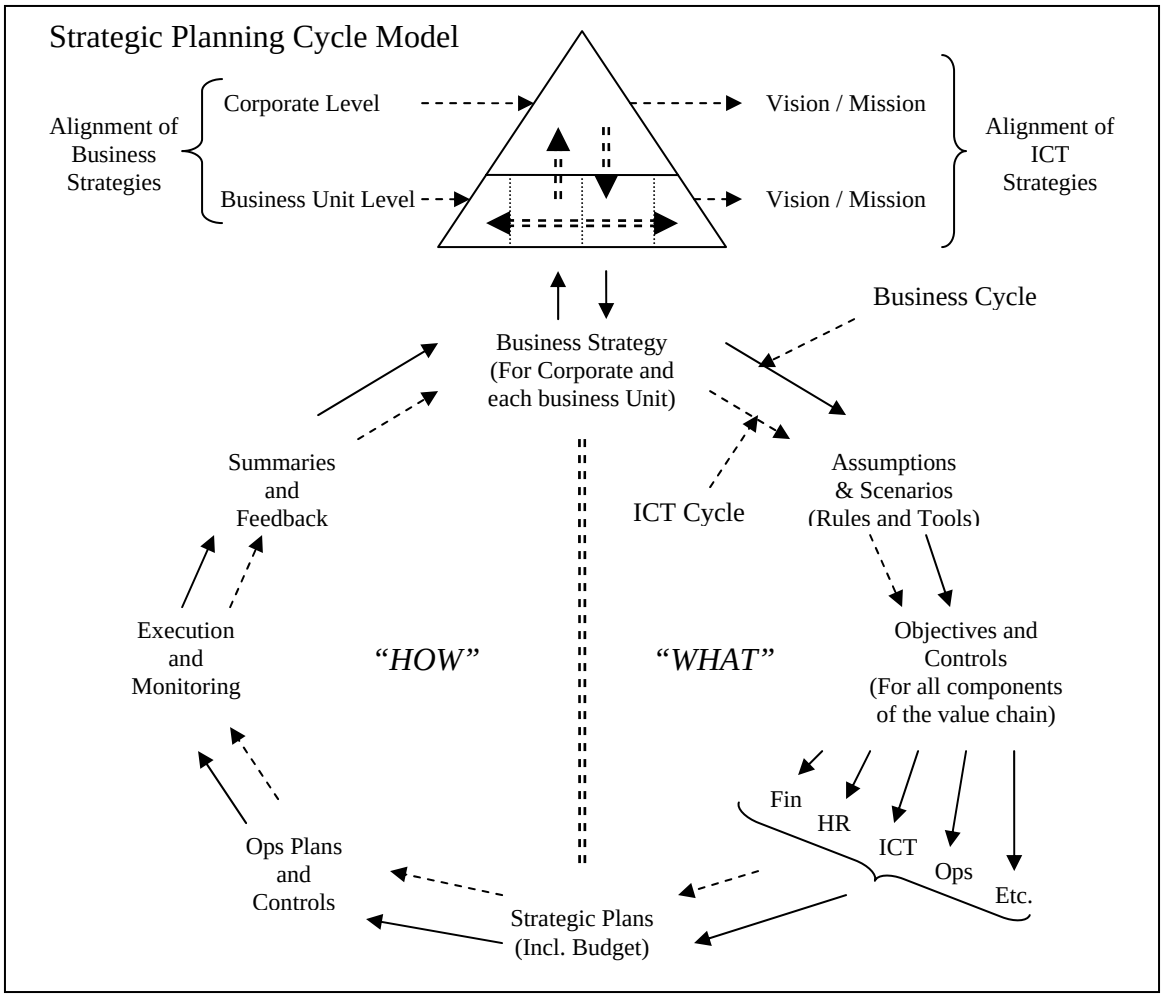

Figure 5.7: Strategic Planning Model as adapted from an interpretation by Smith A. J. (2001)[395] and a general interpretation of Ward and Griffiths (1996)[396]

From the above a graphic conceptual construct or framework for strategic ICT planning in diversified organizations can be construed to serve as a basis for comparison as experienced during the implementation of strategic ICT planning process in the SA DOD. This can be done with due consideration of the conclusions drawn from this research and the intention of the research proposal in relation to the research problem. Four constructs can be provided to illustrate the conclusions and to guide the establishment of appropriate management arrangements and mechanisms to support the institutionalisation of an appropriate strategic ICT planning process for the DOD. These constructs are:

[395] South Africa. University of Pretoria. 2001. *Strategic Planning of Information Resource Course as presented by Smith, A.J.: Advanced Certificate in IS Management*. Pretoria: University of Pretoria.
[396] Ward, J. & Griffiths, P. 1996. *Strategic Planning for Information Systems*. New York: John Wiley and Sons.

- Group Strategic Planning with Business Focus Providing Initial Planning Guidelines for ICT emanating from the Enterprise Planning Process – Figure 5.8.
- Business Unit Strategic Planning with Business Focus including ICT Planning in conformance with Enterprise Planning Guidelines – Figure 5.9
- Dynamically Iterative Approval and Ratification Process at Group (Enterprise) Level with involvement of Business Units (Including ICT) – Figure 5.10.
- Strategic Planning Process for ICT Function in Diversified Organizations in Support of Business Objectives and Requirements – Figure 5.11.

These constructs form the basis for the institutionalisation of formalised management arrangements and mechanisms to facilitate strategic ICT management in the SA DOD. The strong emphasis that is placed on participation and collaboration towards enterprise ICT solutions makes these frameworks a valuable tool to demonstrate roles and responsibilities that influence the actual strategic planning process. These considerations were found to be the critical success factors for the implementation of an appropriate strategic ICT planning process in the DOD.

5.6.2 Group Strategic Planning with Business Focus Providing Initial Planning Guidelines for ICT Emanating from the Enterprise Planning Process

With due consideration that the planning imperative should eventually result in the ability to actually realise such plans through the delivery and sustainment of ICT solutions the through-life management implications should be clearly understood. The process of through-life management provides the required feedback loops from an operations perspective that can be considered vital to continuous improvement. To this effect the definition of this life cycle management process is appropriate to strategic ICT planning in diversified organizations. The process can be schematically presented as follows:

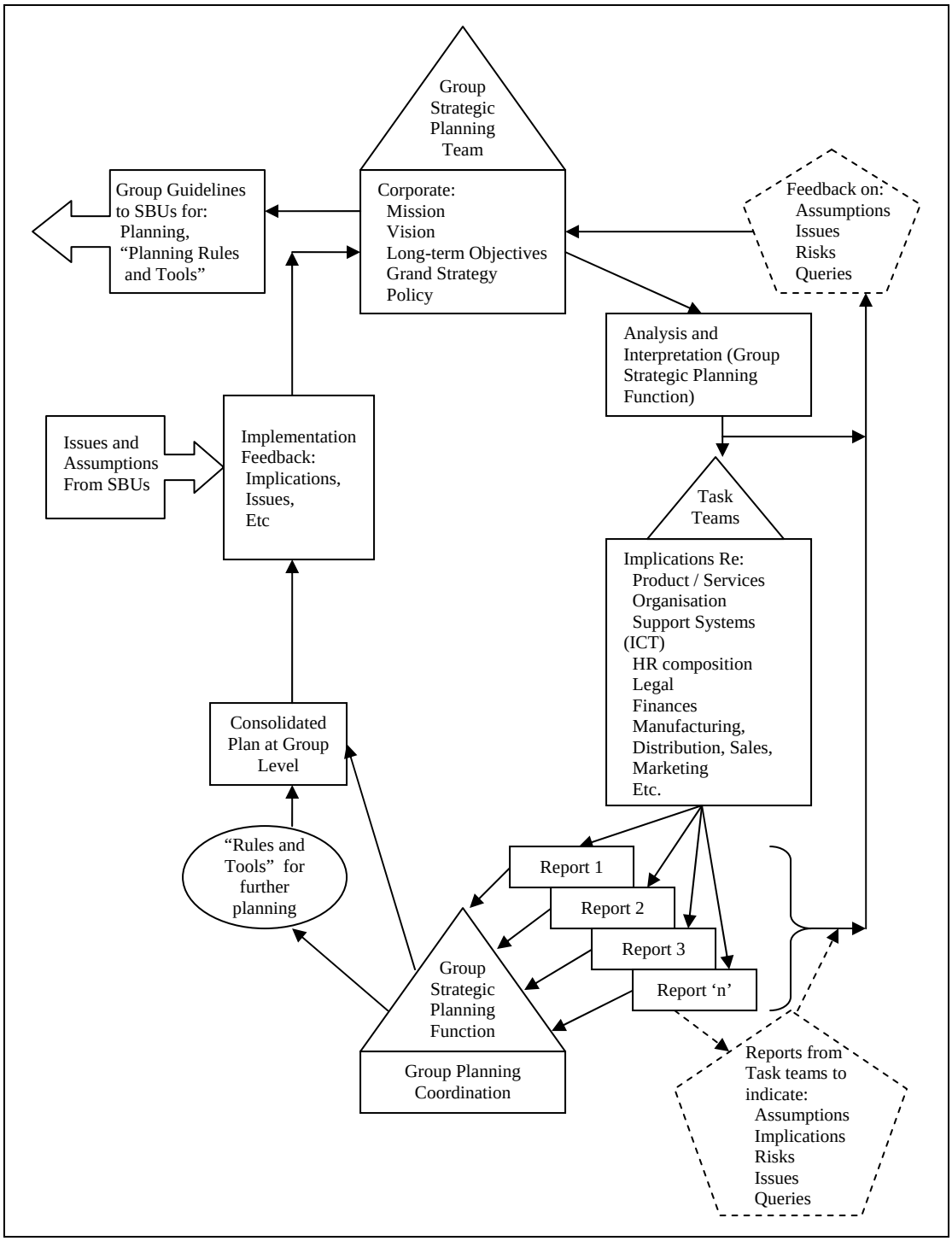

Figure 5.8: Strategic Enterprise Planning (Group level) as Appropriate to Strategic ICT Planning in Diversified Organizations

The intention of the schematic representation of the Group Strategic Planning Process is to ensure that there is a clear and unambiguous indication of the activities which are to take place in chronological order as appropriate to a diversified organization.

From the above it can be deduced that there is a definite implication to consider the nature of the respective SBUs as appropriate to the diversified organization, as the nature of the SBU will have a direct impact on the degree of direction which is given from group or corporate level. It can also be considered necessary that corporate direction be sufficiently specific to ensure that strategic focus is provided on the corporate culture, the corporate image, confirmation of issues of collaboration and process standardisation. This will provide sufficient insight for ICT standardisation, interoperability and the realisation of rules of scale.

The creation and nature of internal centres of ICT excellence as well as principles for outsourcing as opposed to own capacity should be forthcoming from this level that when applied will impact on the enterprise concept of managing ICT systems, interaction with the ICT industry and the corporate value chain. Regular feedback loops will ensure that the dynamic and iterative nature of strategic planning are realised, resulting in improved alignment and the improved ability to execute and sustain configuration management.

Given that sufficient management structure, responsibilities and participation is to be institutionalised to effectively manage the ICT responsibility as part of the Strategic management structures of the diversified organization the opportunity to effectively implement and institutionalise an appropriate ICT planning process could be expected to be greatly enhanced.

5.6.3 Business Unit Strategic Planning with Business Focus Including ICT Planning in Conformance with Enterprise Planning Guidelines

With the nature of the diversified organization and the relationship between corporate management and business unit management the relationship and the ability to collaborate becomes imperative. To elucidate the relationship the construct can be presented as follows:

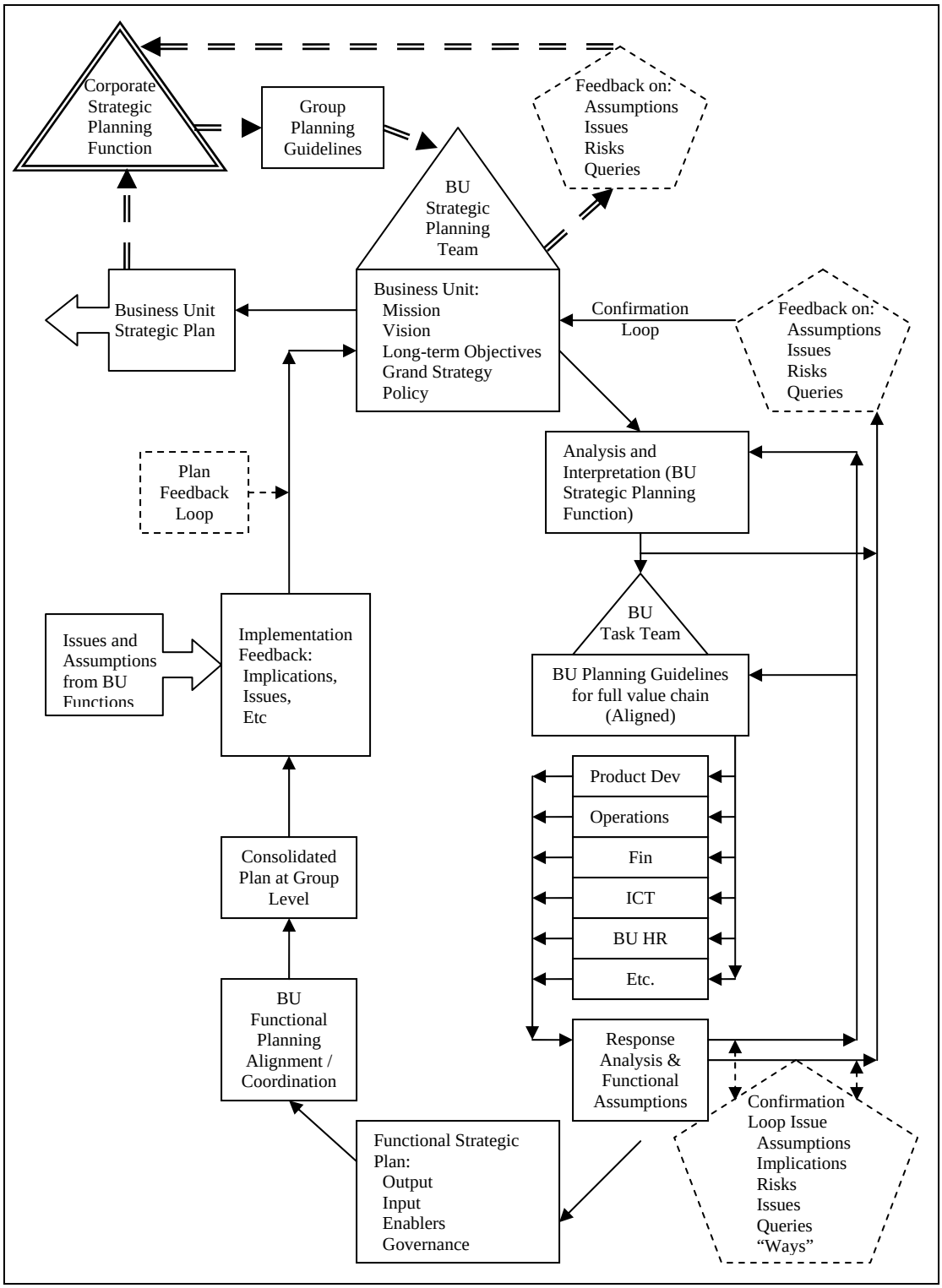

Figure 5.9: Strategic Business Unit Planning as Appropriate to Strategic ICT Planning in Diversified Organizations

The above interpretation confirms the necessity to provide corporate direction that addresses the whole enterprise with due consideration of the requirement to acknowledge

the semi-autonomous nature of the respective business units. As such there is now a direct connection between the line of business and the ICT direction for the SBU. The nature of the organization can also be clearly defined from its value chain and the nature of its line-of-business and incorporated into the strategic business direction for ICT. Collaboration of all functionaries can also be orchestrated from a single responsibility to ensure maximum collaboration and execution, which in turn will result in more comprehensive and representative ICT planning and will negate stove-pipe ICT solutions. This provides the basis for ICT System ownership, with roles and responsibilities clearly defined and institutionalised under full configuration management and supported by relevant and appropriate enterprise architectures.

From an architectural perspective processes can be standardised and deviations managed from the perspective of business ICT system requirements and resultant ICT solutions. This facilitates structured change that can be managed within the greater organizational construct and strategic intent. The overall result should be a more representative and balanced approach towards resource allocation and utilisation can be institutionalised and clearly aligned with both enterprise and business unit priorities.

5.6.4 Dynamically Iterative Approval and Ratification Process at Group (Enterprise) Level with Involvement of Business Units (Including ICT)

Given the expectation that collaboration, standardisation and optimisation of ICT solutions and the utilisation of scarce resources should become more manageable the following schematic representation supports this.

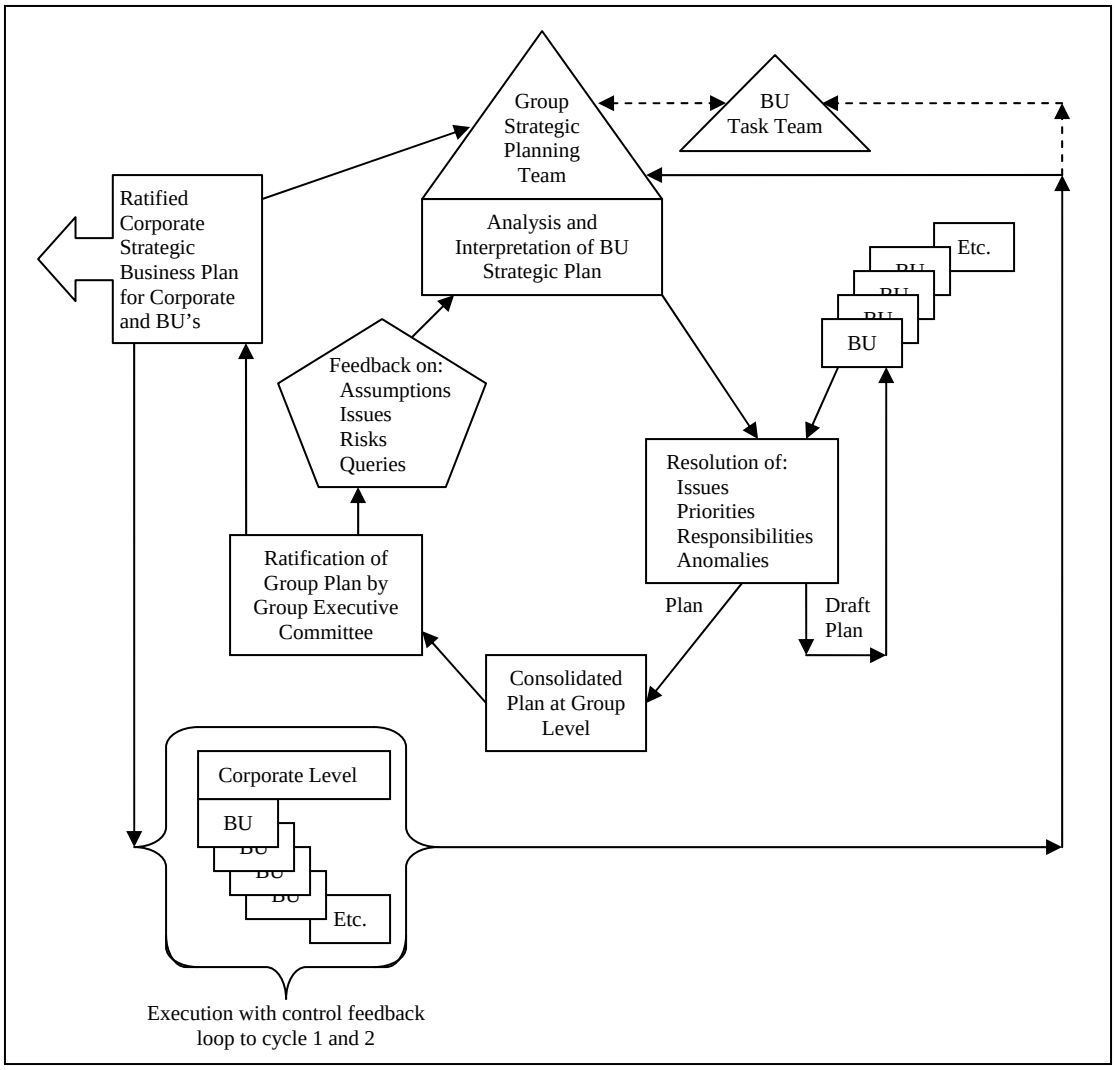

Figure 5.10: Interaction of strategic planning at enterprise level and strategic planning at business unit level as appropriate to strategic ICT planning in diversified organizations

From the requirement to manage the systemic implications as appropriate to the interaction between the Group or Enterprise management level and the respective business units some salient issues will be forthcoming. These salient issues once again relate to the mechanisms required to manage the ICT function within the diversified organization that should be clearly identified and institutionalised to ensure alignment and representivity in collaboration.

Management and coordination/alignment activities should also be institutionalised as standing activities with clear cycles of planning, ratification at all levels, reporting and review. This should be aligned with the corporate strategic management (planning) calendar and representative of the entire diversified organization even if in omission.

There should also be a culture of balanced control against the plan to ensure that the mechanisms actually add value as opposed to becoming mere talk shops. This requires a clear and unambiguous indication and understanding of the nature of the diversification within the enterprise and the impact thereof on not only the organizational culture, but also on the total enterprise value chain. This will reduce confusion regarding roles and responsibilities and enhance prioritisation and resource allocation within a construct of institutionalised roles and responsibilities.

5.6.5 Strategic Planning Process for ICT Function in Diversified Organizations in Support of Business Objectives and Requirements

The relationship between the strategic ICT planning process as managed with due consideration of corporate and business unit collaboration as relevant to strategic business management can be graphically presented as follows:

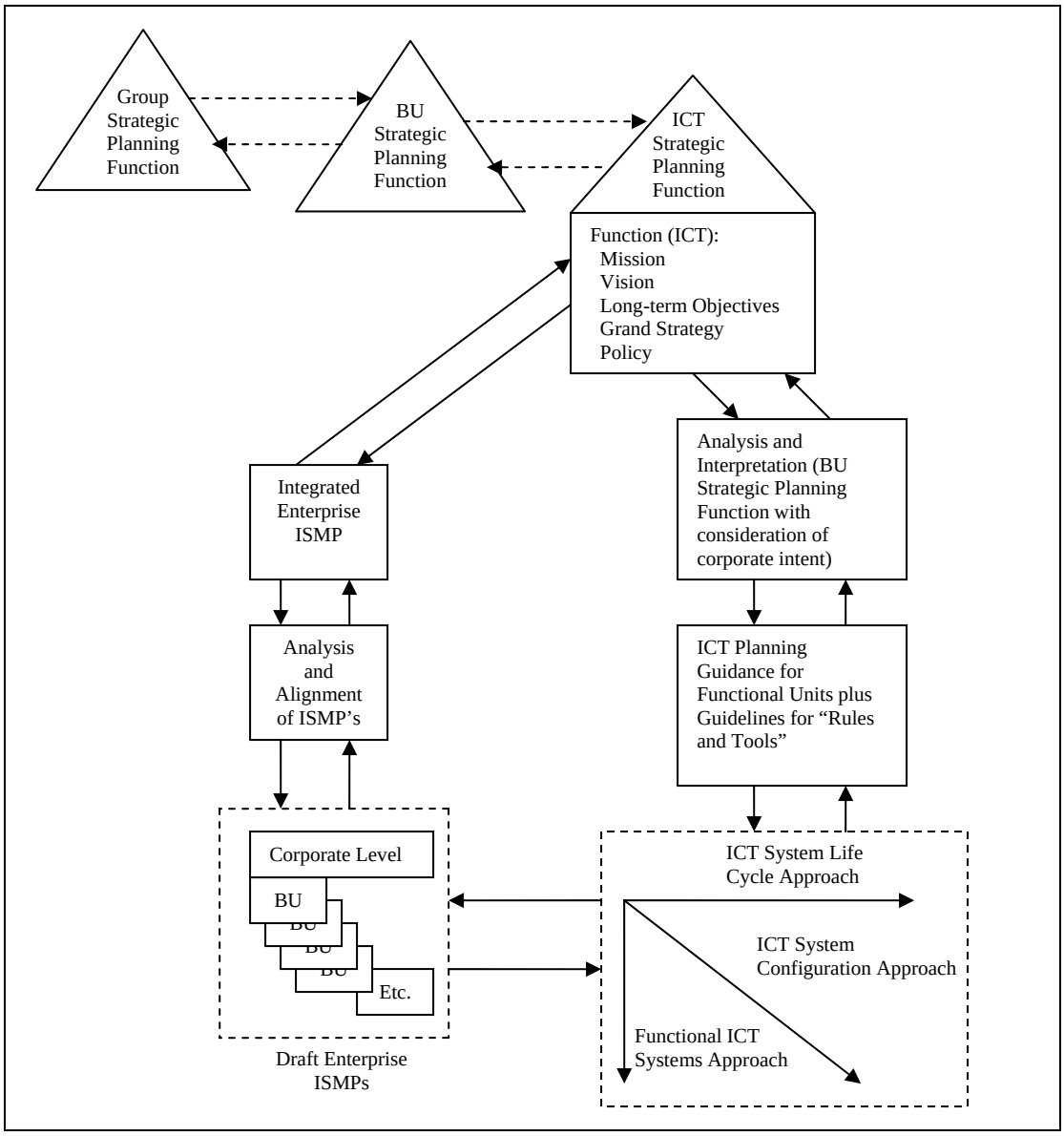

Fig 5.11: Strategic ICT Planning Process for Diversified Organizations as part of strategic business planning in a Diversified Organization

The ability to sustain interaction between business management and ICT management as appropriate to corporate management and business unit management ensures that the resultant ICT system can be aligned with corporate or enterprise direction with due consideration of uniqueness as appropriate to the respective Strategic Business Units. An additional characteristic is that related and relevant governance as appropriate to the diversified organization in its entirety can be considered and therefore reflected in the enterprise ICT system. Requirements for ICT solutions can also be managed within the context of the total, diversified organization and supported by standardised

methodologies, toolsets and capacity. As such value adding objectives for ICT solutions can be clearly defined, planned for and orchestrated with due consideration of the diversified organization as a whole.

The fact that the ICT function can be properly orchestrated and aligned with business considerations has the potentially added benefit that rules of scale can be managed with the clear understanding of productivity requirements, effectiveness, efficiency, ethical behaviour and financial constraints. This presents a clear understanding of the nature of total cost to company as opposed to the value adding potential of ICT and its contribution to sustain the competitive advantage to the total diversified organization. New opportunities to further improve the organization can also be managed as part of the dynamic strategic management process with due consideration of all change management objectives.

5.6.6 Graphic Representation of the Strategic ICT Planning Process for Diversified Organizations

When considering the ICT planning process in relation to the model presented by Ward and Griffiths (1996)[397] it can be concluded that the model does not necessarily provide insight into the full complexity of the strategic ICT Planning Process as appropriate to diversified organizations. This is with due consideration of the issues that are relevant and appropriate to the strategic planning for ICT solutions, within the construct of the higher order tasks for strategic management within diversified organizations.

From this research and its conclusions the main tasks as adapted form the model of Ward and Griffiths can be presented to ensure that the strategic ICT planning process is managed as a dynamically iterative process with due participation and involvement of all role players, stakeholders and participants involved.

The implications of the above can be utilised to adapt the strategic ICT management model presented by Ward and Griffiths (1996:137) *op. cit.* as follows.

---

[397] Ward, J. & Griffiths, P. 1996. *Strategic Planning for Information Systems*. New York: John Wiley and Sons.

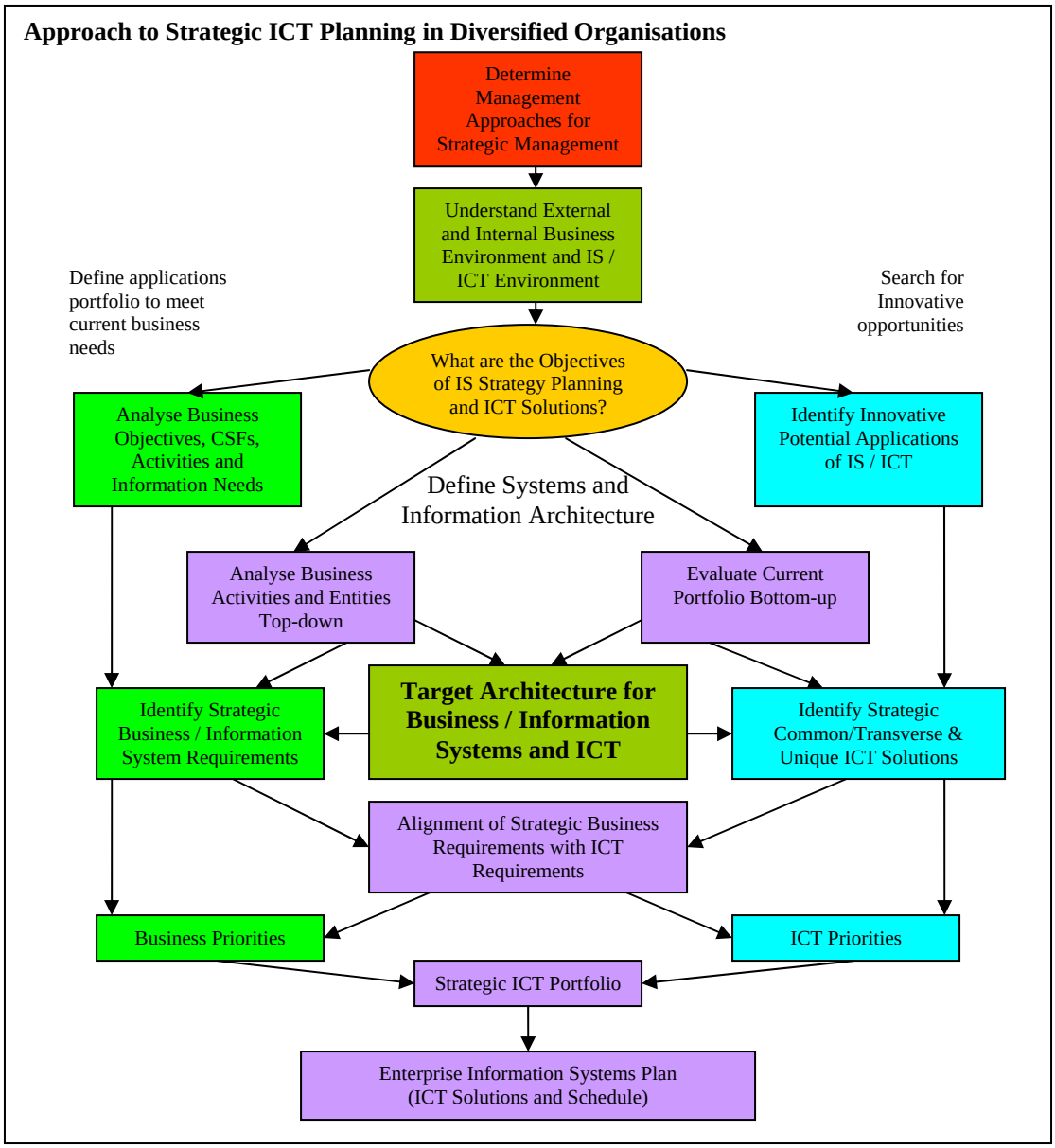

Figure 5.12: Approach to Strategic ICT Planning in Diversified Organizations as Adapted from Ward and Griffiths (1996:137)

5.7 CONCLUSIONS DRAWN REGARDING THE STRATEGIC ICT PLANNING PROCESS IN THE DOD

As confirmed in the formulation of the strategic ICT Planning process it was found that the following contributions to scientific theory resulted from this research when referring to the systemic components DOD strategic ICT management as relevant to the institutionalisation of an appropriate strategic ICT planning process.

Focus	New Findings
Strategy and Governance	There should be a clear and distinct difference between corporate policies being descriptive in nature as opposed to policy at business unit level that can be prescriptive. There should be a clear and distinct definition and delegation of powers and duties at both corporate and business unit level to ensure that common and unique responsibilities can be accommodated. Corporate policies should therefore set the framework and longer term strategic intention of the organization as a whole (enterprise), whilst business unit strategy should be shorter term focused and more focused towards execution. The degree of autonomy that is allocated to semi-autonomous business units should be commensurate with the responsibility and not be allowed to directly oppose corporate authority. The imperative for participation by business unit management in corporate management as a continuous process is driven from these implications.
Culture	A formal change management plan should be put into effect that commences at corporate management level and moves though business units to establish the corporate information-orientated culture in the organization. Due consideration should be given to the respective organizational cultures at corporate level as well as those at business unit levels in establishing the corporate information culture. The reason for this being that the respective business units have different lines of business and therefore different requirements for ICT solutions. This leads to stove-pipe solutions when considering the semi-autonomous nature of these respective business units that are not desirable. The nature of the information resource and the nature of ICT to facilitate information-driven solutions should be understood throughout the diversified organization. Organizational maturity should be actively managed to enhance the information-orientated culture requirements of the organization.
Organization	The requirement for collaboration between management at corporate and business unit level is imperative. The collaboration should focus on the sustainment of an appropriate strategic ICT planning and indeed management methodology, participation in total life cycle management of ICT solutions as appropriate to the respective roles and responsibilities. Differentiation is necessary between corporate management and operations management as relevant to managing the ICT solutions from a corporate and systemic perspective as opposed to product and user system management. Management arrangements for both business management and corporate management for business governance and ICT governance are imperative. There should be appropriate participation by both the business environment and the ICT environment in the management forums as indicated. Representation in business and management forums should be such that senior managers with the necessary skills and authority are involved in higher order forums that require a strategic perspective regarding both time and solutions. Lower level functionaries that do not have the expertise or mandate to fully participate simply become posts offices and as such a risk.

Focus	New Findings
	ICT Management arrangements should be structured to ensure that there is a differentiation between corporate governance and systems management in execution of corporate governance. ICT Management Mechanisms should be formally constituted to formalise the mandate, powers and focus thereof. As such the corporate management forum should be representative of the primary ICT functionaries of the respective business units under the chairmanship of the corporate ICT manager of CIO. The ability to sustain the ICT system in accordance with corporate governance within an appropriate regulatory framework that recognises uniqueness within the enterprise as a whole should be performed at execution level. The nature of corporate and systems management level is related to being descriptive and prescriptive respectively. Involvement of dedicated functionaries in normal management forums should be formalised to ensure alignment at business unit level and at corporate level throughout the enterprise.
Competency	A formal business model for the management of ICT solutions should be established that can serve to guide the concept and construct of the enterprise systems. Competencies should be focused by the functional requirements to manage the enterprise system holistically from a total life cycle approach. Develop a vocabulary that can accommodate the requirement of both business and ICT functionaries to ensure that collaboration between business and the ICT function can be optimised. Competency should be developed to address information management, information and communication systems management and ICT management.
Facilities and Equipment	Facilities such as accommodation and enabling infrastructure should be commensurate with the tasks at hand given the activities performed within the total systems life cycle management approach. ICT related facilities and equipment should be dispersed throughout the organization in accordance with the allocated responsibilities given the nature of common or transverse as well as unique responsibilities.
Process	There is a direct correlation between the high level business process cycles, namely Mandate, Business Concepts, Force Design, Force Structure and Force Establishment (capacity) and the high level ICT planning process cycles, namely ICT Mandate, ICT Management Concepts, DEIS Design, DEIS Structure and DEIS Capacity. The ability to execute strategic ICT planning as a corporate and a business unit function requires formal alignment as a dynamically iterative process that occurs at each activity in the respective planning processes between business and ICT as well as between corporate and business units. The ability to provide a strategic ICT does not negate the responsibility to plan for implementation in execution of the strategic ICT plan. Such implementation plans are to be reflected in the respective strategic business plans and budgets at both corporate level and business unit level. Control should be exercised with the focus on risk, performance and compliance to ensure that the feedback loop for continuous improvement can also be realised

Focus	New Findings
IS/ICT	The requirement for an Integrated Enterprise Architecture Solution (IEAS) Toolset as a functional ICT management 'tool' should be managed as a corporate commitment and responsibility. The business model for the utilisation and support of such a toolset should be collaboratively managed with full consideration of the respective roles and responsibilities within the organization. The IEAS Toolset should cover the ability to address the strategic perspective, the business perspective, the logical system solutions perspective and the physical ICT solutions. The IEAS Toolset should allow for full configuration management of all artefacts, both primitive and composite with base-line management. Alternative uses for the architectures should drive both the ability to align business with ICT as well as leverage the potential utility of ICT towards business issues such a structuring, risk management, delegation, performance and compliance. General tools for office and administrative support should enhance the primary ICT management function in support of the IEAS Toolset. Note: At the time of the completion of this research it seems as if there is no single integrated toolset that covers the span of activities from strategy to physical solutions supported by a single repository. To this end the necessity for a single repository for enterprise architectures as a centralised capability enabling access through the diversified organization through optimised information infrastructure becomes imperative.
Finances	There should be a clear differentiation between corporate responsibilities and responsibilities that are to be decentralised to the respective semi-autonomous business units. The allocation of responsibilities for participation in ICT management should drive the planning and budgeting as well as resource – including financial – allocations. Centralised and centrally coordinated planning and budgeting should direct the execution of strategic business plans at both corporate and business unit level respectively in accordance with the allocated responsibilities for ICT management. Funding should address both the renewal and the maintenance and improvement ICT portfolios.
Performance	Prioritisation for ICT solutions and performance should be done with full cognisance of business priorities within the strategic concepts and constructs for information, information and communication and ICT management. Prioritisation and scheduling of all activities should be commensurate with the availability of appropriate structural arrangements and resources (HR and Finance, etc.). Strategic focus and trends should guide the ability to contribute towards the competitive advantage of the corporation as a whole with due consideration of requirements for business unit performance.

Table 5.2: Summary of Contributions to Existing Theory with Due Consideration of Practice

5.8 SUMMARY OF LESSONS LEARNT

The conclusions to be drawn from the lessons learnt can be categorised into primarily two environments, being the actual ICT planning process and the structural arrangements necessary to ensure the appropriate execution of such a process. These conclusions are mainly in line with the expectations of this study as identified as part of the research problem. To compare the findings of this study with the literature as discussed in Chapter 3, Ward and Griffiths (1996:108)[398] can once again be referenced as follows to provide a framework:

- *"What are the purpose and the main stimuli prompting the need for planning, and what are the key business drivers to be addressed?* To ensure that the function can be appropriately coordinated and orchestrated towards optimising the ICT solutions with due consideration of 'common' and unique solutions. This will eliminate duplication whilst improving the ability to standardise appropriately and also to ensure maximum integration as a conscious management function across all business units.

- *What aspects of the current business and technical environment, and what issues, constraints, underlying problems and risks are likely to affect the conduct and outcome of planning?* The respective levels of maturity throughout the diversified organization and the differences in functional requirements when analysed are not necessarily as different as what each business unit might expect. There is a far greater level of commonality of function than what the respective business unit managers and therefore the ICT managers might expect. The establishment of descriptive corporate strategic ICT direction provides a framework to guide the management of ICT solutions throughout to organization.

- *What should be the scope of planning, and where should planning be focused – on the corporate organization as a whole, at strategic business unit level or on a specific core business process?* The focus should be top down as a fully

[398] Ward, J. & Griffiths, P. 1996. *Strategic Planning for Information Systems*. New York: John Wiley and Sons.

collaborative function between corporate and business unit level management. In this regard cognisance should be taken of the enterprise value chain to ensure that the total set of business processes – and enterprise architectures – can be defined. This sets the corporate planning baselines as a single set for the whole diversified organization.

- *How can the planning process effectively be integrated with business planning?* The establishment of appropriate management mechanisms to ensure that strategic ICT planning and strategic management of ICT planning can be done is imperative. These management mechanisms should be done with due cognisance of the requirement to manage ICT requirements and solutions with due consideration of the total ICT solutions and through-life management thereof. As such the ICT planners should be involved in business planning and vice versa with such collaboration formally structured and sanctioned.

- *What are the expectations and business objectives to be met, and what deliverables are required?* Given that the emphasis is to manage information as both a resource and a commodity the ICT system should serve to enable the organization in its drive for competitive advantage. The ability to do so is inherent to the ability of the organization to balance the potential utility of ICT with the continuous improvement drive of the business towards it competitive advantage. Cognisance should however be taken that rules of scale are predominantly the focus area of the common or transversely standard part of the enterprise ICT solution. The strategic ICT plan could therefore be presented as an Enterprise Information Strategy (resource and commodity), an Enterprise Information System Framework and a Strategic ICT Architecture. All of these can then be interpreted towards an Enterprise Information System Master Plan to guide the management of physical solutions from the target architectures over an extended period of time for the whole enterprise.

- *How should the IS Strategy be "marketed" and consolidated with other elements of the business strategy to ensure that optimal support and cooperation are obtained*

from the organization? With the strategic ICT planning process being fully collaborative and cognisant of the respective value chains within the enterprise through the utilisation of an Enterprise Architecture Approach and the participation of both business and ICT functionaries throughout the business and ICT planning processes the ability to continuously align is optimised. This is as a result of the fact that there is collaboration and interaction at each step of the process as opposed to only before or after the 'plans' have been presented. Alignment is a continuous and progressive process between business and ICT management. The ICT manager (CIO or GITO as is the case in the DOD) should be part of corporate management with the respective ICT managers of the business units being part of business unit executive management.

- *Should the approach employed be totally prescriptive, tailored, or a mixture of both, and how can the organization build on its previous experience of IS planning?* The fact that the main role of corporate ICT management is to provide direction over an extended period of time, the emphasis should be on descriptive strategic corporate ICT direction. This allows for flexibility and innovation that is directly or indirectly related to the uniqueness of the specific requirements of the business units with cognisance of the requirements for standardisation, integration and the elimination of duplication as part of a common enterprise solution. The short half-life of ICT also requires descriptive strategic direction as technology might have changed if the ICT initiative is scheduled too far into the future.

- *What are the most effective approaches, and which techniques achieve best results – for example, determining the critical success factors associated with top-level business functions or employing business analysis down to a very detailed level?* The ability to provide structure to enable the strategic intent as it serves to set a common approach, methodology and management arrangements and mechanisms throughout the enterprise. This is a characteristic of an Enterprise Architecture Planning (EAP) Approach in its ability to sustain configuration management of all planning activities for both business and ICT management. Both functions utilise

these same strategic and business architectures to guide solutions. This further enhances alignment and coordination between business and ICT management.

- *What resources, from which areas of business, fulfilling which roles and responsibilities, and which skills should ideally be involved in the process and are they available? What training will be required?* The business model for the management of ICT should dictate the nature and range of ICT management skills required. It is however contended based on the experience of the DOD that it would be unwise to contract out ICT requirements management. ICT maintenance management on the other hand could be outsourced unless it is mission critical and therefore requires in-house capacity. Solutions management (procurement and development) can be either in- or outsourced according to the nature of the solutions required. Should skills not be available in-house, such skills can be contracted in or developed in-house for especially according to the requirements of management.

- *What other resources are required (automated tools, administrative support, physical facilities)?* The complexity and volume of data to be managed for the enterprise as a whole necessitates a tool or set of tools that can accommodate and enable the EAP approach. Such a tool should have the ability to manage strategic / business architectures and logical / physical ICS/ICT architectures. The availability of such integrated toolsets seems somewhat problematic at this stage.

- *How long will the planning process take and what will it cost?* The ability to support strategic ICT planning that is fully supported by Enterprise Architecture can take a number of years depending on the size of the organization. In the case of the DOD the development and application of an appropriate strategic ICT planning process took eight years of which the establishment and institutionalisation of structural arrangements was the most difficult part. This is due in part to organizational complexities and varying levels of maturity. The approximate cost of this initiative over the period of eight years was RM 65. It is furthermore contended by this researcher that and EAP approach should not be followed for organizations

where the requirement for configuration (baseline) management of planning data is not required.

- *How should the process be steered and managed?"* Pro-actively with appropriate management arrangements and mechanisms in place to ensure that a structured and institutionalised process can be followed. This is a top-down approach with full collaboration between users, business management and ICT management. Planning, coordination and control should be the focus of corporate management with full consideration for uniqueness with execution at business unit level. The responsibility to manage corporate solutions should also be done at business unit level to provide common systems and services across the whole enterprise.

The overarching conclusion that can be drawn given the collaborative nature between the actual process of strategic ICT planning and the requirement to manage such a process is that the process cannot be executed in a diversified organization without the commensurate management arrangements and mechanisms being put into effect. As such these have to be formalised and managed to the point where the ICT functionaries can appropriately interact with the business planners. This interaction has to be effective at both corporate level and business unit level with clear lines of communication and participation between the respective organizational levels and business units.