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THE ESTABLISHMENT, THROUGH ACTION RESEARCH, OF AN APPROPRIATE STRATEGIC ICT PLANNING PROCESS FOR THE SOUTH AFRICAN DEPARTMENT OF DEFENCE AS A DIVERSIFIED ORGANIZATION

1 CHAPTER 1: INTRODUCTION TO THIS RESEARCH

1.1 BACKGROUND AND CONTEXT

Considering the requirement for any organization to leverage the potential utility of ICT towards its competitive advantage, the ability to ensure that a comprehensive yet appropriate approach towards strategic ICT planning in diversified organizations can be sustained becomes imperative. As such the ability to institutionalise an appropriate strategic ICT planning process that is fully collaborative of all role players and stakeholders becomes important.

The ability to institutionalise a strategic ICT planning process, however, relates more to "how" strategic planning should be done and managed than the mere ability to define the process required to perform strategic ICT planning. This becomes apparent when considering current theory regarding the strategic ICT planning process. Authors such as Ward and Griffiths (1996:120-121)[1] indicate that attempts to develop corporate IS/ICT strategies as opposed to strategic business unit IS/ICT strategies, are not always successful. To this effect Ward and Griffiths (1996:121) specifically state that "*unless the corporation is essentially a single business unit company, the task is almost impossible*".

Fairly exhaustive research has already been done in the field of ICT with due consideration of the fact that Whitley (1984)[2] considered it to be a "*fragmented adhocracy*". This begins to illustrate the potential complexity of research into the ICT environment. This research focuses on the development and institutionalisation of an appropriate strategic ICT planning process for especially diversified organizations and contributes to the existing body of knowledge in this field. According to the researcher, one of the issues of the day in ICT management research is that these

[1] Ward, J. & Griffiths, P. 1996. *Strategic Planning for Information Systems.* New York: John Wiley and Sons,
[2] Whitley, R., 1984. *The Intellectual and Social Organization of the Sciences*. Oxford: Clarendon Press.

respective sciences or disciplines have to be synthesised into a holistic approach to ensure that the strategic ICT planning process can be utilised and institutionalised within an organization. This opinion is supported by authors such as Boland and Hirschheim (1987)[3] and others such as Baskerville and Myers (2004)[4].

Given this situation the research undertaken contributes as a result of the critical action research undertaken in the South African Department of Defence as an instantiation of a diversified organization. Given the existing theory the ability to institutionalise an appropriate strategic ICT planning process in practice provided its own set of challenges and characteristics. As such the deviation experienced during this research serves to add to the existing theory and its previous generalised perspective.

1.2 APPROPRIATENESS OF THE DOD TO THIS RESEARCH AS A DIVERSIFIED ORGANIZATION

In general a diversified organization can be described with due consideration of authors such as Thompson and Strickland (2003:291)[5] as an organization that has multiple lines of business and is made up of more than one semi-autonomous business unit. This provides a complexity where management has to ensure that there is appropriate alignment from a corporate perspective without direct involvement in the daily execution of the line functions of such business units.

As an example of a diversified organization given the complexity of a defence function in general and especially the specific regulatory characteristics of the South African Department of Defence, it was considered an appropriate organization for this research. The establishment of a defence secretariat to provide strategic direction and policy for the whole defence function with strong emphasis on the enhancement of civil control as opposed to the management of military capability and capacity by the South African National Defence Force serves to demonstrate the structural complexity of the SA DOD. This, however, requires further elucidation.

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[3] Boland, R.J. & Hirschheim, R.A. 1987. *Critical Issues in Information Systems Research.* Chichester: John Wiley and Sons.
[4] Baskerville, R & Myers, M.D. 2004. Special Issue on Action Research in Information Systems: Making IS Relevant to Practice – *Foreword: MIS Quarterly*, September 2004, vol.28, no.3, p.329-335.
[5] Thompson, A.A. Jr. & Strickland, A.J. III. 2003. *Strategic Management Concepts and Cases*. 13th Ed. New York: McGraw-Hill.

Subsequent to the ending of apartheid and the creation of the new constitution of the RSA[6] the complexity of the South African Department of Defence was increased by the establishment of the Defence Secretariat (Def Sec) in addition to the new South African National Defence Force (SANDF). The primary function of the Defence Secretariat is to provide strategic direction for the defence function and to establish and sustain an appropriate policy framework that would guide the defence function in the Republic of South Africa (RSA). This can be collectively referred to as 'Governance for Defence'.

The other side of the 'defence coin' prescribes that the primary function of the SANDF is the management of an appropriate military capability and capacity to ensure the successful execution of military operations. The "common" national strategic objective and therefore collective mandate of both the Def Sec and the SANDF as taken from the Constitution of the RSA[7] is "*to defend and protect the Republic, its territorial integrity and its people in accordance with the Constitution and the principles of international law regulating the use of force*".

From an academic perspective the implication of this "common" objective is that it sets the overarching "common corporate objective" for the DOD as a whole as referenced from, for example, Thompson and Strickland (2003)[8] and Pearce and Robinson (2003)[9]. This objective that is 'shared' between the Secretary for Defence and the Chief of the SANDF (C SANDF) furthermore sets the scene for collaboration and participation as a strategic imperative for the establishment of inter alia an appropriate strategic ICT planning process for the organization as a whole. By implication it does not allow for strategic planning to be performed in separate 'stove-pipes', partially the nature of legacy solutions that have only the individual requirements of the respective services and divisions of the DOD as strategic objectives. Strategic planning should be driven by corporate objectives and not at 'business unit' level.

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[6] South Africa. Parliament. 1996. *Constitution of the RSA Act 108 of 1996, Section 200 (1)*. Cape Town: Parliament.
[7] South Africa. Parliament. 1996. *Constitution of the RSA Act 108 of 1996, Section 200 (2)* Cape Town: Parliament.
[8] Thompson, A.A. Jr. & Strickland, A.J. III. 2003. *Strategic Management Concepts and Cases*. 13th Ed. New York: McGraw-Hill.
[9] Pearce, J.A. & Robinson, R.B. 2003. *Strategic Management: Formulation, Implementation and Control Sited*. New York: McGraw-Hill.

The complexity that exists within the DOD can be demonstrated by the following figures that firstly indicate the corporate relationships within the DOD, with the latter indicating the structural and functional complexity of the DOD.

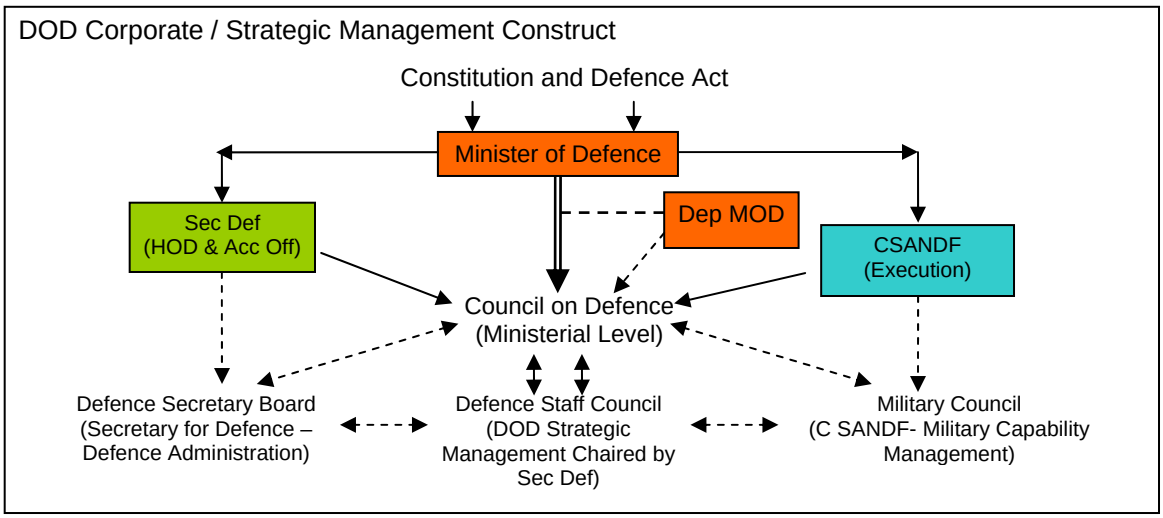
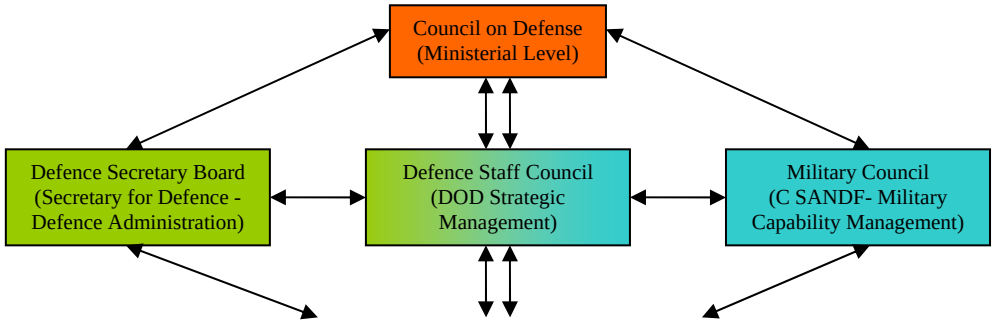


Figure 1.1: Strategic Management Construct from the RSA Constitution and Defence Act

The depiction above indicates the functional relationship between the Minister of Defence as the political executive for the national defence function and supported by the Deputy Minister of Defence (Dep MOD), the Secretary for Defence (Sec Def) as the Head of the Department of Defence and the C SANDF as the executing authority or Commander of the Military. The relationship indicated above is derived from the RSA Defence Act[10] with due consideration of the fact that the RSA Constitution establishes the Defence Secretariat and the National Defence Force. The complexity of the organization as a whole can be presented as follows, also indicating the matrix nature of the functions.

[10] South Africa. Department of Defence. 2002. *SA Defence Act, Act 42 of 2002, Sect 8 and 14 respectively as indicating the functions of the Secretary for Defence and the Chief of the SANDF*. Pretoria: Government Printers.

The SA DOD Organisational Construct as a Diversified Organisation



Strategic Management Councils / Boards for Functions and Capabilities (LOB)

Capabilities / Functions	SA Army	SA Air Force	SA Navy	Military Health Services	Joint Operations	Support Divisions	Defence Intelligence
Strategic Management							
Policy							
Force Design							
Force Preparation							
Force Employment							
HR Management							
Financial Management							
Materiel Management							
Information management							

Figure 1.2: SA DOD organization construct from a functional perspective to indicate complexity as relevant to the existing matrix relationship between process and capability

Figure 1.2 provides an overview of the structural relationships between the core business of the DOD as relevant to the Services and the Divisions and the relevant functions and resources that enable them to operate within an appropriate system of governance. Prior to the initial transformation initiative of the DOD that commenced in 1996 and concluded in 1998, the management of ICT had largely been decentralised to the services and divisions of the DOD that in turn led to a situation where stove-pipe solutions and all its challenges prevailed.

The initial transformation objective for the ICT management function within the DOD was to establish a centralised organization that could be charged with the responsibility to manage defence information, the defence information and communication system as well as the utilisation of ICT in support of the defence function.

The DOD transformation initiative furthermore included the transformation of the ICT management function to ensure that it can contribute towards the realisation of departmental and national imperatives. One of the national imperatives as taken from the Constitution of the RSA[11] and relevant to the National Defence Force states that:

> *'the defence force must be structured and managed as a disciplined military force'*

This has the implication that meticulous attention had to be paid to the development of structures and mechanisms that contribute to the integrity of the South African National Defence Force (SANDF) and the Defence Secretariat. The RSA Constitution *op. cit.* also states that:

> *'the primary object of the defence force is to defend and protect the republic, its territorial integrity and its people in accordance with the constitution and the principles of international law regulating the use of force'[.]*

The overarching implication is that a multitude of core and supporting capabilities should be harnessed to 'defend and protect' and as such should be continuously improved towards this end. The transformation of the ICT management function within the wider transformation of the DOD was therefore approached with the requirement to ensure that it would be scientifically sound and practically executable. This requirement was part of the original transformation charter that included the ICT management function as confirmed in the final report[12].

The improvement and realignment imperative was especially appropriate given the decentralised approach towards ICT management that was in evidence in the DOD prior to transformation. This decentralised approach resulted in non-standardised practice and in addition to the "stove-pipe" solutions as already mentioned within the DOD. Thus the imperative to ensure that ICT system management was performed within the context of an integrated and coordinated DOD where strong emphasis was placed on "jointness" and integration.

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[11] South Africa. Parliament. 1996. *Constitution of the RSA, Act 108 of 1996, Section 200 (1).* Cape Town: Parliament.
[12] 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.

The migration from managing ICT at business unit level as opposed to from an enterprise or corporate perspective became the driver for the new approach towards ICT management in the DOD. This required full participation and collaboration between corporate management and business unit management.

It was furthermore expected that the better the management of the ICT became, the bigger the improvement in the nature of the ICT solutions would become. These improvements would in combination have a positive improvement on the overall maturity of the organization to ensure conformance to defence requirements and commitments. This added complexity to the initiative and the research given the fact that the DOD is a going concern with national and international obligations through its implications for continuous alignment.

These defence obligations required sustainment of the existing capacities and capabilities that included ICT solutions and services. In addition to this the requirements for ICT solutions had to be managed and integrated in such a manner that it reflected a Defence Enterprise Information Systems (DEIS) rather than the plethora of non-standardised and functionally duplicated and obsolete systems that made up the ICT inventory of the DOD.

1.3 PROBLEM STATEMENT AND MOTIVATION FOR THE STUDY

Prior to the transformation of the DOD the management of ICT was decentralised to each Service and Division. Strategic ICT management was therefore performed without consideration of the specific requirements of the organization in its holistic complexity.

The organizational maturity as well as the ability of the organization to manage information from an enterprise perspective within the context of the larger public sector, was not coordinated either. This extended to the point where corporate direction was not necessarily aligned with national governance. Corporate direction that served to guide the utilisation of ICT within the DOD was therefore not optimised and coordinated from a government wide perspective.

From a strategic ICT management, and therefore strategic ICT planning process perspective, the problem of decentralised ICT planning became apparent because of

the fact that general approaches to strategic information systems planning and ICT planning, as currently presented by various models, are largely based on the premise that the organization has a single or simple line (or lines) of business when referencing, for instance, the work of Ward and Griffiths (1996) *op. cit.* This is how it was in fact managed in the DOD as "stove-pipe" responsibilities that resulted in "stove-pipe" systems and solutions.

In addition to this the general process of strategic ICT planning that was practiced did not necessarily acknowledge structural and organizational imperatives required to ensure that the strategic ICT planning process can be progressively taken to its logical conclusion and focus. This was reflected in the nature and functioning of the management arrangements and mechanisms employed when considering for instance the implications of the adage that 'structure follows strategy' as coined by Chandler (1962)[13].

Authors such as Stair and Reynolds (1999)[14] as well as Cross (1999)[15] indicate that the focus of ICT planning should be on realising the potential utility of ICT for the organization. As such it can be generally contended that ICT should enhance the continuous improvement of the organization's competitive advantage. The underlying understanding was also that ICT planning as presented by for instance Ward and Griffiths (1996)[16] must be applied in concert with the general strategic management process as defined by for example Thompson and Strickland (2003)[17], Pearce and Robinson (2003)[18] and especially Luftman (1996)[19]. It was further contended by for instance Ward and Griffiths (1996) *op. cit*. that the strategic ICT planning process was to be simply repeated for each focus area or semi-autonomous business unit such as

[13] Chandler, A.D., Jr. 1962. *Strategy and Structure: Chapters in the History of Industrial Enterprise*. Cambridge, Massachusetts: MIT Press.
[14] Stair, R.M. & Reynolds, G.W. 1999. *Principles of Information Systems*. 4th Ed. Cambridge, MA: International Thompson Publishing.
[15] Cross, J. 1999. IT Outsourcing: British Petroleum's Competitive Approach. *Harvard Business Review: On the Business Value of IT*, 1999.
[16] Ward, J. & Griffiths, P. 1996. *Strategic Planning for Information Systems*. New York: John Wiley and Sons.
[17] Thompson, A.A. Jr. & Strickland, A.J. III. 2003. *Strategic Management Concepts and Cases*. 13th Ed. New York: McGraw-Hill.
[18] Pearce, J.A. & Robinson, R.B. 2003. *Strategic Management: Formulation, Implementation and Control Sited*. New York: McGraw-Hill.
[19] Luftman, J.N. 1996. *Competing in the Information Age: Strategic Alignment in Practice*. New York: Oxford University Press.

the Services and Divisions of the DOD. The resultant strategic ICT plans were then to be combined into a single integrated strategic ICT plan for the enterprise.

The above is indicated by Ward and Griffiths (1996:65) *op. cit*. when posing the questions whether the organization "*should be broken down into smaller, discrete parts where it might be easier to apply tools and techniques, and develop coherent strategies and plans?*" The simple statement that Ward and Griffiths (1999:65) *op. cit.* make in response to this dilemma is that "*[t]his can be reconciled by considering the enterprise strategy as a combination of achievement of corporate objectives via the contribution of SBU's"*. Such a bottom-up approach of aggregating strategic ICT planning from business unit level as opposed strategically managing ICT from a corporately driven top-down approach is advocated in spite of the fact that appropriate acknowledgement is given to the complexities and characteristics of complex or diversified organizations. Forthcoming from such an approach the requirement for alignment is clearly an issue as an enterprise (corporate) responsibility as per the opinions of Luftman (1996)[20] and others.

Even though the complexity of the organization is acknowledged by many authors such as those indicated above it was not necessarily comprehensively related to specific organizational structural approaches or models such as for the DOD. As a complex organization the DOD, with functional differentiation inherent to the enterprise and its specific structural arrangements between the Secretary for Defence as Head of the Department and Head of the Defence Secretariat and the Chief of the National Defence Force (CSANDF) as the Military Commander, provided an appropriate research environment. This is due to the fact that there is a distinct separation of function within a single organization with a common objective. This relationship in itself is somewhat unique due to the nature of the separation of functions, as will be explained in Chapter 2.

Given the perspective provided by Ward and Griffiths (1996:121) on the ability to do strategic ICT planning for a 'complex' or 'diversified' organization when stating that "*Unless the corporation is essentially a single business unit company the task is almost impossible*" the problem was expected to revolve around 'how it should be

[20] Luftman, J.N. 1996. *Competing in the Information Age: Strategic Alignment in Practice*. New York: Oxford University Press.

done' rather than about 'what should be done'. This was confirmed as this research progressed given the specific and somewhat unique nature of the organization as a type of diversified organization.

This research therefore intends to expand on the implications and complications of the strategic information systems (ICT) planning function in functionally and/or geographically diversified organizations as based on and taken from the DOD. The results of this research is expected to benefit both the organization and its practices and to scientific knowledge.

Complex organizations typically have several lines of business, each of which has its own respective issues and drivers influencing its ICT solutions due to its particular set of circumstances. The strategic ICT planning process should therefore not only address these specific issues, but must also incorporate a number of disciplines related to, as well as arrangement for, strategic ICT planning as a single congruent process within an organization that does not necessarily conform to the standard or generic model as generally described in literature.

The following considerations in the opinion of the author (researcher) were found to be relevant to this research as part of the process of continuous improvement that characterises the implementation of the strategic ICT planning process in the DOD:

- Existing theory regarding strategic information management and strategic information systems management was insufficiently developed / enhanced to guide the strategic management of information and information systems in a diversified organization such as the DOD. This resulted in an inability to simplistically implement the strategic ICT planning approach as presented by for instance Ward and Griffiths in the DOD. As indicated in this research a number of issues should to be addressed to facilitate such institutionalisation.

- Work done during the normal process of continuous improvement and alignment within the DOD with due consideration of its specific, yet ever-changing environment, should be based on theory that generally applies to the industry. This required understanding of the specific nature and issues of the DOD to ensure that optimised institutionalisation can in turn maximally contribute towards its strategic imperatives.

- Participation by ICT specialist functionaries in the strategic management processes of an organization should contribute towards the optimal utilisation of information as a primary resource. Specialists should therefore not necessarily focus more on the technology as opposed to the systems which it supports, given the emphasis on information as a primary resource. This in turn results in a requirement for alignment of the ICT systems to support the information strategy and therefore enhances its contribution towards adding a competitive advantage to an organization.

- A process of change does not necessarily dynamically work towards implementing the objectives of a true learning organization. This has to be done through the innovative utilisation of knowledge and experience. The focus of learning is usually on external perceptions as well as expectations and influences, and is not necessarily focused on the expectations of the specific organization where it requires the practical implementation of theory.

- The process of realising strategic objectives is not necessarily taken to its logical conclusion, since the social acceptance or institutionalisation as part of organizational culture of the change objectives as supportive of strategic objectives, are not realised. This is particularly applicable to the information management responsibility and its participation at all levels of activity and responsibility in the organization. Such non-participation causes extensive problems which need to be resolved regarding services and information systems delivery and support.

- Uncertainty and conflict are usually experienced with institutionalisation of the 'transformed' approach towards information and information systems management in an organization, and IT as an enabler. Institutionalisation as such should be done in such a manner that it '*eliminates*' uncertainty and conflict.

- Conflict often occurs with the definition, acceptance and execution of the roles and responsibilities of the users and the solution providers for information and information systems in a diversified organization. To resolve this issue clarity

of roles and responsibilities becomes an imperative for the diversified organization.

In terms of these considerations the problem encountered in the DOD prior to its transformation initiative revolved around the fact that there was no appropriate strategic ICT management process that included the strategic ICT planning process given the nature of the organization. In addition the management arrangements and mechanisms were still orientated towards decentralised ICT management with each business unit (Service and Division) functioning predominantly independently. Obviously the ability to institutionalise strategic ICT planning within the DOD as a complex organization was therefore problematic. This complexity will be explained in the next chapter (Chapter 2) to provide some relevant contextual definition of the DOD as an organization.

With due consideration of the structural arrangements as presented in Figures 1.1 and 1.2 the following issues influenced the context within which the strategic ICT planning function had to be performed when considering the Constitution of the RSA[21] and the SA Defence Act[22].

- There is a dialectic relationship between the Secretary for Defence, being the "Head of the DOD" and the Chief of the SANDF (C SANDF), being the "Commander of the Force". This relationship stems from the constitutional imperative to deliberately create a situation of "*tension*" between the Secretary for Defence and the C SANDF as the military commander. The Secretary for Defence has a specific duty to "enhance civil control" over the Military.

- The Secretary for Defence (Sec Def) is the primary "Defence Policy Advisor" to the Minister of Defence, whilst the Chief of the SANDF (C SANDF) is the "Primary Military Advisor" to the Minister of Defence in his capacity as the executive authority for the defence function in Cabinet. This creates a situation where the defence function can be balanced with appropriate military capacity and capabilities.

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[21] South Africa. Parliament. 1996. *Constitution of the RSA (Act 108 of 1996), Section 198 to 204*. Cape Town: Parliament.
[22] South Africa. Parliament. 2002. *SA Defence Act of the Republic of South Africa (Act 42 of 2002).* Cape Town: Parliament.

- As indicated above the Secretary for Defence is charged with the responsibility to contribute towards "enhancing civil control" over the SANDF, whilst the CSANDF in his capacity of Commander of the SANDF ensures "appropriate command and control over the military capability".

- The objective for the management of the ICT function is to ensure that there will be appropriately centralised or corporate strategic direction to guide the utilisation of ICT in support of the defence requirements for information systems to address the information requirements of the organization.

- There was no standardised process for strategic ICT planning in the DOD given the acknowledged complexity of the organization.

- Due to the previously decentralised nature of the ICT management function the ICT regulatory framework and specifically the policy related to strategic ICT planning was not aligned with the approach to strategic ICT planning. This informed the decision for the transformation of the ICT function to also include the development and institutionalisation of an appropriate strategic ICT planning approach.

- ICT management arrangements and mechanisms were still decentralised to a very large degree, resulting in ineffective and inefficient ICT solutions and bad alignment with organizational objectives.

1.4 MOTIVATION FOR THIS STUDY

The fact that the primary focus within the DOD was to realise and institutionalise an appropriate strategic ICT planning process for the DOD had to be soundly based on accepted theory has already been indicated. Given the complex nature of the DOD and therefore the complexity of establishing an appropriate planning process the expectation was that this specific research will contribute towards the existing body of knowledge regarding this topic. From the research undertaken this was found to be the case.

With this implication in mind this study in its progression by necessity also focused on the establishment of an appropriate functional authority to ensure corporate governance for the management of the ICT function in the DOD as a diversified

organization. The appointment of such a functional authority was then to be augmented by the establishment of an appropriate process for strategic ICT management. For the purpose of this research the strategic ICT planning process taking place in the DOD with appropriate structural arrangements to sustain the management of the ICT function within the DOD became a prerequisite objective for institutionalisation.

In the case of the DOD the institutionalisation of the ICT planning process required appropriate policy that stemmed from the requirement for appropriate corporate governance consisting of strategic direction and policy. This was with due consideration of the transformation condition that the function had to be managed in a collaborative manner to enhance the "executability" and acceptance of the strategic governance within the relevant regulatory framework as an imperative.

1.5 RESEARCH QUESTIONS AND OBJECTIVES

In view of the above this research was driven by the requirement to understand the issues, characteristics and considerations that need to be consciously addressed as part of the intention to apply a generic strategic ICT planning process appropriately in the DOD. The questions that are considered to underpin these issues and therefore related objectives are the following:

- What is the nature of the organizational complexity as appropriate to a diversified organization that will drive the institutionalisation of the strategic ICT planning process? This is with due consideration of the fact that there are environmental issues due to product or market differentiation that necessitate specific attention in the formulation of a strategic ICT plan with the focus on function within the context of total systems management and total life cycle management. These can relate to issues of governance that can influence the regulatory framework for strategic ICT planning in diversified organizations.

- Would a distinct process have to be followed to ensure that strategic ICT planning and therefore the resultant strategic ICT plan is aligned with the strategic intent of the DOD as a diversified organization functioning within a holistic environment? It was therefore considered appropriate that very specific management arrangements would be required to ensure not only participation

and collaboration between the respective levels of the diversified organization, but also between business management and ICT management to ensure alignment of solutions in support of business requirements. This should be performed with due consideration of the internal and external environment and its influences on the DOD and the strategic ICT planning process.

- Would specific structural arrangements and mechanisms facilitate the institutionalisation of such a strategic ICT planning process, given the requirements for governance? To this end there could be specific considerations that are forthcoming from the nature of the core business and its relationship with management practices and supporting functions that have a direct implication for the nature of the ICT solutions. These are issues such as organizational function, structure and culture as well as the nature of the lines-of-business themselves.

- Is there a correlation between the existing theory and the strategic ICT planning process as appropriate to the DOD, and which lessons should be learnt to ensure that value can be added to strategic ICT planning in the DOD and to the body of knowledge regarding strategic ICT planning as a scientific discipline?

- Are there specific ICT planning process requirements appropriate to strategic planning in diversified organizations that will ensure that performance and compliance indicators for systems management over their total life cycle with due considerations of the ever-changing business environment can be managed effectively through effective alignment?

1.6 RESEARCH CONTRIBUTIONS

The existing body of knowledge provides a firm theoretical and practical baseline for the management of the respective disciplines involved with strategic ICT planning. The findings of this research as a longitudinal study contribute to the expansion of the existing body of knowledge regarding the enhanced process of strategic ICT planning in diversified organizations.

The contribution made by this research relates mainly to the ability to integrate and synthesise relevant planning aspects and characteristics of the strategic ICT planning

process in complex organizations. This is as a result of the improved understanding of the dynamically iterative relationship between the process and its enabling structural arrangements in a complex organization such as the DOD. This was confirmed by the actual implementation and institutionalisation of an appropriate strategic ICT planning process in the DOD and realising the related transformation objectives for an appropriately centralised corporate strategic ICT management function.

To this end the contribution of this research is presented in terms of 'how' it was actually achieved. The ability to implement the actual findings of the research initiative within the DOD confirms this. As such the results will be directly appropriate and executable in the DOD, and the findings can serve to establish an improved understanding of the nature of strategic ICT planning, especially in complex organizations. The requirement and endeavour to generalise will be further explained as part of the literature study and applied during the formalisation of the research findings. In essence the findings of this research will be presented as an instance of critically applying existing theory to a specific set of circumstances in accordance with the conclusions reached by Lee and Baskerville (2003)[23]. The further generalisation to establish a generic framework could be the focus of further study and is not covered in this research.

1.7 RESEARCH APPROACH

This research was undertaken as a case study over a period of approximately 8 years. The complex nature of the research given the complexity of the research environment necessitated structure in the research approach and methodology. Such structure given the nature of the research undertaken was provided by utilising an action research approach and methodology. The ability to critically analyse both existing theory and practice to ensure alignment between theory and practice through a process of dialogical reasoning by relevant role players and stakeholders enhanced the research undertaken.

The ability to ensure alignment between the strategic (business) management process and the strategic ICT planning process necessitated a synthesis of related theory. The implementation of an appropriate strategic ICT planning process therefore also has to

[23] Lee, A.S. & Baskerville, R.L. 2003. Generalizing Generalizability in Information Systems Research. *Information Systems Research*, vol.14, no.3, September 2003.

address general management requirements as relevant to appropriate structural arrangements and mechanisms. Addressing such arrangements was found to enhance the ability to institutionalise the strategic ICT planning process within the overall DOD management construct as opposed to merely defining the process.

The ability to do this contributed towards the internalisation and institutionalisation of the result and the understanding of continuous learning to support the principle of continuous improvement of both scientific theory and of practice. As such the emphasis of this research resides in the ability to align theory and practice and to provide insight into what it takes to actually institutionalise the process of strategic ICT planning in an organization such as the Department of Defence.

1.8 THESIS FRAMEWORK

From the research undertaken this thesis will report on the following:

- Chapter 2: A Contextual understanding of the DOD and its implications for ICT Management
- Chapter 3: Applying an appropriate theoretical framework to the case study
- Chapter 4: The research approach and methodology
- Chapter 5: Presentation of the case study and it results
- Chapter 6: Evaluation of research methodology, recommendations and conclusions

1.9 CONCLUSION

Concluding this chapter, it can be reiterated that the intention was to ensure that an appropriate strategic ICT planning process was developed and institutionalised in the DOD. In addition to this, the requirement of the DOD for scientific integrity provided an ideal opportunity to ensure that the lessons learnt could be incorporated into the existing body of scientific knowledge regarding strategic ICT planning. The nature of the DOD initiative and the intended research approach towards resolving the problems

and challenges made a critical analysis and interpretation of existing theory and an intensive understanding of the organizational issues of the DOD an imperative.

The following chapter provides insight into and an understanding of the DOD as an organization with specific focus on ICT management.

2 DESCRIPTION OF THE DOD: ITS CONTEXT, HISTORY AND POSITION WITHIN THE SOUTH AFRICAN GOVERNMENT, STRUCTURE AND ORGANIZATION

2.1 CONSTRUCT TO GUIDE THE MANAGEMENT OF THE DEFENCE ENTERPRISE INFORMATION SYSTEM IN THE DOD

Subsequent to the establishment of the new order in the RSA after 1994 a new national Constitution was put into effect. In addition to this a new Defence Act was also promulgated. When read in conjunction with other legislative documents, such as the Public Service Act (PSA)[24], the Public Finance Management Act (PFMA)[25] and other relevant Acts of Government as well as its supporting Regulations, - to be referenced later -, it sets the scene for the management of Defence Information, Defence Information and Communication Systems and ICT within the DOD. When referencing the Defence ICT system it is referred to as the Defence Enterprise Information System (DEIS) in its systemic context. At product system level it is referred to as the Command and Management Information System (CMIS). This understanding sets the organizational scene and defines the paradigm for the management of the DEIS.

The first order implication at national level for the management of the DEIS is derived from the RSA Constitution (Chapter 11) that indicates that there is to be a separate SA National Defence Force and a Defence Secretariat. The Defence Act of the Republic of South Africa (Act 42 of 2002) and especially Sect 8 apportions certain functions to the Secretary for Defence (Sec Def), whilst Sect 14 indicates those functions that are appropriate to the Chief of the South African National Defence Force (C SANDF). These functions are in support of the Constitution of the Republic of South Africa (Act 108 of 1996): Chapter 11, Section 198 to 204. As such the allocated functions also provide the basis for the management of information, information and communications systems (ICS) and the utilisation of ICT in the DOD, and the relationship between the Government IT Officer (GITO) and the Chief of Command and Management Information Systems (C CMIS) that are part of the Defence Secretariat and the SANDF respectively.

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[24] South Africa. Parliament. 1994. *Public Service Act, Act 103 of 1994*. Pretoria: Government Printers.
[25] South Africa. Parliament. 1999. *Public Finance Management Act, Act 1 of 1999, Sect. 36 (Act No. 1 of 1999)*. Pretoria: Government Printers.

The aim of providing this context is to enhance the understanding of the nature of the organization and its implications that influenced information and ICS/ICT management in the DOD and the participation of role-players and of stakeholders in the management of Defence Information. It also provides insight into the implications of managing the ICT function within the DOD as aligned with normal practice in the DOD. Such a systemic perspective as defined by Checkland and Scholes (1990:18)[26] set the paradigm for the institutionalisation of an appropriate strategic ICT planning process for the DOD.

2.1.1 Functional Approach for Strategic Information Management in the DOD

As per the strategic approach[27] for the management of the DEIS as well as Information, Information Systems and ICT solutions management with the commensurate capacity of the CMIS Division as eventually approved by the Secretary for Defence, it will be "*managed in a structured, yet clearly defined and approved approach as well as an approved business plan for the management of command and management information solutions and service delivery through unambiguous direction, implementation plans and robust control mechanisms*". This definition was eventually developed by the GITO as a result of this research and confirmed in 2005 at the strategic work session of the Defence Secretariat of 2005 attended by the Secretary for Defence and members of the Defence Secretariat. Some of the participants in this collaborative process were the Chief of Policy and Planning, Chief Director HR Policy and Planning and the Chief Financial Officer of the DOD.

2.1.2 Functions of the Secretary for Defence as Relevant to DEIS Management

In addition to the functions ascribed to the Secretary for Defence in terms of the Defence Act[28] he/she is also the 'Head of the Department' in terms of the Public Service Act and the Accounting Officer in terms of the Public Finance Management Act. As such he/she serves as the primary advisor to the Minister of Defence on matters related to defence policy. He/she also performs tasks that are necessary or

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[26] Checkland, P.B. & Scholes, J. 1990. *Soft Systems Methodology in Action.* Chichester, England: John Wiley & Sons.
[27] South Africa. Department of Defence. 2005. *Strategic Business Plan for the GITO Function in the DOD: 2005/06 with reference DS/GITO/R/303/3 dated February 2005.* Pretoria: The Department.
[28] South Africa. Parliament. 2002. *Defence Act, Act 42 of 2002, Sect. 8, par. a. - g.* Cape Town: Parliament.

expedient to "enhance civil control" and as such he/she provides the "contextual construct" for the defence function to the C SANDF. This in turn results in the requirement for the C SANDF to in terms of the Defence Act "issue orders and instructions and to give commands to any specified member" (of the SANDF).

The responsibility of the Secretary for Defence to contribute towards enhancing civil control has him monitoring compliance to policies and directions issued by the Minister to the C SANDF and reporting thereon to the Minister. The Secretary for Defence is also as quoted from the Defence Act, "responsible for discipline, administrative control over and management of employees, including their effective utilisation and training". The above functions of the Secretary for Defence lead directly to the nature of the functions that the GITO performs in executing his duties.

2.1.3 Functions of the C SANDF as Relevant to DEIS Management

The functions of the C SANDF[29] as the Commander of the SA National Defence Force are focused on the fact that he/she serves as the principle advisor to the Minister of Defence on military matters and as such "must comply with any direction by the Minister under authority of the President" (as the Commander-in-Chief). To ensure that the C SANDF can realise this commitment he/she is responsible for formulating and issuing military orders and doctrine and executes his command by issuing orders, directives and instructions, and by giving commands.

The C SANDF is also responsible for direct management and administration of the Defence Force which includes "capacity development for members of the Defence Force" and "employees of the Department where so required by the Secretary for Defence". He/she also has the responsibility to "execute approved programmes of the budget for the Defence Force" and "must supply the Secretary for Defence with such information with regard to the Defence Force as may be required by the Secretary for Defence".

It is therefore clear that the C SANDF is responsible for the employment of the Defence Force, the training of its members, the maintenance of such military response capability as authorised by the Minister, with appropriate planning for contingencies

[29] South Africa. Parliament. 2002. *Defence Act, Act 42 of 2002, Sect. 14, par. a. to m.* Cape Town: Parliament.

that may require the use of the Defence Force. As such he/she must manage the Defence Force as a disciplined force, and is also responsible for the development of a non-racial, non-sexist and non-discriminatory institutional culture within the Defence Force in accordance with the Constitution and departmental policy on equal opportunities and affirmative action. The above functions of the C SANDF lead directly to the nature of the functions that the C CMIS performs in the execution of his/her duties.

2.1.4 Defence Enterprise Information System Management Context

The depiction presented in Figure 2.3 provides insight into the relationship that exists between the President of the RSA as the Commander-in-Chief of the SA National Defence Force, the Minister of Defence as the political executive for the Defence function and the Department of Defence and his/her interaction with the Secretary for Defence and the C SANDF. These relationships exist in terms of the stipulations of both the Constitution of the RSA as referenced and the Defence Act as referenced. From this relationship the focus of the Government IT Officer (GITO) [30] of the DOD is on strategic direction, governance and control in respect of the DEIS as supported by the Performance Agreement between the Secretary for Defence and the GITO[31].

The GITO also assists the Chief of Acquisition and Procurement (C Acq & Proc) as the Head of the Defence Acquisition and Procurement Division (DAPD) in exercising governance over the process of ICS acquisition and procurement. Consequent to this the C CMIS, as the primary CMIS integrator, is the single highest level point of execution for ICT solutions and services at product system level. The mechanisms available to the DOD to obtain ICT solutions are the State IT Agency for ICT solutions that have an administrative nature and the Armscor (“Armaments Corporation”) for ICT solutions that have a distinct armaments nature. In addition to these mechanisms there are defence contracts where procurement is done by the DOD itself. Other capability owners that have Command and Control systems embedded in

[30] South Africa. Parliament. 2000. *Cabinet Memorandum 38a of 2000, dated 4 August 2000: Establishment of a Government Information Technology Officer (GITO) function in Government and a Government Information Technology Officers council (GITO Council)*. Cape Town: Parliament.
[31] South Africa. Department of Defence. 2005. *Performance Agreement between the Secretary for Defence and the GITO for the Period 1 January 2005 to 31 December 2005 dated 9 February 2005*. Pretoria: The Department.

their Services and Divisions will therefore be subject to the direction and control of the system integrator. This relationship can be presented as follows:

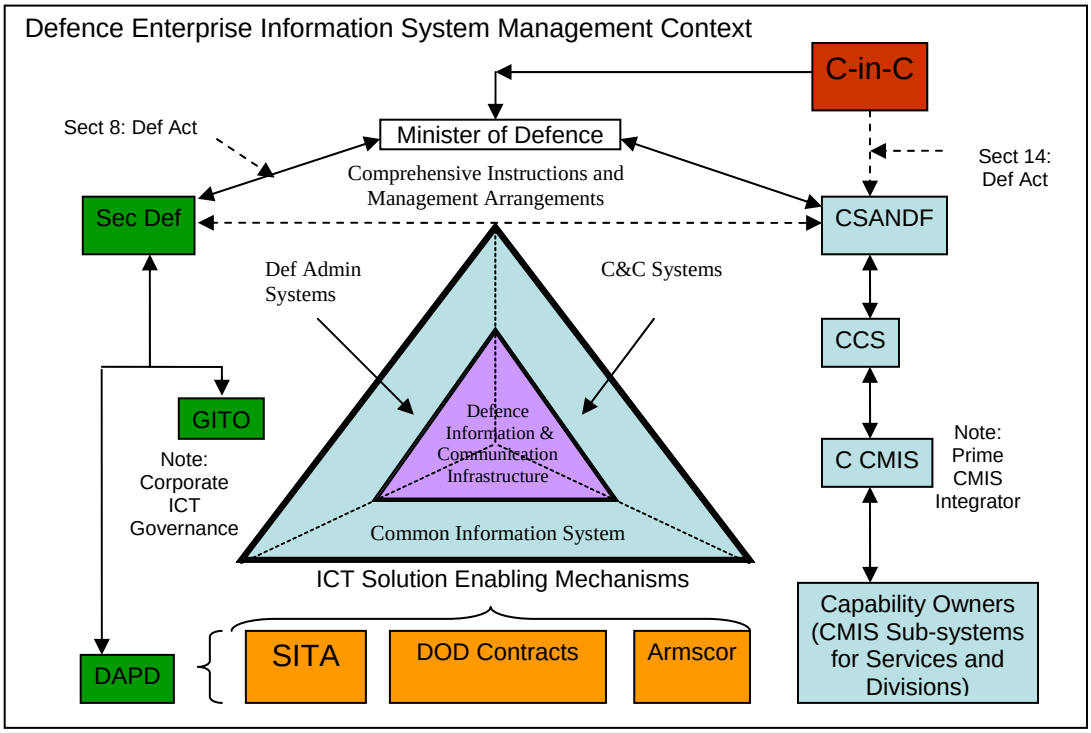

Figure 2.3: Defence Information System Management Context

Given the description and presentation of functions provided above the mechanisms available to ICT and acquisition functionaries to interact appropriately with the ICT industry, certain mechanisms facilitate this interaction. The State IT Agency (SITA) has a national obligation to ensure ICT solutions management for government as part of “public service and administration”. As such its primary focus is on administrative and commercial solutions. Another sector of ICT, the “Armaments Corporation” or Armscor, focuses on military solutions. Both of these mechanisms for solutions management are enhanced with an internal ability of the DOD to manage tenders and contracts towards ICT solutions via its procurement division and DOD contracts.

2.1.5 Comments on the Strategic DEIS Management Context

With due consideration of the context as decomposed from national level to the internal management arrangements within the Department of Defence there is a clear and distinct implication for the management of the Defence Enterprise Information System (DEIS) as the corporate higher order user system. Given the nature of the relationship between the Secretary for Defence and the C SANDF and the fact that the

GITO forms part of the Defence Secretariat whilst the C CMIS forms part of the SANDF, their roles and responsibilities are separated in a manner similar to those of the Secretary for Defence and the C SANDF. In addition to this both the GITO and the C CMIS have an interactive relationship with the Chief of Acquisition and Procurement (C Acq & Proc) related to strategic governance and ICT solutions management respectively. To facilitate the requirement for national coordination a GITO Council[32] was established to ensure coordination for all ICT initiatives of government between all national departments and provincial governments.

The DEIS is currently being managed in terms of a total systems management approach and a total systems life cycle management approach with due consideration of the systemic implication of the information system and its functioning within the bigger DOD as a system of systems. The DEIS Management Arrangements and Mechanisms[33] were defined as the result of approximately four years of work-in-progress and structural review to ensure that an appropriate understanding of the relationships, roles and responsibilities for managing the DEIS was established. This review formed the basis for the research undertaken.

2.2 STRATEGIC CMIS MANAGEMENT APPROACH

2.2.1 Functions of the Secretary for Defence and the C SANDF

Given the considerations of Sect 8 and Sect 14 of the Defence Act as referenced, there is a clear and distinct, yet complementary relationship between the Secretary for Defence and the C SANDF. This can be demonstrated by the following, as it has a direct implication on the allocation of powers, functions and duties to the GITO and the C CMIS that represents the interest (functions) of the Secretary for Defence and the C SANDF respectively[34].

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[32] South Africa. Parliament. 2000. *Cabinet Memorandum 38a of 2000, dated 4 August 2000: Establishment of a Government Information Technology Officer (GITO) function in Government and a Government Information Technology Officers council (GITO Council)*. Cape Town: Parliament.
[33]South Africa. SA Department of Defence. 2006. *DOD Implementation Instruction 10/06: The Implementation of the DEIS Management Arrangements and Mechanism as part of the Comprehensive Instructions to Guide the Management of the DEIS Function of the DOD with reference SD/GITO/R/501/9 dated 7 April 2006*. Pretoria: The Department.
[34] South Africa. SA 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.

2.2.2 Functions of the GITO and the C CMIS as Related to the Functions of the Secretary for Defence and the C SANDF Respectively

From the functions of the Secretary for Defence and the C SANDF it is clear that there is a dialectic relationship by design. This dialectic nature of the relationship is carried through to the GITO and the C CMIS as a system of checks and balances between strategic direction and execution. Taken from the functions of the Secretary for Defence and the C SANDF, it is considered as imperative that there should be a direct correlation between the nature of the functions of the Secretary for Defence and the GITO and those of the C SANDF and the C CMIS. The nature of the relationship between the GITO and the C CMIS should be based on collaborative interaction to realise synergy without negating the ability to manage common or transverse ICT solutions with due consideration of unique requirements and solutions as referenced from relevant documentation.

2.2.3 GITO Functions in Support of the Secretary for Defence

In terms of the functions of the Secretary for Defence and the fact that the GITO[35] functions in support of the Secretary for Defence, he/she serves as the primary advisor on information management for the DOD. In this capacity he/she provides strategic ICT direction, including the formulation of the DOD strategic business plan for information management. The GITO also exercises functional authority over information management to include enhancing civil control. The GITO is also the information system manager for the Ministry of Defence and Defence Secretariat in a coordinating capacity. The focus of the GITO is on the Defence Enterprise Information System as opposed to the C CMIS that focuses on ICS management as relevant to the Command and Management Information Systems (CMIS) and related services.

2.2.4 C CMIS Functions In Support of the C SANDF

[35] South Africa. Department of Defence. 2005. *GITO Performance Agreement with Reference Def Sec/R/105/2 dated 9 February 2005*. Pretoria, The Department.

The functions of the Chief of Command and Management Information Systems (C CMIS)[36] in support of the C SANDF establish him as the primary advisor on Command and Management Information Systems (CMIS) and Services for the DOD. In the capacity of being the primary integrator of the CMIS the focus of the C CMIS is on the physical system and services as opposed to the systemic solution referred to as the DEIS which is the domain of the GITO. The C CMIS is therefore responsible for strategic direction, including the formulation of the SANDF strategic business plan for Command and Control Systems management. The C CMIS also contributes towards the function of Command and Control to enhance operational effectiveness.

In his capacity as the primary systems integrator for the CMIS and Services for the DOD consisting of the Ministry of Defence, Defence Secretariat and SANDF he/she ensures that there is sufficient and appropriate capacity in the DOD to manage the Defence Enterprise Information System.

2.2.5 Contextual Construct For The GITO And The C CMIS

As appropriate to the function of ICT management the corporate management arrangements can be described as follows with the Council on Defence (COD) that is chaired by the Minster of Defence as the political executive for the defence function of the RSA with the Deputy Minister of Defence, the Secretary for Defence and the Chief of the SANDF as members being the highest management forum for the DOD. In support of the COD the Defence Staff Council under the Chairmanship of the Secretary for Defence as the Head of the Department and the Accounting Officer and co-chaired by the Chief of the SANDF as the Commander of the military force is responsible for strategic corporate management of the DOD. From a functional ICT management perspective strategic corporate management is done by means of the Defence Enterprise Information Systems Board (DEIS Board) under the chairmanship of the Government IT officer for Defence with full representation by the C CMIS as the primary Command and Management System integrator and all the ICT Managers of the respective Services and Divisions in attendance. These ICT managers are representative of the respective Budget Authorities that are also the heads of the

[36] South Africa. Department of Defence. 2004. *C CMIS Performance Agreement with Reference CJ Sup/R/105/2 dated 24 March 04*. Pretoria: The Department.

Services and Divisions and function as semi-autonomous business units within the DOD.

The following representation can be made regarding the defined functions as appropriate to the GITO in support of the Secretary for Defence, and the C CMIS in support of the C SANDF. This representation clearly reflects the collaborative nature of managing the National Defence function to realise departmental strategy in an unambiguous and robust manner.

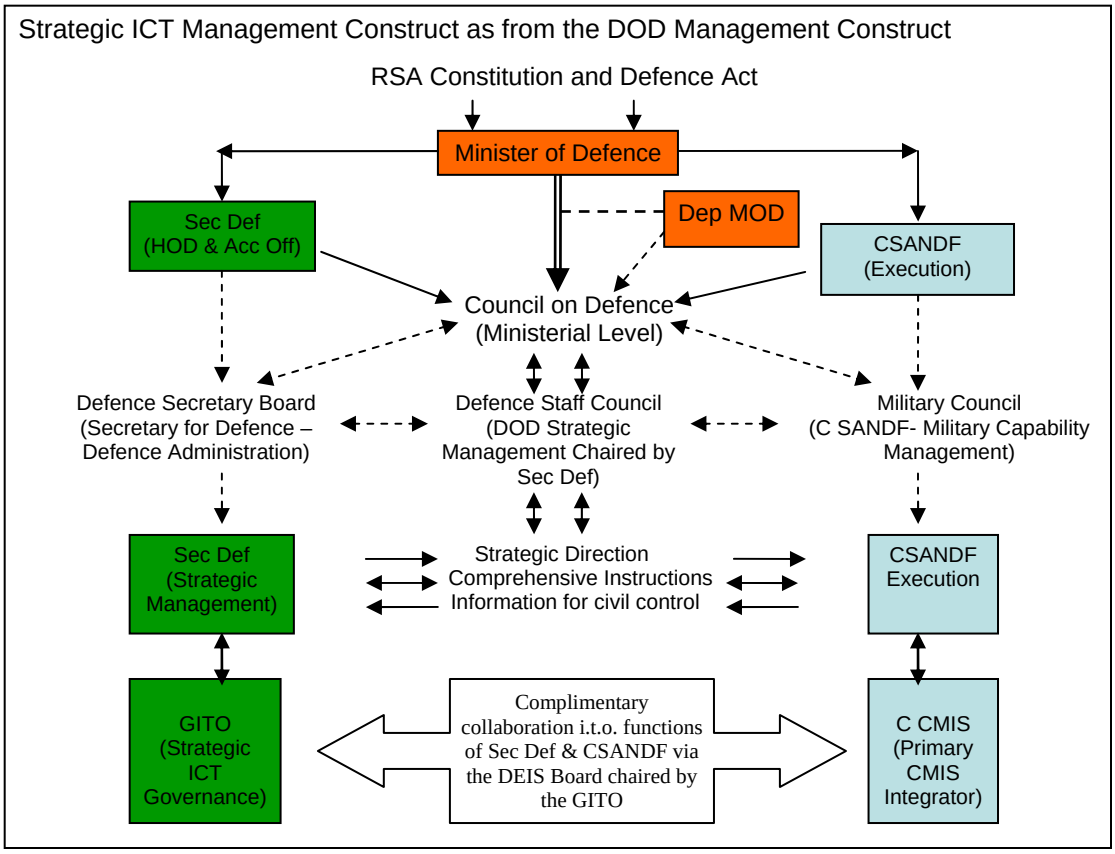

Figure 2.4: Strategic ICT Management Construct from the DOD Management Construct

From Figure 2.4 it is clear that there is a direct correlation between the functions to be performed to ensure alignment of effort to realise the Defence Mission, being "Objective Defence for a Democratic South Africa"[37]. In view of the above the DEIS is not managed in isolation by the GITO and the C CMIS, but are influenced by their environment and its stakeholders and role players that are elucidated next. All of these contribute to the ability of institutionalising an appropriate strategic ICT planning process for the DOD.

[37] South Africa. Department of Defence. 1996. *Defence Review and White Paper on Defence of 1996*. Pretoria: The Department.

2.2.6 Primary Stakeholders

Given that the main role players for the management of the DEIS has been described above, the following stakeholders can be indicated in summary with due consideration of appropriate governance and their respective roles therein.

- The Minister of Defence as the political executive for the function of defence and a member of Cabinet and Parliament
- The Deputy Minister of Defence as the deputy to the Minister of Defence
- The Secretary of Defence as the Head of the Department, the Accounting Officer and the Head of the Defence Secretariat
- The C SANDF as the Commander of the SANDF as the military force
- The GITO as the functional authority for the Defence Enterprise Information System and ICT management. The researcher is currently serving as the GITO and was the central participant and/or researcher throughout the process of developing and institutionalising an appropriate strategic ICT planning process for the DOD.
- The C CMIS as the prime system integrator for the CMIS and ICT products and Services for the DOD
- The Chief of Acquisition and procurement as the Chief of the Defence Acquisition and Procurement Division (DAPD) and responsible for the function of acquisition and procurement
- The SITA as the primary solution provider for Administrative ICT solutions for Government
- Armscor as the primary solutions provider for weapons related solutions for the DOD
- Users as the owners of ICT requirements and the users of ICT solutions as realised by the DEIS managers and role players

2.2.7 Participation In DOD Management Forums

Given the constant nature of change and the requirement for the DOD to continuously improve itself as an organization the Secretary for Defence and the C SANDF[38] issued the "DOD Implementation Instruction" that had the objective to guide the improvement of the organization by also establishing the Department of Defence Organizational Development Work Group (DODW). With the GITO and the C CMIS both being full members of the DOD and the DOD Implementation Instruction also including ICT management, the mechanism was set in place for collaborative approach towards this objective. As such it supported the opportunity to institutionalise the strategic management (and planning) of ICT in the DOD.

From the DODW a number of DOD forums were developed and identified as being relevant to DEIS management within the DOD, even though not as functional ICT management forums. With reference to Figure 2.4 the Defence Staff Council (DSC) is the highest internal management structure functioning at enterprise or corporate level in the DOD. The Defence Secretary Board (DSB) serves the Defence Secretariat under the chairmanship of the Secretary for Defence and the GITO is a permanent member of the DSB. The focus of the DSB is to address strategic defence governance – direction and policy – for the DOD with due consideration of functions of control as appropriate to risk, performance and compliance management. The DSB is chaired by the Secretary for Defence.

On the part of the SANDF the Military Command Council (MCC) under the chairmanship of the CSANDF exercises Command and Control over the SANDF and its Services and Divisions. The C CMIS is represented in this forum under the authority of the Chief of Corporate Staff. The primary focus of the MCC is to ensure that the military capability and structures are management to ensure the successful execution of military operations. As such the SANDF is the "executing" side of the DOD whilst the Defence Secretariat is there to "enhance civil oversight"[39].

Other focused management forums such as the Accountability Management Committee (AMC) serves as a staff mechanism for the Defence Staff Council with the focus on accountability management. The AMC is chaired by the Secretary for

[38] South Africa. Department of Defence. 2005. *DOD Implementation Instruction 15/05: Implementation of Ministerial Directive dated 25 April 2005 with reference DS/CPP/C/518/3/1 and CSANDF/CCS/C/518/3/1 dated August 2005*. Pretoria: The Department.
[39] South Africa. Parliament. 2002. *Defence Act, Act 42 of 2002, Sect. 5 – 17*. Cape Town: Parliament.

Defence supported by Secretariat Staffs – including the GITO – with the CSANDF supported by his chiefs – including the C CMIS – are held to account for assets and resource utilisation with the emphasis placed on risk, performance and compliance management.

Another focused forum in support of the Defence Staff Council is the Defence Budget and Planning Evaluation Committee (DPBEC) that has the objective of ensuring that defence plans and budgets are aligned and executed over the short, medium and long term. This forum is attended by all the DOD Budget Authorities – delegates who have budgets allocated to them – and is co-chaired by the Chief of Policy and Planning (CPP), the Chief Financial Officer (CFO) and the Chief of Corporate Staff (CCS). The CPP and the CFO resort under the Secretary for Defence and the CCS under the CSANDF. This forum reports back to the Defence Staff Council.

The DOD Planning Forum as a staff mechanism for the Defence Staff Council is a corporate planning mechanisms that It also serves to align defence and military matters between the Defence Secretariat and the SANDF under the chairmanship of the CPP and the CCS and reports back to the DSC. Matters relating to the DEIS are also addressed here to ensure alignment and integration within the full spectrum of defence-related planning.

2.2.8 DOD Internal DEIS Management Mechanisms

To manage the DEIS as a departmental (corporate) responsibility the DEIS Board[40] was established under the chairmanship of the GITO with its focus on strategic and corporate management of the ICT function. For purposes of execution (solutions management) the CMIS Capability Management Board was established under the chairmanship of the C CMIS to run the operations management of the CMIS and Services. Both of these have as its members duly delegated representatives that are congruent to the level and nature of management as appropriate to the respective forums. The functional management of the DEIS between the DEIS Management Division of the GITO and the CMIS Division of the C CMIS is done in the Joint Information Systems Management Board (JIS Board) that is co-chaired by the GITO and the C CMIS. The difference between the JIS Board and the other two Boards is

[40] South Africa. Department of Defence. 2006. *Constitution of the Defence Enterprise Information Systems Board with reference DS/GITO/R/302/2 dated April 2006*. Pretoria. The Department.

that the JIS Board has no user or supplier representatives as members, but only representatives of the GITO and the C CMIS. These arrangements are the result of the development and implementation of an appropriate strategic ICT planning process and structural development via the DODW.

The ICT management function within the respective Services and Divisions is done as an integral part of their respective management forums and is also addressed in their respective Strategic Business Plans (SBP's). All of these are coordinated and integrated via the departmental management forums and arrangements into the DOD SBP. These management arrangements were in place prior to transformation, but are now centrally and [collaboratively managed.

2.2.9 External Information Systems Management Mechanisms

To ensure that the DOD does not function unilaterally, but within the wider context of government certain external management arrangements have been established by government. The most important of these that has been established to ensure interdepartmental alignment in an effort to coordinate the national ICT objectives of government is the National Government IT Officer's Council (GITOC) [41] and its sub-structures with the GITO as the primary representative of the DOD. Certain interdepartmental programs have also been launched to contribute to national initiatives and to leverage the collateral utility of Defence ICT solutions.

2.3 THE INFORMATION SYSTEM MANAGEMENT FUNCTION WITHIN DOD

2.3.1 Context for IS Strategy Formation and Formulation as Part of the ICT Management Paradigm

Due to the transformation of the ICT management function and its intention to ensure credibility, the Plenary Defence Staff Council confirmed the establishment of the centralised ICT management function within the DOD in April 1998 of the CMIS Division. Part of this approval was that the function would be based on sound practice and theory. The focus on continuous improvement given this imperative served to

[41] South Africa. Parliament. 2000. *Cabinet Memorandum 38a of 2000, dated 4 August 2000: Establishment of a Government Information Technology Officer (GITO) function in Government and a Government Information Technology Officers council (GITO Council)*. Cape Town: Parliament.

trigger the process that lead to the institutionalisation of an appropriate ICT planning process and this research.

As already indicated, the DOD can be considered a diversified organization with the added implication of having a 'Head of Department' and a 'Chief of the National Defence Force' by virtue of the SA Constitution[42] and the SA Defence Act[43]. The SA Defence Act also separates the functions for departmental strategic direction, policy and strategic control from the execution (operations) environment between the two incumbents respectively. This is partially commensurate with the separation of corporate management and business unit management as appropriate to a diversified organization.

2.3.2 Historical Context for Establishing a New Strategic ICT Management Approach in the SA DOD

Subsequent to the establishment of the new South African political dispensation in 1994 and with due consideration of the DOD strategic transformation guidelines[44] within the context of the National Public Service Administration imperatives[45], the need emerged for the establishment of a centralised function to manage ICT in the DOD. As indicated previously the intention was to provide a centralised function that would address the total Defence ICT system with due consideration of the systemic implication of managing the ICT system within the context of the DOD as an integrated system. This system was eventually referred to as the Defence Enterprise Information System (DEIS) as ratified by the Plenary Defence Staff Council of 14 August 2005[46]. The rationale for this strategic imperative was due to the inherent functional and technical ICT problems and concomitant high financial investment that

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[42] South Africa. Parliament. 1996. *SA Constitution, Act 108 of 1996. Chapter 11, Sect 198 – 204.* Pretoria: Government Printers.
[43] South Africa. Department of Defence. 2002. *SA Defence Act, Act 42 of 2002, Sect 8 and 14 respectively as indicating the functions of the Secretary for Defence and the Chief of the SANDF*. Pretoria: Government Printers.
[44] 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.
[45] South Africa. Department of Public Service and Administration. 2002. *Public Service Regulations, Chapter III, Section E, "INFORMATION PLANNING AND REPORTING" of the Public Service Regulation 2001 (Government Notice No. R. 1 of 5 January 2001), as amended by Government Notice No R 1346 on 1 November 2002*. Pretoria, Government Printers.
[46] South Africa. Department of Defence. 2005. *Defence Enterprise Information System Framework v1.2 (DS/GITO/C/516) dated 15 August 2005*. Pretoria: The Department.

was associated with a decentralised IS/ICT management approach that existed prior to the transformation of the DOD[47].

The pre-transformation ICT situation that was decentralised and largely uncoordinated resulted in a situation where there was serious fragmentation and duplication of ICT systems that in turn resulted in non-integrated and non-interoperable ICT systems across the DOD. This led to increased inefficiencies and exacerbated cost. The lack of coordinated ICT management lead to non-standardisation of functionality, and divergent ICS/ICT solutions that were not compliant with defence requirements or national imperatives and only served to further increase the problems encountered.

The decentralised or stove-pipe approach towards ICT management led to inefficient management arrangements and mechanisms. This overall situation also contributed towards an inability to realise rules of scale and collateral value throughout the Defence Enterprise Information System. To this end the requirement was to also correct the sub-optimal system management processes, including the strategic ICT planning process, to ensure focused strategic direction and alignment with defence requirements.

2.3.3 Historical Structural Arrangements and Intention With Organizational and Functional Transformation of the DOD and the ICT Management Function

The transformation of the ICT function in the DOD resulted in the dismantling of several decentralised and fragmented ICT management arrangements and the creation of a centralised ICT management function and structure as approved by the Plenary Defence Staff Council in March 1998. This structure was named the Command and Management Information System Division (CMIS Division) and eventually the GITO function was created with some new functions and some functions taken from the CMIS Division. To fulfil its mission, the CMIS Division and later the GITO – which equals the Chief Information Officer (CIO) of private businesses to a certain extent – initiated a complex change management process with the intent to consolidate and integrate corporate strategic governance for ICT systems and services in the DOD. This change management process could be considered the second iteration of the action research cycle.

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[47] 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.

Characteristic of the complex process of change management the strategic planning process of the CMIS Division and the GITO, through constantly applied leadership initiated several 'forced' evolutionary changes in the CMIS Division and GITO management and functional (line) structures. This resulted in the transformation of the CMIS Division and the GITO from a fragmented (decentralised) resource (ICT) oriented structure into a balanced capability with a process oriented structure with a dialectic collaborative relationship. The intention was to ensure adding value to business with the emphasis on information management requirements related to the defence function to continuously improve the competitive advantage of the DOD. This established the basis for changing the DOD from and ICT orientated organization to an ICS orientated organization and finally to being an information orientated organization[48]. This change was subsequently reflected in the implementation report of the Department of Defence Organizational Development Work Group of 2006[49].

2.3.4 Expectations for the Delivery of DEIS Strategic Direction

Given the expectations for ICT management that would be focused on an appropriately centralised ICT management function that represents the nature of the organization in its complexity as explained earlier, the GITO was appointed by the Minister of Defence in the Defence Secretariat. To this end the following guidelines were relevant as taken from the Ministerial Approval for the establishment of the GITO[50] function and organization in the Defence Secretariat:

- "To ensure that there is sufficient and unambiguous mandate to perform the functions related to managing information, the enabling information systems by means of appropriate ICT.

- That there will be appropriate governance to guide the functioning of the ICT organization and the resultant systems and services.

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[48] South Africa. Department of Defence. 2003. *DOD Information Strategy v2.1 (JSUP/CMIS/R/516/1) dated 15 Sept 2003*. Pretoria: The Department.
[49] South Africa. Department of Defence. 2006. Ministerial Directive: *DOD Organisational Restructuring under reference MOD/C/518/3/1 dated May 2006.* Pretoria: The Department.
[50] South Africa. Department of Defence. 2005. *Report on the Establishment of a Government Information Technology Officer and Capability at the Office of the Secretary for Defence with reference CMIS Div/R/503/5/12/ dated February 2005*. Pretoria: The Department.

- That there will be a structured and appropriate process to ensure total systems and through-life systems management.

- That there will be sufficient and appropriate capacity within the DOD to manage the ICT functions with due consideration of unique responsibilities and common or transverse responsibilities.

- That there will be sufficient direction with commensurate resources allocated to perform the functions and attain the strategic objectives and requirements.

- That the necessary management arrangements and mechanisms be institutionalised to manage the function for the DOD".

2.3.5 Expected Future Challenges Subsequent to the Establishment of the DEIS Strategic Direction

The required and instructed focus on the ICT management process, and specifically the strategic ICT planning process, resulted in the integrated effort to formulate and promulgate – for the first time in the Department's history – the DOD Enterprise Information System Strategic Direction. Subsequent to the establishment and institutionalisation of a strategic ICT planning process the DOD Information Strategy was completed and approved on 15 September 2003[51] and the Defence Enterprise Information System Framework (DEIS Framework) on 15 August 2005[52]. These documents, that constitute the DEIS Strategic Direction when read in conjunction with the Defence Information Strategy and the Defence Information and Communication Technology Architecture (DICTA)[53] – containing the ICT strategic direction – must be supported by appropriate Regulatory Framework (Policy) for Information/ICS/ICT for the DOD that complies with National imperatives. This intention was developed as part of the Department of Defence Instruction on Policy[54].

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[51] South Africa. Department of Defence. 2003. *DOD Information Strategy v2.1 (JSUP/CMIS/R/516/1) dated 15 Sept 2003*. Pretoria: The Department.
[52] South Africa. Department of Defence. 2005. *Defence Enterprise Information System Framework v1.2 (DS/GITO/C/516) dated 15 August 2005*. Pretoria: The Department.
[53] South Africa. Department of Defence. 2003. *Defence ICT Architecture: DICTA Synopsis R1(A4) with reference D3DDSYNO/78-01-0001 dated 29 September 2003*. Pretoria: The Department.
[54] South Africa. Department of Defence. 1999. *Department of Defence Instruction: Policy and Plan No. 8/99: Policy Process and Procedure for Development, promulgation and Maintenance of Policy at Departmental Level in the Department of Defence with reference DS/CPP/R/501/15B of 1999*. Pretoria: The Department.

The DICTA in its capacity as the ICT Master Plan, has been in existence for an extended period of time, but required alignment with the newly defined strategic direction regarding the information resource (DOD Information Strategy) and the DEIS Framework. This was done as a standing objective under the mandate of the GITO as reflected in his performance agreement via management arrangements and forums such as the then CMIS Staff Council and the Information Systems Planning Forum. The Information Systems Planning Forum served as the planning sub-committee for the CMIS Staff Council. The fact that the DICTA was in existence, but followed by the DOD Information Strategy and the DEIS Framework, serves to indicate the migration from technology to system to the management of information as a resource and a commodity.

With the DEIS Governance (strategic direction and policy) in place and in the process of continuous improvement and alignment, the CMIS Division in its primary roles of ICS/ICT systems manager and integrator now faces the challenge of implementing the strategic direction as instructed by the Plenary Defence Staff Council of 15 August 2005. Some comments as appropriate to the dynamically iterative feedback loop for purposes of planning as forthcoming from the control function will be indicated later in this report.

Given that both the institutionalisation of an appropriate strategic ICT planning process in the DOD and this research from a theoretical perspective followed the same basic timeline this timeline can now be summarised and be presented as follows:

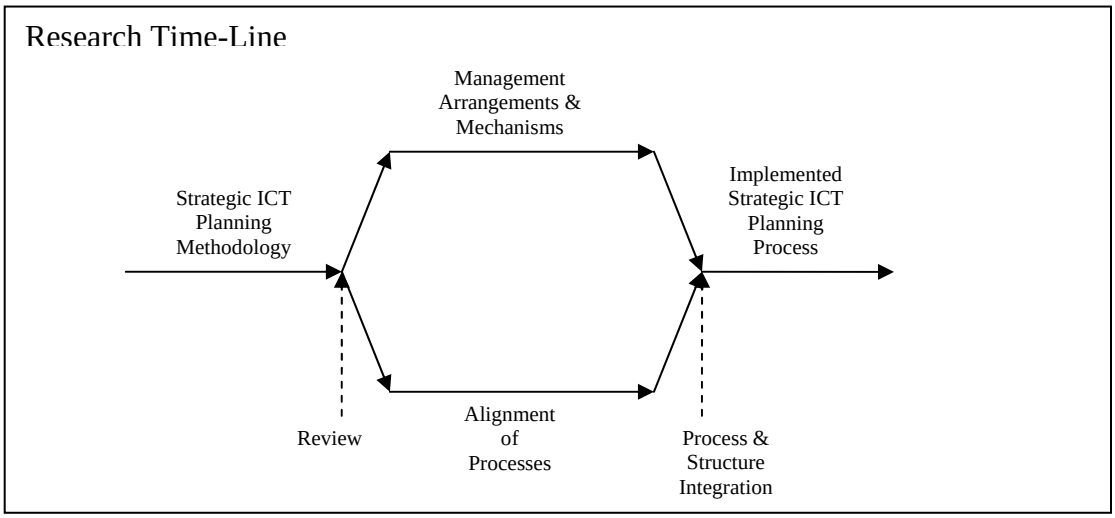

Figure 2.5: Research timeline for practice and theory

The time line as indicated will guide the presentation of this research in the following chapters of this report.

3 CHAPTER 3: APPLYING AN APPROPRIATE THEORETICAL FRAMEWORK TO THE CASE STUDY

3.1 INTRODUCTION

As already indicated, the DOD expected that management practice should be based on sound scientific theory and that an appropriate strategic ICT planning process would conform to this. From this followed the requirement for the analysis of exiting theory along the same timeline as the actual research to support the institutionalisation of an appropriate strategic ICT planning process.

The quest to conform to the "Hermeneutic Principle" as presented by Klein and Myers (1999)[55] will also apply to the chronology of this literature study. The schema below provides insight into the research timeline and as such identifies the primary theoretical focus areas.

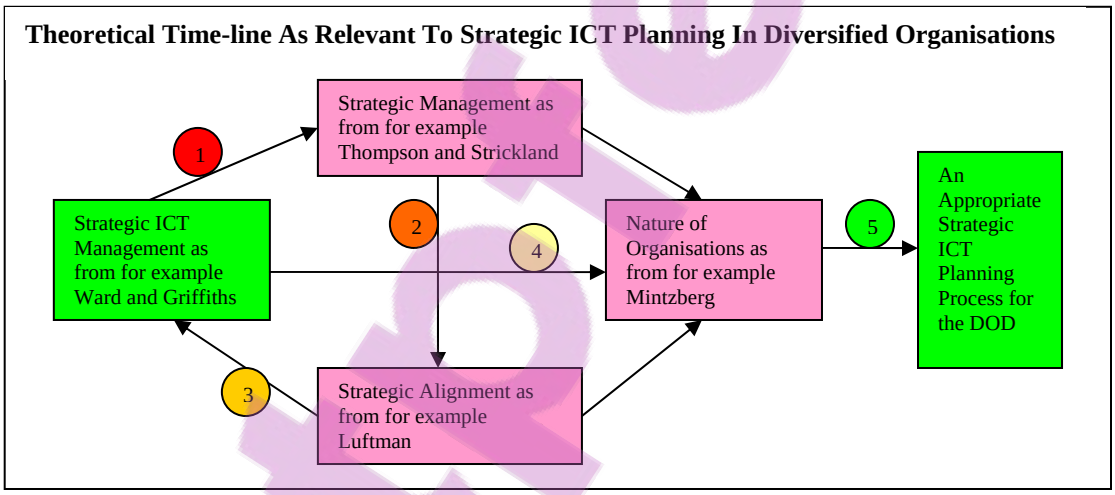

Figure 3.1: Progressive timeline as relevant to strategic ICT planning in the DOD

The timeline and the numbered sequence indicate the sequence of steps 1 to 5 with due consideration that the actual process was dynamically iterative with a number of activities taking place in parallel and with numerous reviews of areas already covered to ensure congruence, alignment and improvement. In the same process the interpretation, application and contributions to scientific knowledge were also addressed as summarised in the findings and conclusions of this research.

[55] Klein, H.K, & Myers, M.D. 1999. A set of principles for conducting and evaluating interpretive field studies in information systems. *MIS Quarterly*, 1999, vol.23, no.1, p.67-94.

The fact that structural or organizational arrangements influenced the institutionalisation and execution of the strategic ICT planning process, given the large number of role players and stakeholders involved, emphasised the clarification of roles and responsibilities in accordance with structural arrangements within the organization. Such structural arrangements and mechanisms were eventually found to be one of the imperatives to ensure the institutionalisation of the strategic ICT planning process in the DOD. It also served to provide a basis for alignment between business and information management.

As the research was undertaken as a process of enhanced learning, the initial understanding of the strategic ICT planning process was primarily directed by theory on strategic ICT planning as presented by Ward and Griffiths (1996)[56]. Knowing the theory without an understanding of the issues encountered in the DOD as a diversified organization was found to be inadequate to institutionalise the strategic ICT planning process. The ability to augment the existing theory regarding strategic ICT management with the experiences encountered in the DOD was enhanced by a thorough understanding of strategic management in general, as presented by authors such as Thompson and Strickland (2003)[57], and many others.

From the requirement to ensure alignment between the business environment and the ICT environment it was found that the theory provided by, for instance Luftman (1996)[58], presented a basis to ensure this alignment between the business and the business systems strategy and the information and the ICT system strategy. The complexity of the organization and the specific relationships that existed between the organizational components of the DOD necessitated collaboration and to this end the work done by authors such as Mintzberg *et al.* (1998)[59] provided an understanding of the characteristics of different types of organizations which would in some combination make up the diversified organization.

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[56] Ward, J. & Griffiths, P. 1996. *Strategic Planning for Information Systems*. New York: John Wiley and Sons.
[57] Thompson, A.A. Jr. & Strickland, A.J. III. 2003. *Strategic Management Concepts and Cases*. 13th Ed. New York: McGraw-Hill.
[58] Luftman, J.N. 1996. *Competing in the Information Age: Strategic Alignment in Practice*. New York: Oxford University Press.
[59] Mintzberg, H., Ahlstrand, B. and Lampel, J. 1998. *Strategy Safari: A guided tour through the wilds of Strategic Management*. New York: The Free Press.

When putting all of the relevant theory together into a single comprehensive reference or knowledge framework as a result of action and reflection, it served to guide the institutionalisation of the strategic ICT planning process for the DOD. The theory as indicated in the following sub-sections of this chapter therefore contributed to the institutionalisation of an appropriate strategic ICT planning process in the DOD as opposed to merely designing a process.

From these introductory comments that set out the intention for the presentation of the literature study the following will be presented:

- An overview of the nature of diversified organizations
- The strategic management process as appropriate to diversified organizations
- Strategic ICT planning as a function of strategic alignment
- Strategic ICT management in diversified organizations
- Strategic ICT planning approach, framework and process
- The application of strategic ICT planning as an integral part of strategic business management in diversified organizations
- Formulation of the IS/ICT management strategy
- The relationship between organizational learning and the requirement for structure

3.2 THE NATURE OF COMPLEX OR DIVERSIFIED ORGANIZATIONS

With the imperative that people have to execute the strategic ICT planning process in a coordinated and structured manner towards specific individual and corporate objectives, specific structural arrangements and management mechanisms became indispensable as confirmed during this research. An understanding of the nature of the organization became imperative.

3.2.1 Concept of the Diversified Organization

Most authors suggest that the more complex the organization, the greater the expected complexity of the planning process. This is in line with the thinking of authors on management theory such as Mintzberg (1998)[60], Thompson and Strickland (2003)[61], Lewis, Goodman and Fandt (1998)[62], and on strategic ICT management such as Ward and Griffiths (1996)[63]. Regarding ICT research authors such as Baskerville and Wood-Harper (1998)[64], Klein and Myers (1999)[65] have a similar position for ICT research that coincides with the position of Whitley (1984)[66] when he describes ICT research as a fragmented adhocracy. All of these have the element of complexity as an integral characteristic.

From a business perspective the complexity of diversity is described by Thompson and Strickland (2003:291)[67] as follows when referring to a "diversified" organization:

> "*... 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 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."*

3.2.2 Structure of Diversified Organizations

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[60] Mintzberg, H., Ahlstrand, B. and Lampel, J. 1998. *Strategy Safari: A guided tour through the wilds of Strategic Management*. New York: The Free Press.
[61] Thompson, A.A. Jr. & Strickland, A.J. III. 2003. *Strategic Management Concepts and Cases*. 13th Ed. New York: McGraw-Hill.
[62] Lewis, P.S., Goodman, S.H. & Fandt, P.M. 1998. *Management: Challenges in the 21st Century, 2nd Edition*. Cincinnati, Ohio: South-Western College Publishing.
[63] Ward, J. & Griffiths, P. 1996. *Strategic Planning for Information Systems*. New York: John Wiley and Sons.
[64] Baskerville, R & Wood-Harper, A.T 1998. Diversity in information systems action research methods. *European Journal of Information Systems*, 1998, vol.7, p.90-107.
[65] Klein, H.K, & Myers, M.D. 1999. A set of principles for conducting and evaluating interpretive field studies in information systems. *MIS Quarterly*, 1999, vol.23, no.1, p.67-94.
[66] Whitley, R., 1984. The Intellectual and Social Organization of the Sciences. Oxford: Clarendon Press.
[67] Thompson, A.A. Jr. & Strickland, A.J. III. 2003. *Strategic Management Concepts and Cases*. 13th Ed. New York: McGraw-Hill.

The essential element of diversified organizations is considered to be that they are not '*of single business*'. As such there is a multitude of disciplines and/or functions that could require recognition and need to be dealt with in the strategic management arena in general. The ability to harmonise the efforts of (semi-autonomous) strategic business units towards appropriate objectives or strategic intent within a structured policy framework, should therefore be addressed.

The high-level contextual construct for a diversified organization can be presented as follows with due consideration of corporate management and business unit management as interpreted from theory:

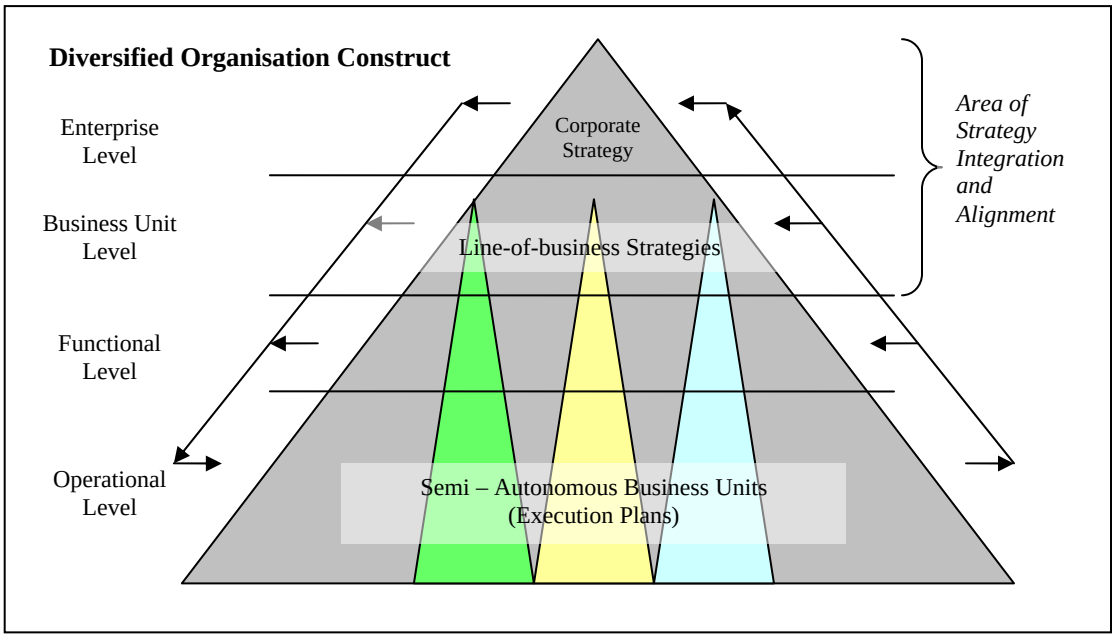

Figure 3.2: Contextual definition of the problem environment as interpreted from Thompson and Strickland (2003), Pearce and Robinson (2003) and Luftman (1996)

From Figure 3.2 as mainly interpreted from the work of Thompson and Strickland (2003) *op. cit.*, Pearce and Robinson (2003)[68] and Luftman (1996)[69], the emphasis is placed on the fact that the diversified organization has a corporate level that is separated from the strategic business unit management level. The ability to ensure alignment and integration from a corporate perspective with due consideration of the interests of the respective business units influenced the research paradigm.

[68] Pearce, J.A. & Robinson, R.B. 2003. *Strategic Management: Formulation, Implementation and Control Sited*. New York: McGraw-Hill.
[69] Luftman, J.N. 1996. *Competing in the Information Age: Strategic Alignment in Practice*. New York: Oxford University Press.

Given the imperative of structure the necessity to enable the ability to manage, the following management mechanisms as presented by Thompson and Strickland (2003) *op. cit.* reflect the functional and hierarchical nature of the diversified organization. This can be presented as follows as being relevant to the DOD and its specific structural arrangements:

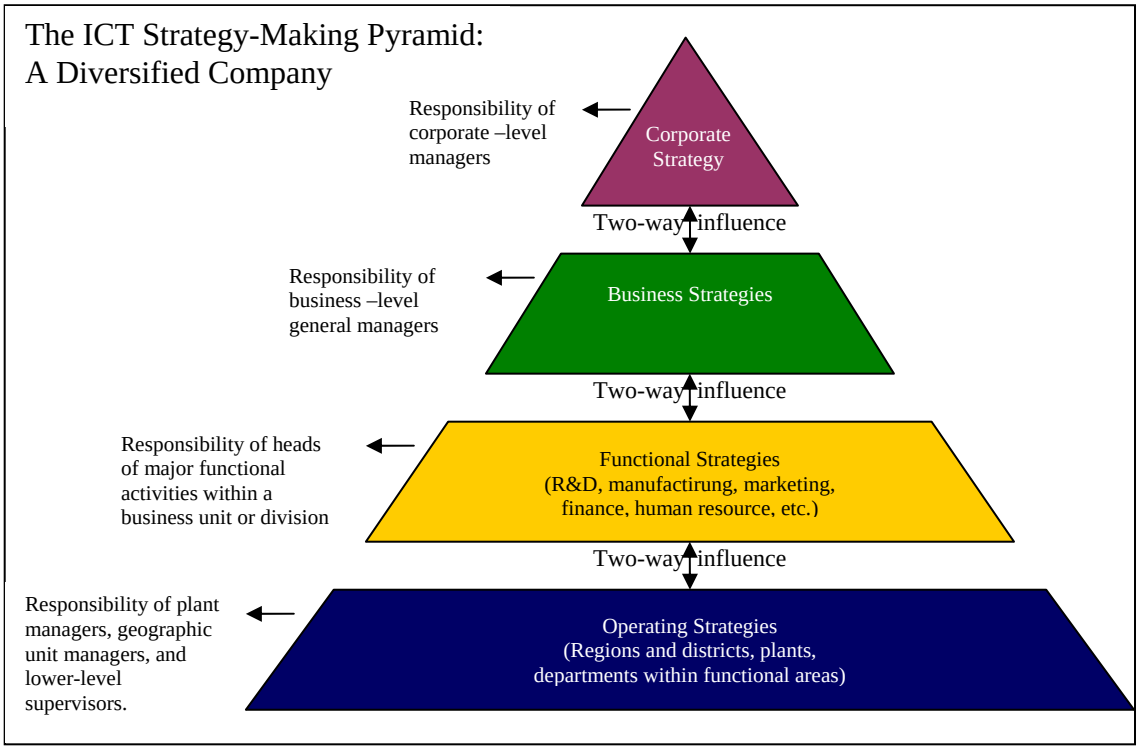

Figure 3.3: Organizational Hierarchy for Strategic ICT Planning in Diversified Organizations taken from Thompson and Strickland (2003)

When considering the corporate perspective of the organization and strategic management the respective lines of business can be presented as a value chain when considering the basic approach of Porter (1985)[70] regarding value chains and the fact that there is a separation between core business and supporting business. The requirement for corporate direction adds another dimension to such a corporate value chain for a diversified organization.

[70] Porter, M.E. 1985. *Competitive Advantage: Creating and Sustaining Superior Performance*. New York: Free Press.

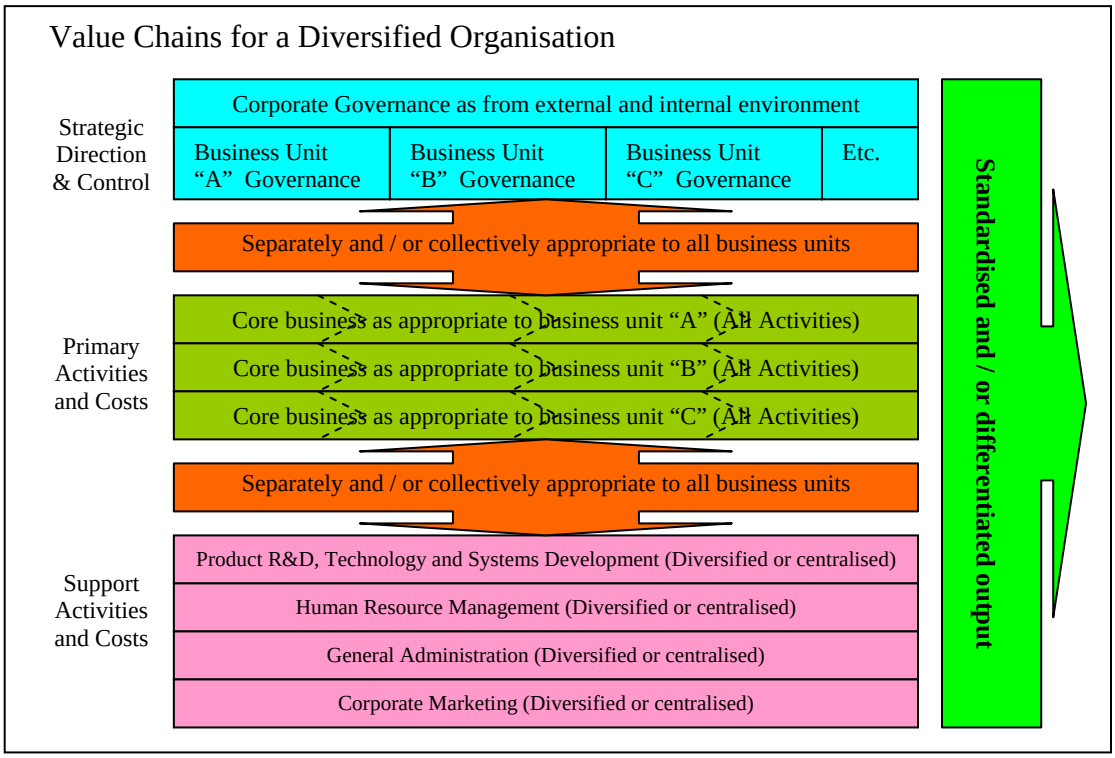

Figure 3.4: Value Chains for diversified organizations with differentiated output as adapted from Porter (1985)

Given the fact that ICT serves as an enabler for the organization as a whole, the three depictions presented in Figures 3.2 – 3.4 set the framework for the identification of those functions that could be transversely common within the organization and those processes that are unique in nature within the diversified organization from a holistic perspective.

Such a perspective highlights the necessity to identify role players, participants and stakeholders if the ICT strategy is required to represent a corporate and collaborative perspective. From this research appropriate structure to ensure specific collaboration and execution was considered a prerequisite for the successful institutionalisation of the strategic ICT planning process in the DOD.

To this end the problems experienced by the researcher with the nature of diversity within the enterprise and relevant to a strategic ICT planning process confirmed the observations of for instance Ward and Griffiths (1996)[71] relating to the following issues of management approaches as presented by Mintzberg (1998)[72], environmental

[71] Ward, J. & Griffiths, P. 1996. *Strategic Planning for Information Systems*. New York: John Wiley and Sons.
[72] Mintzberg, H., Ahlstrand, B. and Lampel, J. 1998. *Strategy Safari: A guided tour through the wilds of Strategic Management*. New York: The Free Press.

aspects as taken from for instance Thompson and Strickland (2003)[73], the process of strategy formulation as described by authors such as Pearce and Robinson (2003)[74] and requirements for alignment as presented by authors such as Luftman (1996)[75].

3.3 STRATEGIC MANAGEMENT IN DIVERSIFIED ORGANIZATIONS

With an understanding of the nature of the diversified organization, those influences and characteristics that are relevant to strategic management became important to this research. To this end the following discussion of theory will centre on the development of strategic management and its relevance to ICT management. It will also elucidate the implication of being able to manage change, with change being a characteristic of strategic management and the fact that the respective business units of the diversified organization might have different levels of maturity. Given the nature of the requirement for alignment, increased pressure is placed on the ability to manage activities in a structured, yet appropriate manner and as such the implication of alignment as an integral activity of strategic management will be discussed. All of these will constantly be made relevant to not only ICT management in general, but also the research undertaken.

3.3.1 Historical Development of Traditional Considerations for Strategic Business Management in Diversified Organizations

As far back as the venerable Sun Zi[76] (Tzu)[77], who around 400 BC started to delineate strategies and matched them to the conditions in which the military was involved in the development of management as a science and as a practice. Practitioners and authors such as Von Clausewitz (1780-1831) made further contributions to the management discipline. The gist of the contributions made by the Sun Zi and Von Clausewitz was that in order to be successful, planning was required and the better and more comprehensive the planning and the ability to manage change, the higher the potential for success. It is also clear from their writings that all the conditions

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[73] Thompson, A.A. Jr. & Strickland, A.J. III. 2003. *Strategic Management Concepts and Cases*. 13th Ed. New York: McGraw-Hill.
[74] Pearce, J.A. & Robinson, R.B. 2003. *Strategic Management: Formulation, Implementation and Control Sited*. New York: McGraw-Hill.
[75] Luftman, J.N. 1996. *Competing in the Information Age: Strategic Alignment in Practice*. New York: Oxford University Press.
[76] Chou-Hou Wee. 2003. *Sun Zi Art of War: An Illustrated Translation with Asian Perspectives and Insights*. Singapore: Prentice Hall.
[77] Sun Tzu, *The Art of War* (New York: Oxford University Press, reprinted 1971).

which could influence the outcome of strategic objectives had to be considered during the planning process. This still remains appropriate and relevant to this day and is even making a come-back.

Management as a scientific approach towards attaining objectives further developed during the mid-nineteenth century, when economists such as Adam Smith and Charles Babbage developed the *systematic management approach*[78]. Their essential approach was to understand the nature of the organization in its complexity as a system of interdependent components that function in harmony towards a common objective.

The next step and evolutionary approach that was developed was Frederick Taylor's (1911)[79] *"scientific approach"* towards management. The focus of scientific management was that it acknowledged the requirement to ensure that appropriate processes, frameworks and work arrangements should be established with a clear understanding of the requirement for commensurate skills management.

The scientific approach was augmented and elucidated upon by an understanding of the 'principles' that will guide the approach towards successfully realising strategic objectives. These 'principles', as deduced from the writings of Von Clausewitz by Summers (1981)[80], centre on the need for clear deliberate strategy; the centrality of authority to develop or at least execute the strategy; the need to keep it simple; and the presumed proactive nature of strategic management. These opinions demonstrate and confirm the requirement for structural arrangements and appropriate management mechanisms that are quite relevant to this specific research.

From the current theory one of the main problems encountered today regarding process and structure can be considered to centre on the diversity of organization and function, and thus a multitude of issues and aspects that need to be considered in the strategic management process and its requirement for alignment.

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[78] Bateman, T.S. & Zeithaml, C.P. 1990. *Management: Function and Strategy*. New York: Richard D. Irwin, Inc.
[79] Taylor, F. 1911. *The Principles of Scientific Management*. New York: Harper & Row.
[80] Summers, H.J., Jr. 1981. *On Strategy: The Vietnam War in Context*. Washington, DC: GPO, Strategic Studies Institute, U.S. War College, Carlisle Barracks, PA.

Irrespective of the nature of the organization, the ever-changing environment and therefore the nature of the demands constantly need to be considered. Robbins[81], as well as Brown and Covey[82], argue that organizational development is an important part of change management. They propose that the people who make up the organization be put through a change process in such a manner that it will contribute towards enhancing the output of the organization. Organizational development as taken from these two authors respectively can be described as "*a collection of change techniques or interventions built on humanistic-democratic values*" and that "*organisational development values human and organisational growth, collaboration and participative processes, and a spirit of enquiry".* From this the organizations are expected to continuously change in a manner that will enable them to continue to function optimally whilst continuously improving and realising their strategic intentions. Such change has to take place in a controlled and structured manner.

When considering the fact that the DOD can be seen to function as a system of systems given its organizational complexity, an understanding of the relationships between process, responsibility and mandate becomes imperative. Such awareness will contribute largely towards appropriate management arrangements and mechanisms to ensure collaboration within the diversified organization. This results in the imperative for balance between all of the respective systems given the requirement to focus such systems on a common set of objectives. Once again these objectives should represent both corporate intent and business unit intent as appropriate to not only the diversified organization, but also its strategic management and ICT management.

3.3.2 Conceptual Framework for Strategic Management

Miller and Friesen (1980b[83], 1982a[84]) view the “states” that an organization finds itself in as archetypes, being related to strategy, structure, situation and process. They

[81] Robbins, S.P. 1979. *Organizational Behavior, Concepts, Controversies, and Applications*, Fifth Edition. New Jersey: Prentice-Hall International Editions.
[82] Brown, L.D. & Covey, J.D. 1987. Development Organizations and Organization Development: Towards an Expanded Paradigm for Organization Development in *Research in Organizational Change and Developmen*t, vol. 1, edited by R.W. Woodman & W.A. Pasmore. Greenwich, Conn.: JAI Press, p.63.
[83] Miller, D. & Friesen, P.H. 1980b. Archetypes of Organizational Transition. *Administrative Science Quarterly Journal*, 1980b. no.25, p.268-299.

also see transition between archetypes and strategic and structural change as quantum rather than incremental. This is further expanded upon by Miller and Friesen (1984)[85] and Miller (1990)[86]. The strategic management of ICT could therefore be expected to follow and even to enable the same cycle of organizational change.

With quantum change having the implication of changing many aspects of the organization, at the same time such changes can be revolutionary and strategic (incremental) and are usually the result of mutual learning that takes place between strategists that in turn leads to revolutionary change. As such the characteristics of change and the fact that the cost and complexity of ICT solutions combined with the potential scale of the impact of implementing new ICT solutions, could be prohibitive. A quantum change approach could therefore be more suitable for large ICT systems in diversified organizations. This research found it to be susceptible to change being interspaced with incremental changes within clear and definite cycles of change as opposed to continuous revolutionary change.

With this in mind given the opinion of Prahalad and Hamel (1990)[87] that indicate that senior management should spend a significant amount of its time developing a corporate-wide strategic architecture that establishes objectives for competence building, strategy should be focused to continuously improve and sustain the competitive advantage of the organization. This is also appropriate to structural changes in the organization according to existing theory.

The position presented by Mintzberg, *et al.* (1998)[88] regarding the configuration schools for strategic management is considered appropriate to this research by the researcher to ensure an informed and balanced approach towards corporate strategic ICT planning. This should be done with due consideration of the nature and maturity of the respective strategic business units as presented by Marchand and Horton

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[84] Miller, D. & Friesen, P.H. 1982a. Structural Change and Performance: Quantum Versus Piecemeal-Incremental Approaches. *Academy of Management Journal*, 1982a, vol.25,4, p.867-892.
[85] Miller, D. & Friesen, P.H. 1984. *Organizations: A Quantum View*. Englewood, New Jersey: Prentice Hall.
[86] Miller, D. 1990. *The Icarus Paradox*. New York: Harper Business.
[87] Prahalad, C.K. & Hamel, G. 1990. The Core Competency of a Corporation, *Harvard Business Review 68:3*, 1990, p.79-91.
[88] Mintzberg, H., Ahlstrand, B. and Lampel, J. 1998. *Strategy Safari: A guided tour through the wilds of Strategic Management*. New York: The Free Press.

(1986)[89] to provide direction and to empower functionaries. Such an approach will ensure structure and capacity to serve the enterprise as a whole.

3.3.3 Characteristics of the Strategic Management Process as Appropriate to Diversified Organizations

When considering the generic model for strategic management as defined by Steiner (1969)[90] it becomes apparent that the underlying approach has not necessarily changed dramatically over the past forty years, but rather that the application of such as the basic approach, has changed due to continuous changes in the landscape that influences 'old' monolithic models.

Stewart (1963)[91], however started to address organizational complexity by referring to diversification when referring to the Stanford Research Institute's proposed "System of Plans" as illustrated below. This was, however, to ensure that the opportunity of diversification is realised as a strategy that would expand the enterprise from a corporate perspective and to indicate diversified sub-structures of the corporate structure.

Chaffey (1985)[92] concluded that strategy is complex and concerns both the organization and its environment holistically. When assessing the progression made with strategic management and its application in diversified or complex organizations, the work done by Pearce and Robinson (2003:2)[93] indicates that there is a sequential albeit causal relationship between strategic management (including planning) and functional management (including planning). It does, however, not explicitly indicate the nature of the diversified organization and its implications on strategic planning as a part of strategic management. This could be seen as a culmination of an understanding that the nature of strategic planning in diversified organization and the ability to ensure alignment between the strategic management process and the strategic ICT planning process is an issue. The ability to develop appropriate structure

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[89] Marchand, D.A, & Horton, F.W. Jr. 1986. *Profiting from Your Information Resources*. New York: John Wiley & Sons.
[90] Steiner, G.A. 1969. *Top Management Planning*. New York: Macmillan.
[91] Stewart, R.F. 1963. *Framework for Business Planning*. Stanford, California: Stanford Research Institute.
[92] Chaffey, E.E. 1985. Three Models of Strategy. *Academy of Management Review*, 1985, vol.10(1), p.89-98.
[93] Pearce, J.A. & Robinson, R.B. 2003. *Strategic Management: Formulation, Implementation and Control Sited*. New York: McGraw-Hill.

and apply the strategic ICT planning process to the point of institutionalisation in the DOD is confirmed by this requirement.

From Thompson and Strickland (2003:7)[94] an example of the generic strategic management process can be presented as follows:

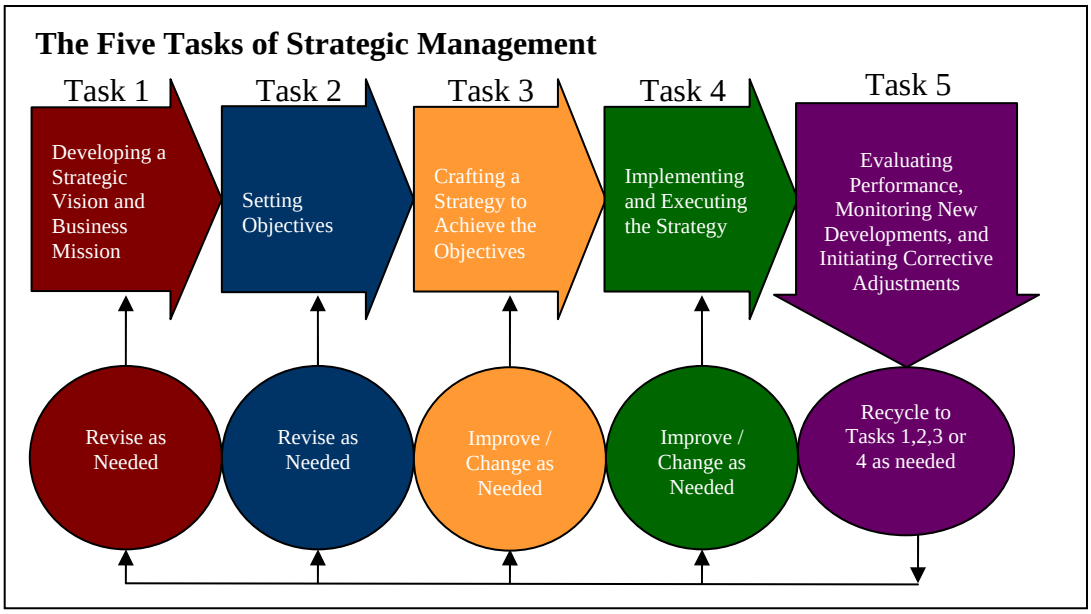

Figure 3.5: Five Tasks of Strategic Management as from Thompson and Strickland (2003)

From Figure 3.5 it is clear that the planning process relates to tasks 1, 2 and 3. This does not imply that no attention be given to tasks 4 and 5 as the required feedback from implementation and control will provide a great deal of input for consideration to continuously optimise and support the strategic ICT plan for the diversified organization. The emphasis is on realising the strategic intention as a process of continuous improvement and learning as is the case with the DOD.

3.3.4 Conclusions on Contextual issues Relating to Strategic Management in Diversified Organizations

For the purpose of establishing a reference framework for strategic ICT planning for the DOD the following can be concluded from the above:

- There should be a clear and unambiguous definition of the enterprise to determine the value chain of the organization. This will ensure that the management arrangements and mechanisms can be defined, internalised and

[94] Thompson, A.A. Jr. & Strickland, A.J. III. 2003. *Strategic Management Concepts and Cases*. 13th Ed. New York: McGraw-Hill.

institutionalised as related to the ICT management process. This definition will also provide the basis for enterprise architecture planning to define the business and as such serve as the basis for ICT solutions management.

- The nature of the diversified organization and the level of maturity of the various business units comprising the enterprise must be established to ensure that appropriate solutions can be managed effectively in accordance with the specific nature of the business units and the enterprise as a whole. This will also serve as the basis for the utilisation of the process and change management issues according to the nature of the specific business environment.

3.3.5 Strategy Formation in Diversified Organizations

Mintzberg, et al. (1998)[95]suggests that diversified organizations tend not to utilise a specific approach simplistically, but that a combination of a number of approaches (or schools) can be utilised to address the issue of strategy formation as opposed to mere strategy formulation. Thus it can be deemed necessary to understand the organizational drivers and influences for determining the strategic management process as appropriate to the corporate level management, as well as to the business unit level management. These will also influence the eventual formalisation and institutionalisation of such a methodology in as much as it will effect the structural arrangements. This implication is also confirmed by, for example, Pearce and Robinson, (2003)[96] as advocators of strategic management in complex organizations.

According to Pearce and Robinson (2003) *op. cit*. and others such as Thompson and Strickland (2003)[97], it is problematic if the actual strategy formulation and its approval are not performed with due consideration of the respective hierarchical roles of managers/functionaries within the diversified organization. This is due to the fact that strategy usually involves the requirement for top management involvement. When considering the nature of strategic leadership and its relevance to change

[95] Mintzberg, H., Ahlstrand, B. and Lampel, J. 1998. *Strategy Safari: A guided tour through the wilds of Strategic Management*. New York: The Free Press.
[96] Pearce, J.A. & Robinson, R.B. 2003. *Strategic Management: Formulation, Implementation and Control Sited*. New York: McGraw-Hill.
[97] Thompson, A.A. Jr. & Strickland, A.J. III. 2003. *Strategic Management Concepts and Cases*. 13th Ed. New York: McGraw-Hill.

management as presented by Chorn (2004)[98] and others, the involvement of both corporate and business unit management becomes essential.

As strategic management is based on the premise of effecting organizational and environmental change through the implementation of the strategy, strategy has the intention of directing a movement from the present state to a new state as a result of reaction to a constantly changing environment. To this effect the appropriate theory regarding change management as utilised in this research was based on the work of Lewin (1951)[99] and Bjorkman (1989)[100] as a continuation of the process of strategy formulation on, for instance, the work done by Pearce and Robinson, *op. cit*. given the nature of the DOD.

3.3.6 Strategic Alignment within Diversified Organizations

The fact that there could be a divergence of strategic intent within the diversified organization has the underlying requirement for alignment. From a corporate perspective as presented by Thompson and Strickland (2003) *op. cit.* and others, this should not interfere inappropriately with the lines-of-business, even though there is a requirement and indeed imperative for corporate direction and business units' strategic direction.

To leverage the value of ICT for the organization, it is necessary that the objectives of the information system (IS) strategy be aligned with the organizational strategy in accordance with for instance the position presented by Luftman (1996)[101]. This is all the more imperative when, as in the case of the SA Department of Defence (DOD), there has never been a comprehensive, enterprise (corporate) orientated information system strategy that directs the utilisation of information and communication technology in support of organizational objectives, even though there is a corporate business strategy. The alignment has to ensure that informed decisions are made regarding the allocation and utilisation of scarce resources which should be done from

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[98] Chorn, N. 2004. *Strategic Alignment: How to Manage Business Leadership, The commercial Environment and Organisational Culture for Strategic Success*. Maryborough, Vic: McPherson Printing Group.
[99] Lewin, K. 1951. *Field Theory in Social Science*. New York: Harper & Row.
[100] Bjorkman, I. 1989. Factors Influencing Processes or Radical Change in Organisational Belief Systems. *Scandinavian Journal of Management*, 1989, vol.5,4, p.251-271.
[101] Luftman, J.N. 1996. *Competing in the Information Age: Strategic Alignment in Practice*. New York: Oxford University Press.

a corporate perspective. To this end the work done by Luftman, (1996) *op. cit*. I(C)T on aligning business strategy and I(C)T strategy as well as organizational infrastructure and processes and I(C)T infrastructure and processes was used as the basis of the alignment approach. This was applied in conjunction with general strategic management theory and the hierarchical nature and requirements of the diversified organization. It is also considered by this author as forthcoming from this research that it is necessary to understand that alignment is a many to many activity that requires structure, process and collaboration / participation. This aspect will be further expanded upon later on in the literature study.

3.3.7 Characteristics of the Strategic Management Process as Appropriate to Diversified Organizations

Given the nature of diversity within the DOD and its systemic implication on the institutionalisation of an appropriate strategic ICT planning process for the DOD, the necessity for structural arrangements became very obvious as this research progressed. As such the nature of the organization and its specific characteristics served to determine the functional foci that presented the systemic components of management. These “systemic” issues were utilised to guide this research as being representative of a more holistic approach towards determining the strategic ICT planning process to ensure institutionalisation as opposed to merely addressing the strategic ICT planning process itself. These issues focused on the following:

- The ability to determine the actual strategic ICT planning process in order to align it with the strategic business management process.
- Determining the relevant issues that will ensure systemic success given the nature of the diversified organization.
- Determining the relationships and collaboration requirements for role players and stakeholders/participants during the strategy formulation process to ensure congruency and synergy.
- Determining the appropriate management arrangements and mechanisms that would ensure a realistic and institutionalisable strategic ICT plan.

- Determining the specific issues and requirements that need to be addressed to ensure alignment of the Strategic ICT Plan with the enterprise strategy in diversified organizations.

Given the hermeneutic context of these characteristic issues as related to the strategic ICT planning process, the following representation can be made:

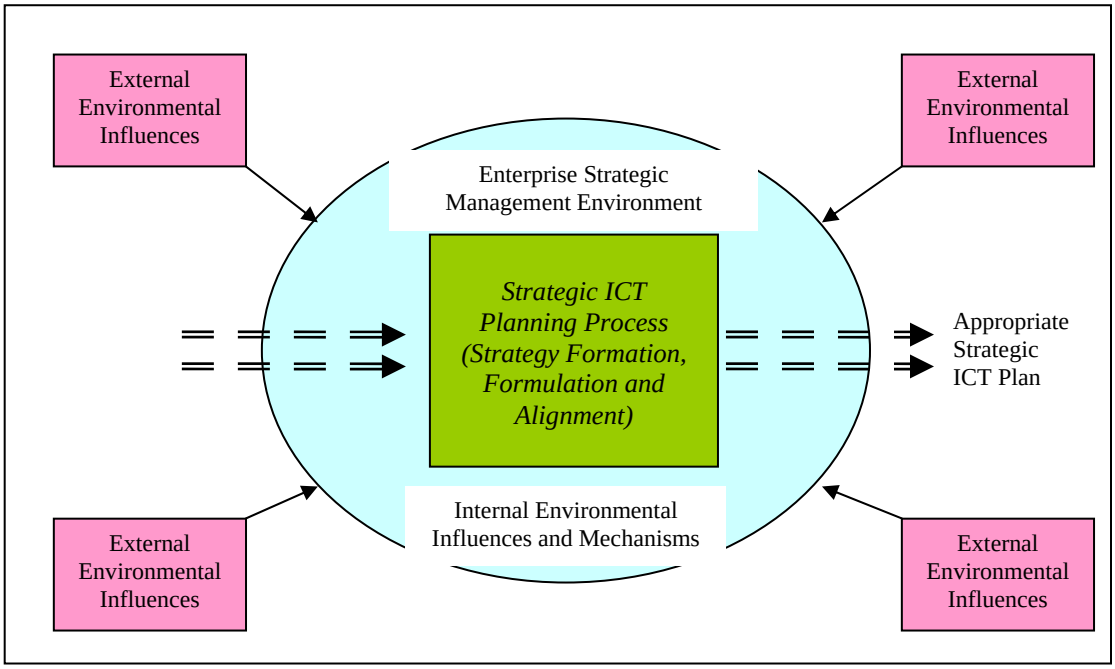

Figure 3.6: Generic Contextual Model for Strategic ICT Planning as Appropriate to this Research

3.4 STRATEGIC ICT PLANNING AS A FUNCTION OF STRATEGIC ALIGNMENT

3.4.1 The Relationships between Business and ICT Solutions

When considering that in accordance with the early approaches presented by Ward and Griffiths from the research and findings of people such as Gibson and Nolan (1974)[102], Anthony (1965)[103] King and Kraemer (1984)[104], Wiseman (1985)[105] and Friedman (1994)[106], and the work done by specifically by researchers such as Ward

[102] Gibson, C. F. & Nolan, R. L. 1974. Managing the four stages of EDP growth. *Harvard Business Review (52)*, January/February 1974, p.76-88.
[103] Anthony, R.N. 1965. *Planning and Control: A Framework for Analysis*, Cambridge, MA: Harvard University Press.
[104] King, J.L. & Kraemer, K.L. 1984. Evolution and organizational information systems: and assessment of Nolan's stage model, *Communications of the ACM*, 1984. vol.27(5).
[105] Wiseman, C. 1985. *Strategy and Computers*, Homewood, IL: Dow Jones-Irwin.
[106] Friedman, A. 1994. The stages model and the phases of the IS field, *Journal of Information Technology*, 1994. vol.9, p.137-148.

and Griffiths'(1996)[107] interpretation of the work published in the EDP Analyser[108], emphasis is placed on the movement from computer or data processing management to information (systems) management with due consideration of the roles and functions as presented below.

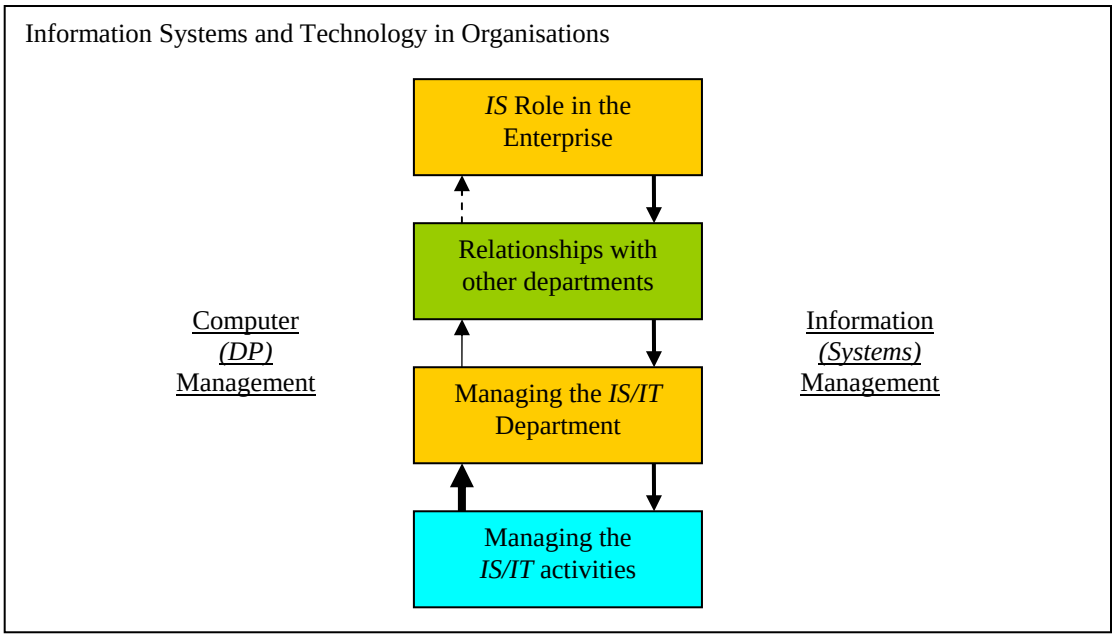

Figure 3.7: Transition between computer and information management: relationships and emphasis as from Ward and Griffiths (1996:6)

The problem as relevant to the research undertaken in the DOD, requires attention with due consideration of the complexity of the organization as opposed to the monolithic approach that is inherent to the work done by Ward and Griffiths (1996)[109]. The complexity of diversified organization is acknowledged by Ward and Griffiths (1996) *op. cit.* For the purposes of this study, when reference is made to IT in literature, it is interpreted as ICT.

[107]Ward, J. & Griffiths, P. 1996. *Strategic Planning for Information Systems*. New York: John Wiley and Sons.
[108] United States of America. EDP Analyser. 1984. *Transition between computer and information management: relationships and emphasis*. USA: EDP Analyser, June 1984, vol.22, no.6,
[109] Ward, J. & Griffiths, P. 1996. *Strategic Planning for Information Systems*. New York: John Wiley and Sons.

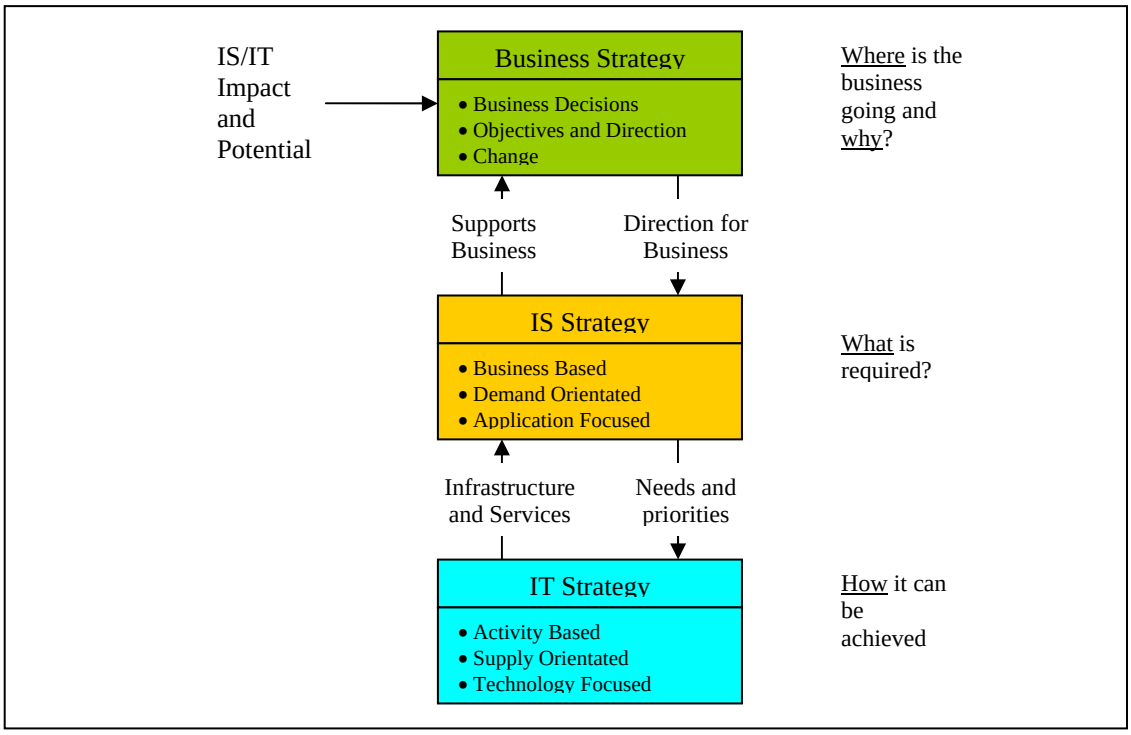

Figure 3.8: The relationship between business, IS and IT Strategies as from Ward and Griffiths (1996:31)

3.4.2 Functions of Strategy as appropriate to ICT

The organization in its complexity and diversity functions as a system of systems and as such has process inherent to its functioning. This is clear from the work done by authors such as Senge (1990)[110] and Sage and Rouse (1999)[111] on systems, Carr and Johansson (1995)[112] on process optimisation and Thompson and Strickland (2003)[113] on strategic management. It is considered relevant to all aspects of the organization as the organization in itself functions as a system and thus has processes to contend with from a management perspective. When considering the application of these approaches within context of the ICT solutions, a high degree of correlation is apparent between the nature of the ICT solution and the organization's functional requirements to follow the same system related requirements and imperatives for continuous improvement.

[110] Senge, P.M. 1990. *The Fifth Discipline*. New York: Doubleday.
[111] Sage, A.P. & Rouse, W.B. 1999. *Handbook of Systems Engineering and Management*, New York: John Wiley and Sons.
[112] Carr, D.K. & Johansson, H.J. 1995. *Best Practices in Reengineering: what works and what doesn't in the reengineering process.* New York: McGraw-Hill.
[113] Thompson, A.A. Jr. & Strickland, A.J. III. 2003. *Strategic Management Concepts and Cases*. 13th Ed. New York: McGraw-Hill.

3.4.3 The Nature of Alignment from a Business Perspective

The high level definition of the strategic management process as appropriate to the six tasks of strategic management as from Thompson and Strickland (2003:5) *op. cit.* and augmented by the approach for alignment presented by Luftman (1996)[114] can be presented as follows for this research.

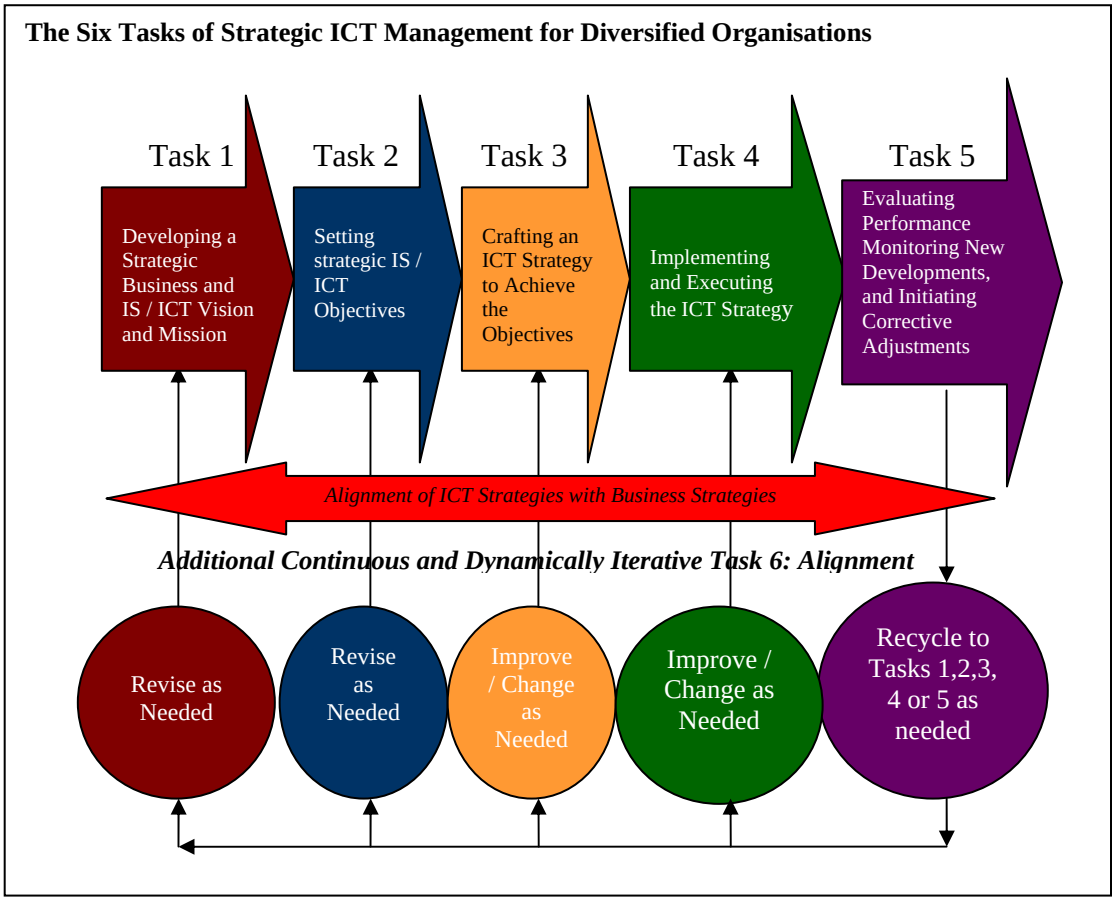

Figure 3.9: Strategic Management as adapted from Thompson and Strickland (2003:5) to include the task of Alignment for Strategic ICT Planning in Diversified Organizations with Control Feedback Loop

From Figure 3.9 it can be concluded that it is necessary to commence the definition of the strategic ICT planning process by understanding that even though alignment is included as a formal task within the strategic management process it has to be performed as part of every cycle of the strategic ICT planning process. This happens as it cycles through the enterprise from group level to business unit level to strategic ICT plans for the whole enterprise and it respective business units. This represents the main difference between the 'standard' approach to an "*Extended Enterprise ICT Strategic Planning Approach*" with the implication that there is a greater and more

[114] Luftman, J.N. 1996. *Competing in the Information Age: Strategic Alignment in Practice*. New York: Oxford University Press.

dynamic requirement for alignment than described above. This is primarily driven by the greater implications coming from the increased diversity of environmental influences – internal and external. The following alignments are considered imperative:

- Enterprise strategy and strategic business plans with business unit strategy and strategic business plans
- Enterprise ICT strategy and ICT Systems Master Plans with business unit ICT strategy and ICT Systems Master Plans
- The respective business strategies and plans with the ICT strategies and plans as an enabler or in accordance with the value chain indication of the relation of ICT to the business
- Note: Alignment is an integral part of strategising and planning and cannot mechanistically be performed after the fact, even though formal confirmation of alignment is required in a formal session. Alignment is as much a function of design as it is of control.

The strategic planning process therefore cycles through the enterprise in a specific manner.

3.5 STRATEGIC ICT MANAGEMENT IN DIVERSIFIED ORGANIZATIONS

With an improved understanding of the characteristics and contextual issues for strategic management the focus can now be placed on strategic ICT management, as an integral part of strategic business management. To this effect current theory regarding strategic ICT management and specifically planning will be presented, analysed and interpreted as appropriate to this specific research.

3.5.1 Approach for ICT Management in Diversified Organizations

Information as a resource and a commodity is acknowledged in the DOD as being subject to strategic direction, policy and control, as would any other resource in the DOD. It is also acknowledged as a resource that permeates throughout the organization and is encountered on and utilised throughout the organization. The

combination of information and information systems within the context of the organization implies not only a systems approach towards information management, but also a systemic perspective towards information management and utilisation. This has to be done as a collaborative activity to ensure coordination and collaboration.

For the purpose of business alignment models such as the one presented by Chorn (2004)[115] provides some insight into this activity and can be presented as follows:

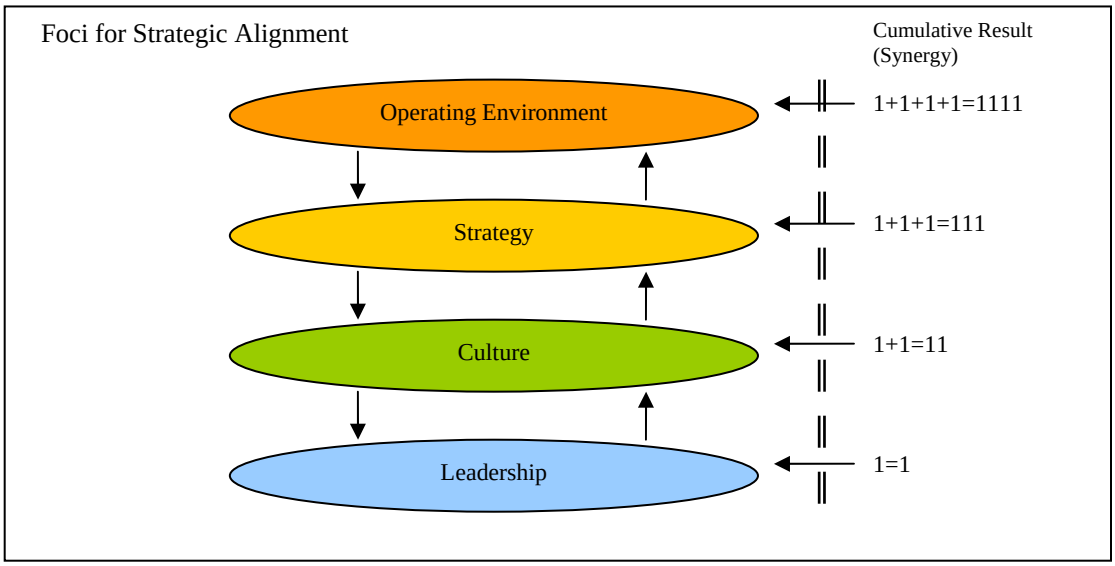

Figure 3.10: Strategic Alignment Model as Adapted from Chorn (2004) to indicate alignment for synergy

The emphasis in this model is centred on aligning the business orientated activities within the organization to ensure that synergy can be achieved and continuously improved. This is, however, another example where the enterprise is presented as if there were a single line-of-business.

The level of organizational maturity has a direct impact on the level of maturity for managing ICT in the diversified organization as inferred from the maturity model presented by Marchand and Horton (1986)[116]. When considering the fact that ICT research is described as a 'fragmented adhocracy' by Whitley (1984)[117] when indicating that it is "*essentially pluralistic*" with "*very limited intellectual and*

[115] Chorn, N. 2004. *Strategic Alignment: How to Manage Business Leadership, The commercial Environment and Organisational Culture for Strategic Success*. Maryborough, Vic: McPherson Printing Group.
[116] Marchand, D.A, & Horton, F.W. Jr. 1986. *Profiting from Your Information Resources.* New York: John Wiley & Sons.
[117] Whitley, R., 1984. *The Intellectual and Social Organization of the Sciences*. Oxford: Clarendon Press.

organizational cohesion or standardisation of methods", and its correlation to managing the ICT function, a standardised approach towards strategic ICT management becomes all the more essential. Flexibility and the recognition of uniqueness is, however, important according to already referenced literature to accommodate unique requirements of the respective strategic business units. Strategic leadership as corporatively managed can therefore be considered as an integral part of the strategic management process and therefore also of the strategic ICT planning process.

From a study done by Ramanujam, Camillus and Venkatraman (1987)[118] it was concluded that strategic management is seen as instrumental to high performance. It might be evolutionary and perhaps revolutionary in its growing sophistication, but still requires action orientation and to be contributing to cost effectiveness. This is considered to be similar for strategic ICT planning given the half-life of ICT and its relationship with business as an enabler.

When performing the functions of strategic management, Pearce and Robinson (2003:3)[119] indicate that it consists of nine critical tasks that focus on the strategic intention of the organization, its environment, the critical success factors or key performance areas that are related to specific scenarios and the 'plans' to realise the strategic objectives. The ability to plan, organize, lead and control these are, however, inherent to any strategic management and therefore planning function.

3.5.2 Considerations for Strategic ICT Planning in Diversified Organizations

From the above the ability to allocate and manage the responsibilities for the management and execution of an appropriate strategic ICT plan in the diversified organization becomes very important. This has to be done with due consideration of the requirement for specific structural arrangements and mechanisms.

3.5.3 Critical Issues to Successful Strategic ICT Planning in Diversified Organizations

[118] Ramanujam, V., Camillus, J.C. & Venkatraman, N. 1987. "Trends in Strategic Planning," in *Strategic Planning and Management Handbook*, Edited by W.R. King and D.I. Cleland. New York: Van Nostrand Reinhold, p.611-628.
[119] Pearce, J.A. & Robinson, R.B. 2003. *Strategic Management: Formulation, Implementation and Control Sited*. New York: McGraw-Hill.

When relating the approach towards Strategic ICT Planning to the actual Strategic ICT planning process, Ward and Griffiths (1996:108)[120] indicate that there are several questions that need to be answered before embarking on strategic IS/ICT planning. These questions became very pertinent to the ability to institutionalise an appropriate strategic ICT planning process in the DOD and refer to issues such as:

- *"What are the purpose and the main stimuli prompting the need for planning, and what are the key business drivers to be addressed?*
- *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?*
- *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?*
- *How can the planning process be effectively integrated with business planning?*
- *What are the expectations and business objectives to be met, and what deliverables are required?*
- *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?*
- *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?*
- *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?*

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

- *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?*
- *What other resources are required (automated tools, administrative support, physical facilities)?*
- *How long will the planning process take and what will it cost?*
- *How should the process be steered and managed?"*

It was considered by the researcher that there could be variations between that which is presented by Ward and Griffiths (1996) *op. cit.* and the way it is applied in the DOD. It has eventually become progressively clear from the research that the difference primarily revolves around the structural relationships as related to the degree of autonomy that is found in the business units of the diversified organization as opposed to that of the monolithic organization that might have full and direct control over the respective business units. This framework will be used to evaluate this research.

To understand the implication of strategic ICT management in the DOD as managing the enabler for the Information and Communication System, emphasis was placed on managing information as a strategic resource and as a commodity it was considered necessary in the DOD to elucidate the contextual issues related to managing information systems.

3.5.4 Establishing a Contextual Definition for an Expanded Strategic ICT Planning Process for Diversified Organizations

From the requirement to understand the context for strategic ICT planning in the DOD the establishment of a common theoretical framework became necessary. The fact that the directing function is separated from the execution function in the DOD required a similar separation of duties for the ICT management function, whilst still ensuring close collaboration. This separation is confirmed by authors such as Andrews and

Christiansen *et al.* (1982)[121], indicating that there should be "a clear separation of strategy and execution based on the issues of detaching thinking from acting". Steiner (1969)[122] added to this by indicating that "top management planning" should set some main steps that will serve as a basis for the actual process whilst "not specifically defining" the environmental influences.

Ward and Griffiths (1996)[123] utilises such frameworks to demonstrate the strategic ICT planning given their perceived challenges whilst adding that the ability to utilise tools, methodologies and mechanisms to support the strategic ICT planning process for diversified organizations also becomes important as a result of the scale, volume and complexity of the work to be undertaken. The context can be therefore be presented as follows:

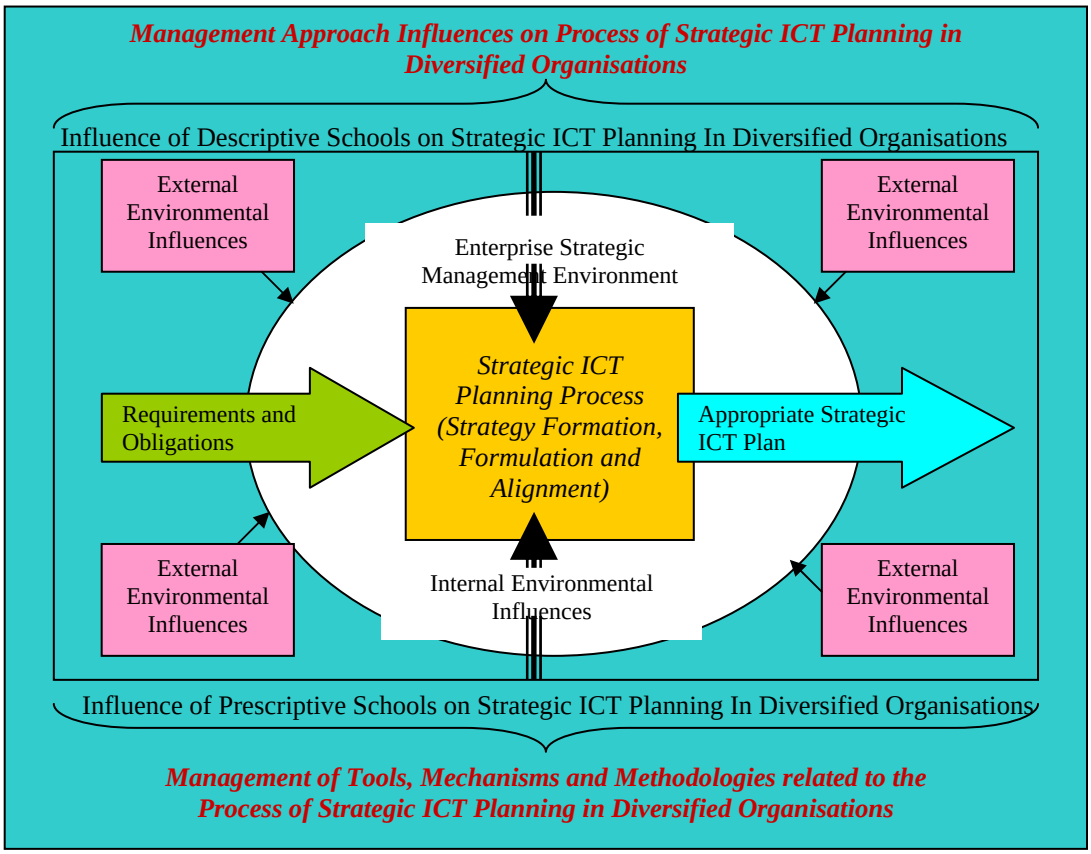

Figure 3.11: Expanded Contextual Positioning of the Influences of the Management Approach towards the Strategic ICT Planning Process in Diversified Organizations

[121] Christensen, C.R., Andrews, K.R., Bower, J.L., Hamermesh, G., & Porter, M.E. 1982. *Business Policy: Text and Cases*, 5th edition. Homewood, Illinois: Irwin.
[122] Steiner, G.A. 1969. *Top Management Planning*. New York: Macmillan.
[123] Ward, J. & Griffiths, P. 1996. *Strategic Planning for Information Systems*. New York: John Wiley and Sons.

The position presented by Mintzberg, *et al.* (1998:58-60)[124] relating to the 'planning school' for strategic management can be confirmed by recent developments and interpretations such as those made by Kruger and Snyman (2002)[125], who indicate that "*[i]t is clear that the Anthony three-tier structure approach*[126] *to defining organisational systems and the 'Nolan and Gibson - six-stage' model*[127] *can be considered as useful starting points in understanding the institutionalisation of ICT. However, the inability of these models to offer guidelines for identifying or explaining the strategic importance of ICT, makes them virtually unusable in our quest to determine the interdependability between strategic management and strategic ICT management.*" This relates to aspects of strategic management such as scenario planning to investigate different scenarios as part of the strategic planning process. It also relates to strategic control that includes activities such as strategic planning, financial control and strategic control that "*involves both business unit autonomy and promotion of corporate interests*" and "*responsibility rests with the division, but strategies must be ultimately approved by headquarters*" according to Thompson and Strickland (2003).

3.5.5 Establishing a Strategic IS/ICT Planning Process for Diversified Organizations

As an inherent part of interpretive research the ability to apply theory appropriately to specific circumstances is imperative. As appropriate to this research it is then considered necessary to understand the "traditional" mistakes that are generally made during the process of strategic management as confirmed in the 'seven deadly sins of strategic planning' as defined by Mintzberg (1994)[128].

According to the planning approach as presented by Mintzberg (1994) *op. cit.* the relationship between corporate management and execution should be such that corporate management is descriptive with execution being prescriptive. This is also confirmed by authors such as Thompson and Strickland (2003) *op. cit.* for general

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[124] Mintzberg, H., Ahlstrand, B. and Lampel, J. 1998. *Strategy Safari: A guided tour through the wilds of Strategic Management*. New York: The Free Press.
[125] Kruger, C.J. & Snyman, M.M.M. 2002. The interdependability between Strategic Management, and the formulation of an Information and Communication Technology Strategy. *South African Journal of Information Management*, 2002, vol.4,2.
[126] Anthony, R.N. 1965. *Planning and control: a framework for analysis*. Cambridge, MA: Harvard University Press.
[127] Gibson, C. F. & Nolan, R. L. 1974. Managing the four stages of EDP growth. *Harvard Business Review 52*, January/February 1974, p.76-88.
[128] Mintzberg, H. 1994. *Rise and Fall of Strategic Planning*. New York: Free Press.

management and by authors such as Ward and Griffiths (1998) *op. cit*. for ICT management. ICT planning should therefore not take place in isolation from the "implementers" where ownership of the ICT solutions resides. This characteristic of management is described by Marianne Jelinek (1979)[129] as the "*fallacy of detachment"* and is based on the fact that there should be *appropriate* detachment of the strategists from the executors. In the researcher's view this is like two sides of the same coin that requires a strong relationship without overlapping. The focus of solutions should not be allowed to shift to specific issues as opposed to focusing on business-orientated solutions as related to core or approved business as contended by Ward and Griffiths (1998) *op. cit.*

If strategies ignore organizational and cultural issues by focusing simplistically on the external environment, then the preponderance towards performing "single point forecasting" becomes an inappropriate basis for planning when the environment is changing so rapidly that a single scenario simply does not exist. This is especially appropriate to ICT with its extremely short half-life and its implications for the diversified organization. It therefore becomes increasingly relevant when considering the difference between corporate strategic management and management of ICT solutions at business unit level.

The ability to think outside the conventional approaches and thereby finding innovative solutions, should be tempered with reality, which requires continuous and conscious interaction of the whole IS management cadre of the enterprise. The premise in this case should be the necessity of not only understanding the nature of the business, but also displaying the ability to contribute towards the optimisation of the organizational capacity and capability. Given the imperative to continuously improve the competitive advantage of the whole corporation planning activities should not negate the semi-autonomous nature of the strategic business units of the diversified organization. To this end change management to realise continuous improvement throughout the whole enterprise requires firm baselines for the definition of future business requirements and the subsequent delivery of appropriate IS solutions and services.

[129] Jelinek, M. 1979. *Institutionalizing Innovation: A Study of Organizational learning Systems*. New York: Praeger.

3.5.6 Strategic ICT Planning as a Continuous Learning Process

A structured and appropriately managed approach will allow for the identification of deviations that can be used to guide the management of planned change. The problem usually encountered is that implementation becomes subject to internalisation and institutionalisation and should be managed with these requirements. A progressive approach might be appropriate given the scope and complexity of the change management initiative in a complex organization.

From the above implication for general management it could be expected that the strategic ICT management plan should place emphasis on continuously improving both the ICT solutions and issues of continuous learning to improve the strategic ICT planning process. This conforms to the phenomenon of "*double-loop learning*' as defined by Argyris and Schön (1978)[130] which relates to the practice of learning about "how to learn". This characteristic of learning has an influence on this research being conducted as action research and specifically this research as an ongoing process as also confirmed by Ward and Griffiths (1996:106) *op. cit*. when not only referring to the process, but also the structural and management requirements to ensure institutionalisation.

As suggested by Porter (1980)[131] the process of business strategy formulation should result in four generic strategies as opposed to a myriad of strategies that position the enterprise in the market and industry. This is also appropriate to the DOD as a diversified organization to support both its centralised and decentralised functions. Therefore the collaborative relationship within the ICT community within the enterprise should deliver solutions that will add value to the organization whilst at the same time adhere to appropriate requirements. The development of enabling methodologies, structural arrangements and toolsets for the enterprise are therefore of paramount importance.

The ability to project target IS/ICT architectures and solutions pro-actively into the long-term from the perspective of a knowledgeable user becomes an important driver,

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[130] Argyris, C., & Schön, D.A. 1978. *Organizational Learning: A Theory of Action Perspective*. Reading, Massachusetts: Addison-Wesley.
[131] Porter, M.E. 1980. *Competitive Strategy: Techniques for Analyzing Industries and Competitors*. New York: Free Press.

according to authors such as Ward and Griffiths (1996) *op. cit*. As such the ability to continuously improve the organizational maturity as a whole, given the relationship between user and enabler, must be managed as part of strategic ICT management. Maturity in this respect is considered with due cognisance of quality management as addressed in assessment for performance awards such as Malcolm Baldrige National Quality Award[132] presented by Schulmeyer and McManus (1996:133)[133] and the Capability Maturity Model (CMM) of the Software Engineering Institute (SEI) as presented by Humphrey (1989)[134], the latter relating to process maturity where five phases have been identified.

Not all of the strategic business units of the diversified organization will necessarily be on the same level of maturity when considering the nature of their respective businesses. The five stages as summarised from Ward and Griffiths (1996:38)[135] move progressively from being technology driven to being method driven to being administratively focused and eventually moving from driven by specific business requirements to a position where it serves the strategic intentions of the organization as a whole. These characteristics will also have an influence on the ability to realise common or transverse solutions that could be centrally managed with unique requirements being managed within the semi-autonomous business units.

3.6 STRATEGIC ICT PLANNING APPROACH, FRAMEWORK AND PROCESS AS APPROPRIATE TO THE DOD

Given the elucidation of the strategic management environment, the characteristics of general strategic management and strategic ICT management and its application in the DOD can now be addressed.

3.6.1 The Strategic ICT Planning Process: an Overview of the Model

As indicated above, the following depiction of the planning framework can be presented to serve as terms of reference for the establishment of a strategic ICT

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[132] United States of America. National Institute of Standards and Technology. 1999. *Malcolm Baldrige National Quality Award, MD 20899 – 1999 Application Guidelines*. Gaithersburg: The Institute.
[133] Schulmeyer, G.G. & McManus J.I. 1996. *Total Quality Management for Software*. Boston: International Thompson Computer Press.
[134] Humphrey, W. S. 1989. *Managing the Software Process*. New York: Addison-Wesley.
[135] Ward, J. & Griffiths, P. 1996. *Strategic Planning for Information Systems*. New York: John Wiley and Sons.

planning process for the DOD given the nature of diversified organizations and the contextual and structural issues described above. The one prerequisite for successful implementation of a strategic ICT planning process is a dedicated process leader as reference from authors on change management such as Lewin (1951)[136] and Bjorkman (1989)[137] as read in conjunction with Ward and Griffiths (1996) *op. cit.*

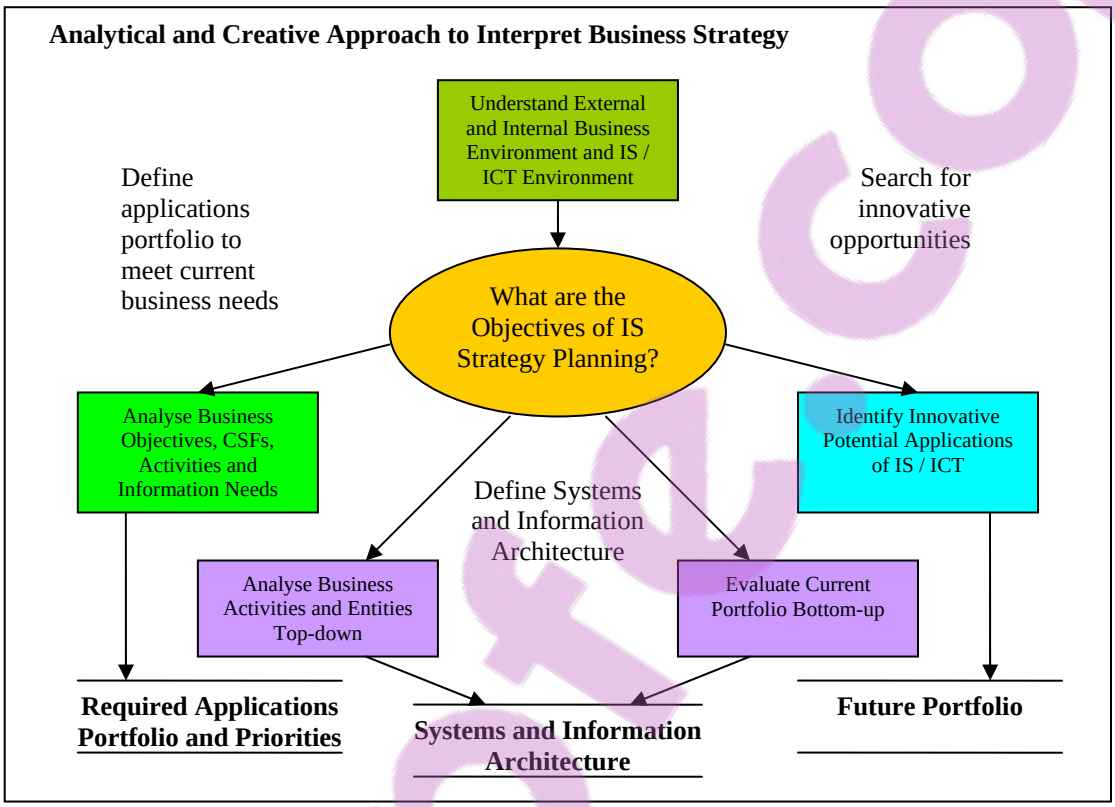

Figure 3.12: Analytic and Creative Approach to Interpret Business as from Ward and Griffiths (1996:137)

When describing the strategic ICT planning process at conceptual process level figure 3.12 defines the main activities of strategic ICT planning as presented by Ward and Griffiths (1996:128-129) *op. cit.* This process takes place within a specific organizational context that has as its essence the ability to ensure implementation with due consideration of relevant issues to ensure success. This is reflected in the following depiction.

[136] Lewin, K. 1951. *Field Theory in Social Science*. New York: Harper & Row.
[137] Bjorkman, I. 1989. Factors Influencing Processes or Radical Change in Organisational Belief Systems. *Scandinavian Journal of Management*, 1989, vol.5,4, p.251-271.

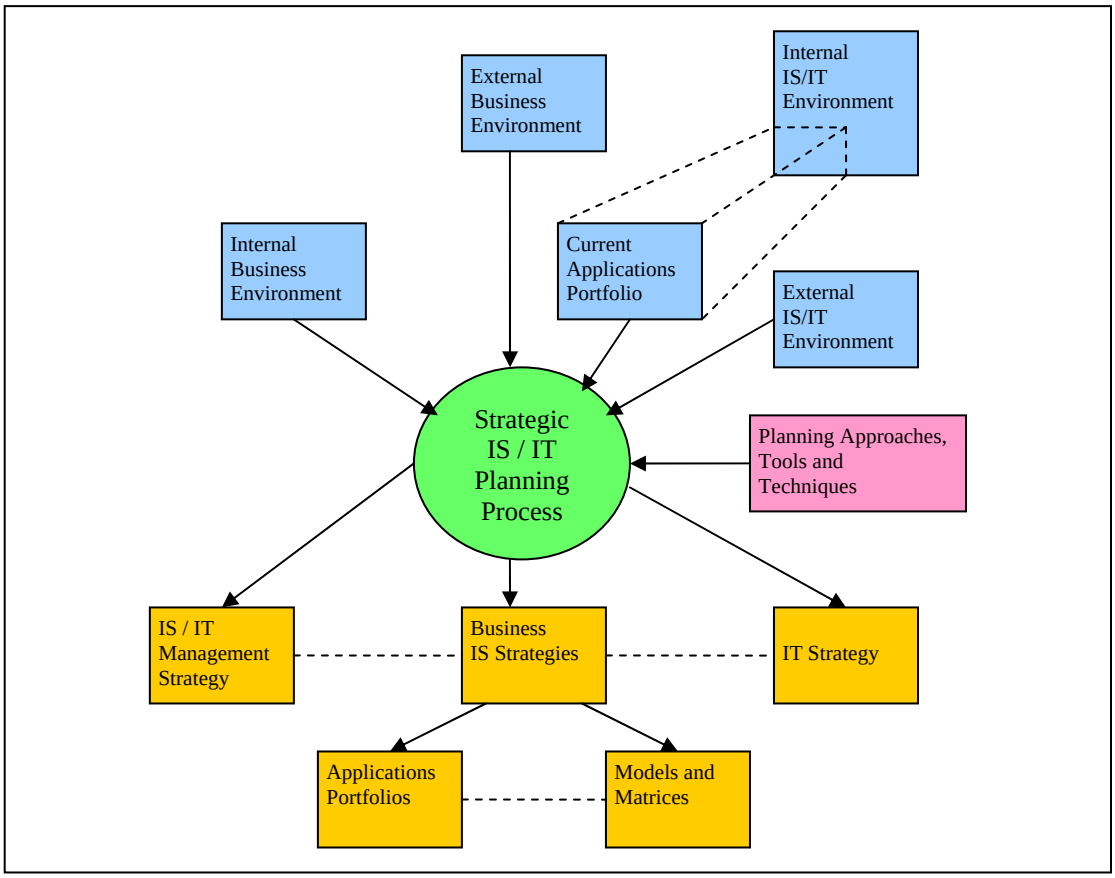

Figure 3.13: The inputs, outputs and related process activities and enablers as from Ward and Griffiths (1996:129)

This holistic approach towards strategic ICT management as presented in Figure 3.13 takes cognisance of the complexity of the organization and the researcher believes that it serves to confirm the requirement and necessity for appropriate structural arrangements to ensure collaboration, participation and alignment. The nature of the organization therefore starts playing a deciding role in the ability to institutionalise an appropriate strategic ICT planning process.

3.6.2 Outputs of the Strategic ICT Planning Process for Diversified Organizations

The strategic direction that results from applying the strategic ICT planning process should focus on the following, according to Ward and Griffiths (1996:129-130)[138]:

- *IS/ICT management strategy*: The focus is on establishing a common approach towards the management of IS/IT by means of policy.

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

- *Business IS strategies*: How each unit will deploy IS/IT to achieve its business objectives. Each business unit therefore has its own information architectures and IS/IT portfolios.

- *ICT strategy*: Policies and strategies for the management of technology and specialist resources.

The ability to support the strategic management obligations according to Ward and Griffiths (1996) is not disputed by this author when reference is made to the analytical and creative techniques and enabling toolsets that can be utilised within the planning process to provide the deliverables of the process as discussed previously. Cognisance should, however, be taken of the continuous requirement for alignment at both corporate and business unit level as well as bi-directionally between the two levels.

3.7 APPLYING THE STRATEGIC ICT PLANNING PROCESS

The original expectation of the DOD and this researcher was to simply apply the strategic ICT planning process as presented by Ward and Griffiths (1996)[139] and augment the process with aspects of alignment as presented by authors such as Luftman (1996)[140]. The nature and complexity of the organization, however, play an ever-increasing role in both practice and the research undertaken when referring to the complexity of the DOD as a type of diversified organization. To this end strategic management in diversified organizations presented by authors such as Thompson and Strickland (2003)[141] provide the essential theory. The core theory provided by these authors is substantially augmented by additional interpretation from the existing body of both scientific and practical knowledge as appropriate to the DOD.

3.7.1 Initiating the Planning Cycle

With due consideration of the research timeline the ability to initiate the planning cycle and thereby the definition and utilisation of a strategic ICT planning process require that a determination should be made as to the '*T*erms *O*f *R*eference' (TOR) to

[139] Ward, J. & Griffiths, P. 1996. *Strategic Planning for Information Systems*. New York: John Wiley and Sons.
[140] Luftman, J.N. 1996. *Competing in the Information Age: Strategic Alignment in Practice*. New York: Oxford University Press.
[141] Thompson, A.A. Jr. & Strickland, A.J. III. 2003. *Strategic Management Concepts and Cases*. 13th Ed. New York: McGraw-Hill.

be utilised for the planning process. The appointment of the Director Enterprise Information Systems Architecture (DEISA)[142] in the newly established CMIS Division created a nodal point for strategic ICT planning and commenced this research, with the TOR being drafted and eventually approved by top management in the DOD. The TOR served to initiate and guide both the establishment and institutionalisation of an appropriate strategic ICT planning process and this research. The DEISA, who eventually became the Government IT Officer (GITO) for the DOD, as the primary practitioner and researcher served as the single point of continuity throughout the past eight years during which the research was undertaken to the point where the strategic ICT planning process was actually institutionalised in the DOD. The migration of the then DEISA from practitioner to researcher is addressed later in this thesis as part of the discussion of the research methodology. The private sector would loosely compare the GITO to the Chief information Officer (CIO).

3.7.1.1 Environmental Issues that Will Initiate the Strategic ICT Planning Process

According to Ward and Griffiths (1996: 109-110) *op. cit.* the stimuli that will initiate the strategic ICT planning process could come from both the internal and the external environment as appropriate to all "sectors" of the enterprise. This is supported by Porter (1979[143], 1980[144]) with reference to his position on "competitive forces" that effect organizations in their internal functioning and their interaction with the external environment.

This position is confirmed by the understanding presented by Kruger and Snyman (2002)[145] in their interpretation of Applegate, McFarlen and McKenney (1999:71)[146] as well as from Frenzel (1999)[147], King (1987)[148] and also the position presented by

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[142] South Africa. Department of Defence. 2000. *SA DOD Performance Agreement for the Director Enterprise Information Systems Architecture dated with reference Def Sec/PP/DIMS/C/501/5 June 2000*. Pretoria: The Department.
[143] Porter, M.E. 1979. How Competitive Forces Shape Strategy, *Harvard Business Review 57:2*, March-April 1979, p.137-45.
[144] Porter, M.E. 1980. *Competitive Strategy: Techniques for Analyzing Industries and Competitors*. New York: Free Press.
[145] Kruger, C.J. & Snyman, M.M.M. 2002. The interdependability between Strategic Management, and the formulation of an Information and Communication Technology Strategy. *South African Journal of Information Management*, 2002, vol.4,2.
[146] Applegate, L.M., McFarlen, W.F. & and McKenny, J.L. 1999. *Corporate information system management: text and cases*. Boston: Irwin/McGraw-Hill.
[147] Frenzel, C.W. 1999. *Management of information technology*. Cambridge: Thomson Publishing Company.
[148] King, W.R. 1987. It's time to get out of the dark. *Datamation*, July 1987.

Earl (1989)[149] regarding the association that exists between business and IS/ICT and specifically exists between strategic ICT planning and its relationship to strategic "business" management. They place this emphasis squarely on the fact that such strategies should be exploitative and entrepreneurial.

It is also stated by Ward and Griffiths (1996) *op.* cit. that ICT strategy requires new attitudes to the use of IS/ICT and in this process requiring new skills and for different people to participate with new types of technology. This is considered as quite appropriate to the defence environment where technology plays a huge role. The adoption of such an approach allows the organization – such as the DOD – to respond to technical risks and/or threats from both the internal and the external environment. As taken from theory these "issues" should be addressed in relation to all the components of the systemic model that is being utilised in the DOD as appropriate to this research.

3.7.1.2 Information Flows and Monitoring Mechanisms

The activity of monitoring runs in parallel with the actual planning process. According to Thompson and Strickland (2003)[150] and others this is to ensure that there is continuous feedback regarding not only the inputs, but also the actual progressively improving process of ICT strategy formulation, the necessity to create monitoring mechanisms becomes a critical success factor in the ability to plan effectively and appropriately.

The ability to monitor ensures that there is continuous dynamic and iterative feedback across the total ICT system life cycle management process of the diversified organization. The ability to monitor and ensure the feedback into the planning process contributes to the necessity of establishing structure and appropriate structural arrangements in the DOD. According to Ward and Griffiths (1996:112)[151] this can be presented as follows:

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[149] Earl, M.J. 1989. *Management strategies for information technology*. Englewood Cliffs, NJ: Prentice Hall.
[150] Thompson, A.A. Jr. & Strickland, A.J. III. 2003. *Strategic Management Concepts and Cases*. 13th Ed. New York: McGraw-Hill.
[151] Ward, J. & Griffiths, P. 1996. *Strategic Planning for Information Systems*. New York: John Wiley and Sons.

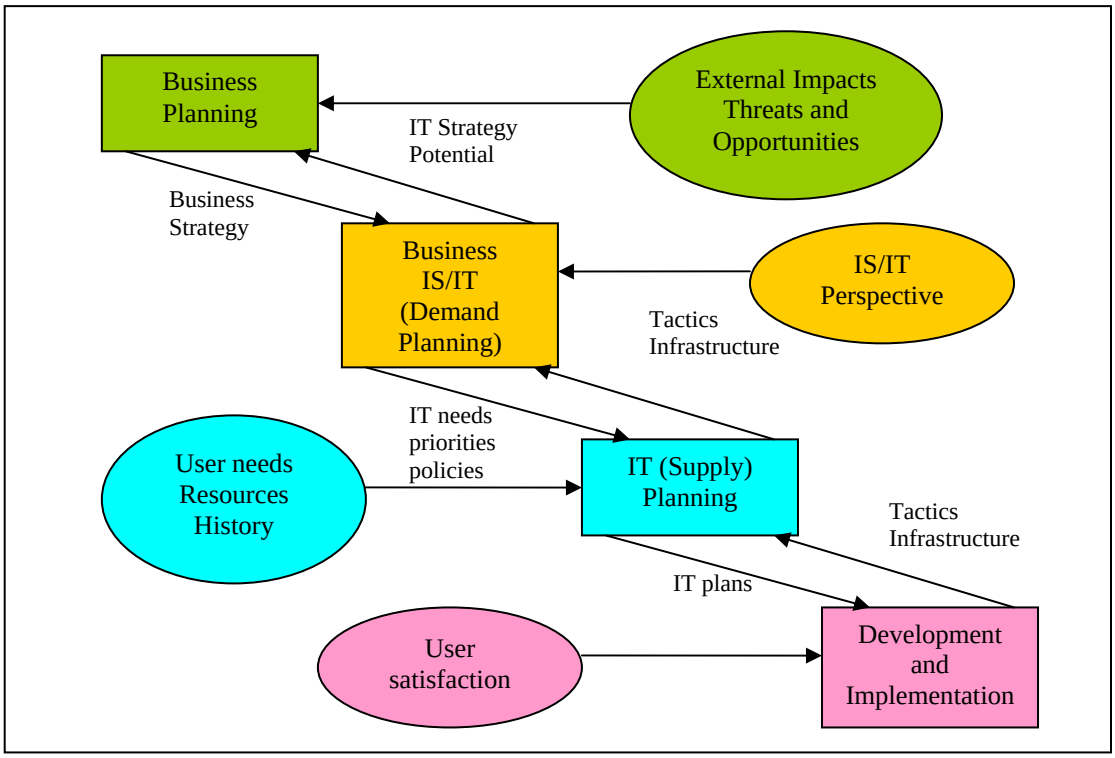

Figure 3.14: Information Flows and Feedback for IS/IT planning as from Ward and Griffiths (1996:112)

The underlying issues are from the depiction above and centred on the ability to identify the issues to be focused on during the planning life cycle of the IS/ICT system. Given the functions of corporate management and its relevance to control these underlying issues correspond greatly to the perspectives that for instance Luftman (1996)[152] uses for purposes of alignment and are described by Ward and Griffiths (1996) *op. cit.*, occurring at business planning level, business IS/ICT demand planning level, ICT supply planning level and development and implementation level. These activities have to be addressed with a clear and distinct allocation of responsibilities. This should be done with due consideration of corporate and business unit level management functions in the DOD. For purposes of this research the focus will be on the strategic planning environment and therefore confined to the "*Business Planning Level*" and the "*Business IS/ICT demand planning level*".

3.7.1.3 Current Environment Issues and Risks Affecting IS Planning and its Outcomes

[152] Luftman, J.N. 1996. *Competing in the Information Age: Strategic Alignment in Practice*. New York: Oxford University Press.

According to Ward and Griffiths (2003) *op. cit.* the intention of initiating the strategic ICT planning processes is to provide focus for the ICT management function. This is confirmed by Wainright Martin *et al.* (1999:539)[153] and the contention that the ICT vision/mission statement should set forth the fundamental rationale for the future activities of the ICT department by providing common guidelines for the corporate ICT planning process. From a business management perspective and specifically the characteristics of strategic leadership as presented by for instance Pearce and Robinson (2003)[154] this is confirmed as being a function of strategic management and therefore also strategic ICT management.

3.7.1.4 Scope, Expectations and Objectives

With due consideration of the fact that the purpose of the ICT planning has been determined, the current environment assessed, as well as the stimuli and the principles that affect IS/IT planning should be done, a determination of the scope and objectives of the planning becomes necessary. This was augmented by establishing a clear and unambiguous indication of the expectations that business has of the planning results.

3.7.1.5 IS Demand and ICT Supply

As a next step the objective of managing IS demand and ICT supply is to align the demand for IS solutions in such a manner with the supply of ICT solutions that there is no confusion. It is indicated that IS strategy therefore deals with "*what*" to do with information, systems and technology. It also deals with how to manage applications from a business point of view. IT strategy on the other hand indicates "*how*" ICT will be utilised to deliver information and systems and ultimately contribute towards the competitive advantage of the organization.

3.7.1.6 Strategic IS Planning for the Strategic Business Units as Part of the Corporation (Enterprise)

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[153] Wainright Martin, E., Brown, C.V., DeHayes, D.W., Hoffer, J.A. & Perkins, W.C. 1999. *Managing information technology – what managers need to know*. 5th Edition. New Jersey: Prentice Hall.
[154] Pearce, J.A. & Robinson, R.B. 2003. *Strategic Management: Formulation, Implementation and Control Sited*. New York: McGraw-Hill.

With due consideration of the nature of the diversified organization and its challenges as alluded to by authors such as Sifonis and Goldberg (1996)[155] and the level of autonomy that is afforded each business unit in relation to centralised corporate functions, conscious decisions are required as to the structure of IS/ICT strategies throughout the organization. Ward and Griffiths (1996:119)[156] presents this as follows:

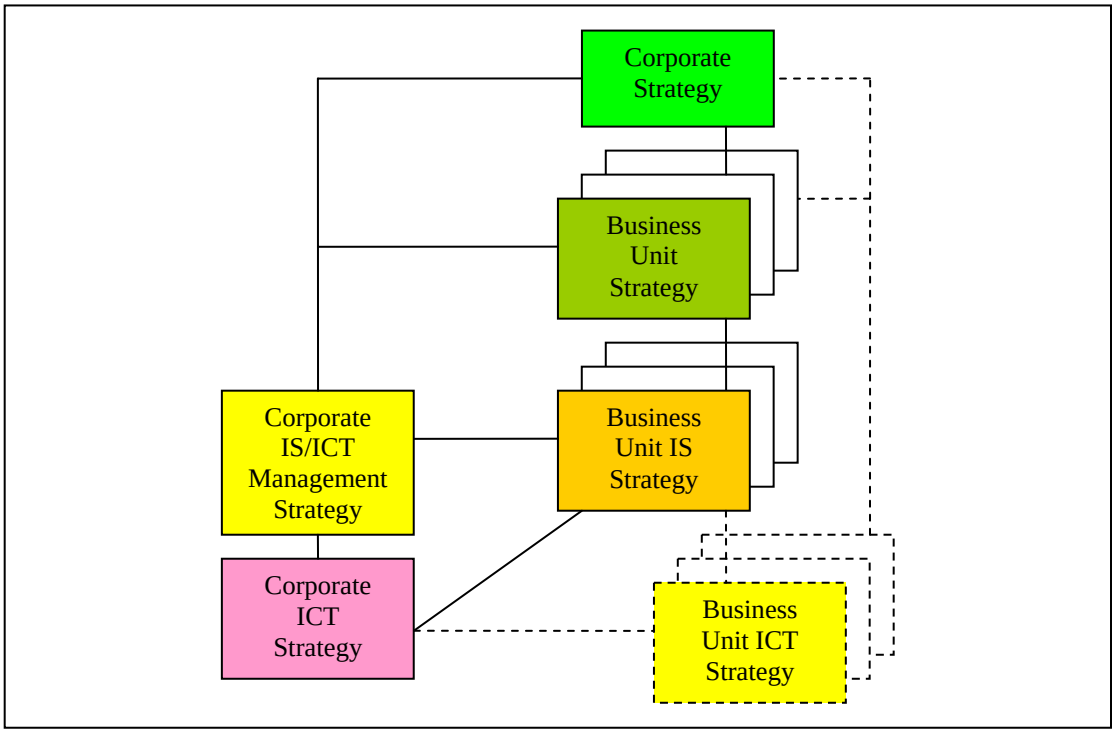

Figure 3.15: Options for ICT strategies for an organization with distinctive business units as from Ward and Griffiths (1996:119)

The important issue highlighted by Ward and Griffiths (1996) above is that there should be a direct relationship between the business strategy and the related IS/ICT strategy. This confirmation implies that structures might have to be created and incumbents appointed to manage the function of strategic ICT planning at corporate and business unit level given the imperative for appropriate alignment. The requirement for such arrangements amounts to vertical and horizontal collaboration and could be expected to play a huge role in the DOD, given its complexity.

As indicated by Ward and Griffiths (1996:120-121) *op. cit.* the attempts to develop corporate IS/ICT strategies as opposed to Strategic Business Unit IS/ICT strategies

[155] Sifonis, J.G. & Goldberg, B. 1996. *Corporation on a tightrope: Balancing leadership, governance, and technology in an age of complexity*. New York: Oxford University Press.
[156] Ward, J. & Griffiths, P. 1996. *Strategic Planning for Information Systems*. New York: John Wiley and Sons.

are not always successful. The corporate strategic business unit can also be considered a distinct user group on its own, whilst simultaneously having the responsibility to participate in corporate strategic direction for the total diversified organization. To ensure that the strategic ICT planning process for diversified organization can be managed effectively, issues related to commitment, participation and collaboration with a clear acceptance of role of ICS and ICT in the organization and the enterprise are necessary. Ward and Griffiths (1996:123) *op. cit.* contend that the ability to manage these aspects is strongly dependant upon established strategic business planning. The requirement for collaboration and therefore alignment furthermore allows for the identification and exploitation of opportunities towards "*mutual support*". This should, however, not take place to the determent of unique requirements throughout the organization.

The underlying imperative is that 'the enterprise' must make the necessary conscious decisions to manage its information systems as enabled by the utilisation of technology and organizational capacity. These implications also fit into the contextual construct of the strategic ICT planning process as presented earlier.

3.7.1.7 Expectations and Setting of Strategic ICS Objectives

With due consideration of the strategic ICT management process presented by Ward and Griffiths *op. cit.* it is the intention to set strategic ICS objectives to guide the ICT function and align it with business objectives that should also include the expectation of business in general terms. Such focus and alignment is in line with the opinions of Kruger and Snyman (2002)[157] in their consideration of the findings by Haag, Cummings and Dawkins (1998:304)[158]. This approach is also confirmed by King[159] and Earl (1989)[160]. Kruger and Snyman (2002) *op. cit.* can be quoted as stating that "*the whole point of the ICT planning process is to find systems that enable the business to go where it needs to go*".

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[157] Kruger, C.J. & Snyman, M.M.M. 2002. The interdependability between Strategic Management, and the formulation of an Information and Communication Technology Strategy. *South African Journal of Information Management*, 2002, vol.4,2.
[158] Haag, S., Cummings, M. & Dawkins, J. 1998. *Management information systems for the information age*. Boston: Irwin/McGraw-Hill.
[159] King, W.R. 1987. It's time to get out of the dark. *Datamation*, July 1987.
[160] Earl, M.J. 1989. *Management strategies for information technology*. Englewood Cliffs, NJ: Prentice Hall.

In order to align organizational goals with ICT goals, Haag, Cumming and Dawkins (1998) *op. cit.* proposed five distinctive steps, appropriately named the "*Information Technology System Planning Process*".

The implications of expectations that are relevant to the strategic ICS/ICT planning process for diversified organization can once again be referred to as being relevant to the systemic foci for ICT management. Ward and Griffiths (1996:126)[161] confirm this by clarifying this implication when indicating that "*the process should be institutionalised to translate to a progressive yet comprehensive process that addresses the expectations of the organisation as appropriately aligned with the strategic business intent*". This position is also confirmed by Pearce and Robinson (2003)[162] when they state that the emphasis of strategic analysis and choice, centre around identifying strategies that are most effective at building sustainable competitive advantage based on the core competencies and capabilities of the firm. This increases the importance of making the connection between ICT solutions and the business requirements within the constant suspicion of non-compliance and performance at ever-increasing cost as stated by Ward and Griffiths (1996:126) *op. cit.* This requires the ability to manage specific planning constraints as appropriate to corporate considerations with due cognisance of considerations as appropriate to the respective business units.

3.7.2 Selecting, Defining and Implementing a Planning Approach

The acquisition of military equipment generally has an extensive lead-time; therefore the requirement for the approach to be flexible, adaptable and modular is imperative. As such the specifics of the deliverables with clear indications of the process checkpoints should be recognised as being cyclic in nature. This could be illustrated by simple diagrams to elucidate what might be a very complex process. Ward and Griffiths (1996:131) confirm some of these process characteristics as appropriate to the ICT environment when referring to the ability to provide context, consistency, and communication as formalised in documentation. All of these are focused on the ability

[161] Ward, J. & Griffiths, P. 1996. *Strategic Planning for Information Systems*. New York: John Wiley and Sons.
[162] Pearce, J.A. & Robinson, R.B. 2003. *Strategic Management: Formulation, Implementation and Control Sited*. New York: McGraw-Hill.

to make rational decisions based on the strategic intention with due consideration of context, but under full configuration management.

3.7.3 Framework for the IS Planning Approach

The framework and characteristics for the IS planning approach as described by Ward and Griffiths (1996:132-136) *op. cit.* places emphasis on the ability of the organization and specifically the planners to assess the nature of the planning activities to be undertaken with due consideration of the current status of IS/IT planning in the organization. As such the framework provides a definition that guides the planner to the actions to be taken by providing a generic construct that guides to planner to this decision. The framework is presented as follows:

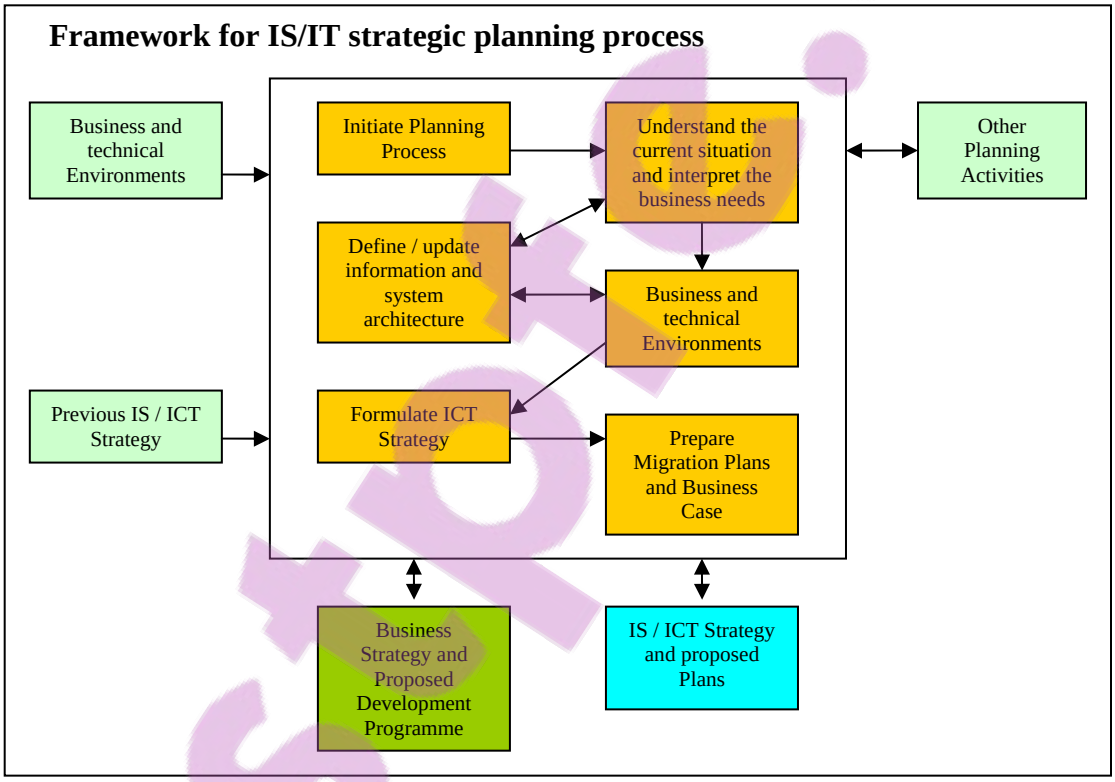

Figure 3.16: Framework for IS/ICT Strategic Planning process as from Ward and Griffiths (1996:133)

The primary planning activities are indicated by Ward and Griffiths (1996:132) as such that it focuses the attention of the planner on the following where it provides the planner with the opportunity to understand the organization and its business needs with specific reference to the fact that it includes activities such as confirmation of the purpose, objectives, scope and deliverables with a clear and unambiguous approach to be followed. This process should be supported by "tools" that can be utilised to support the effort.

Given the requirement for alignment between business and ICT as taken from Henderson and Venkatraman (1990)[163], Luftman, *et al.* (1993)[164] and eventually Luftman (1996:26)[165] developed a theoretical model that explores the interrelationship between business and I(C)T referred to as "The theoretical construct of strategic alignment". This model was based on two distinct linkages: strategic fit and functional integration. The model has as its basic foci for comparison and alignment the business strategy, the I(C)T strategy, the organizational infrastructure and processes and the I(C)T strategy and processes. This becomes more important for diversified organization by their very nature and complexity when considering the degree of collaboration required to facilitate continuous alignment.

With due consideration of the complexity of the organization the establishment and institutionalisation of firm planning baselines become important to create stability in the planning process, the determination and management of appropriate mandates, as well as for the establishment of management arrangement and management mechanisms. Such a stable situation will assist to not only manage the corporate ICT function, but also towards the determination of the Business IS Strategy where an application portfolio is defined for each Strategic Business Unit with a clear consideration of the current systems, required systems and future systems. It provides a common reference framework for the enterprise.

3.7.4 Structure for Strategic ICT Planning Deliverables

Ward and Griffiths (1996:139) *op. cit.* indicate that the strategic ICT planning framework that they present should be adapted to conform to the nature of the organization that wants to apply it. Given that this is also the focus of this research a few general points can be highlighted that relate to aspects such as the need to have statements of demand for information, information systems and information and communications technology in the business IS strategy and accompanying application/ICT portfolio. As such the supply initiatives should be contained in the

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[163] Henderson, J, & Venkatraman, N. 1990. *Strategic alignment: a model for organisational transformation via information technology*. Boston: Sloan School of Management, (Working Paper 3223-90).
[164] Luftman, J., Lewis, P. & Oldach, S. 1993. Transforming the enterprise: the alignment of business and information technology strategies. *IBM Systems Journal*, vol.32(1), p.198-221.
[165] Luftman, J.N. 1996. *Competing in the Information Age: Strategic Alignment in Practice*. New York: Oxford University Press.

ICT strategy whilst the ICS/ICT management strategy contains the overall direction/policies for satisfying and balancing demand and supply.

It can also be stated that there should be an appropriate ICS/ICT management strategy for any organization where ICS/ICT are applied consistently throughout the organization. There may, however, according to Ward and Griffiths (1996) *op. cit.* be several business IS strategies, one for each business unit, or even separate strategies for specific functional or geographically located business units. Given the perspective provided by authors such as Thompson and Strickland (2003)[166], Pearce and Robinson (2003)[167] and Kruger and Snyman (2006)[168] of strategic management for diversified organization the ability to align these with corporate strategy remains important.

3.7.5 Formulation of the Business IS Strategy to Manage the Demand for IS/ICT

As indicated previously the soft factors that will influence the ability of the organization to manage its information management solutions focus on providing insight into the management style of the organization as well as corporate values and business practices. Given the command orientated (autocratic) culture of the military these soft issues have a tendency to become extremely "hard" issues of not managed appropriately towards collaborative continuous improvement. This implication in turn leads to the requirement for appropriate structural arrangements and mechanisms to ensure participation, collaboration and integration. This has to be determined as appropriate to the respective organizations with due consideration of all the dynamics that will impact on the business environment and from the business environment on the IS/IT solutions. Ward and Griffiths (1996:141-142)[169] provide an indication of the aspects that are to be addressed and contained in the business IS strategy.

3.7.6 Formulation of the Strategy to Supply ICT Solutions

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[166] Thompson, A.A. Jr. & Strickland, A.J. III. 2003. *Strategic Management Concepts and Cases*. 13th Ed. New York: McGraw-Hill.
[167] Pearce, J.A. & Robinson, R.B. 2003. *Strategic Management: Formulation, Implementation and Control Sited*. New York: McGraw-Hill.
[168] Kruger, C.J. & Snyman, M.M.M. 2002. The interdependability between Strategic Management, and the formulation of an Information and Communication Technology Strategy. *South African Journal of Information Management*, 2002, vol.4,2.
[169] Ward, J. & Griffiths, P. 1996. *Strategic Planning for Information Systems*. New York: John Wiley and Sons.

The current literature related to supplying ICT solutions indicates that it should not only cover the central (common) ICT function, but also the responsibility of unique users where appropriate. Strategic direction therefore should provide the intention of the organization regarding the way in which it is going to manage its information resources and enabling technologies. From a military perspective given the importance of ICT infrastructure and its enabling ability towards force employment, the ICT strategy indicates the changes required to the information systems and ICT into focus. This should be done with due consideration of the changes in the business environment and its requirements, or where new options for IS/ICT solutions are required due to changes in technology and the ability to sustain the implemented baseline. According to Ward and Griffiths (1996:142) *op. cit.* the IS/ICT strategy will normally reflect on application portfolio management, the organization of IS/IT as well as the management of its resources and administrative matters. It will also address issues related to managing the information resources and the provision of information services as well managing investment, prioritisation and benefits. The ability to manage relevant technology should also be addressed. Once again emphasis is placed on the ability to manage the ICT function with due cognisance of the requirement to establish and institutionalise structural arrangements and mechanisms.

3.7.7 Expansion of the Strategic ICT Planning Process

The requirement to ensure appropriate governance as well as management arrangements and mechanisms had the implication that the implementation for the utilisation of the strategic ICT planning approach had to be changed to include organizational issues. This necessitated an expansion of the theoretical reference framework to address those issues that became relevant to the ability to manage the ICT function as a collaborative effort within the organization and with strategic business management.

3.8 FORMULATION OF THE ICS/ICT MANAGEMENT STRATEGY

With the intention of the ICS/ICT management strategy being to provide focus for ICT solutions and as such guide commensurate structural arrangements, it has become necessary for the DOD to address the total system and its related life cycle. It serves to strategically direct the resource and the resource management system for the

enterprise and has the nature of policy once approved, whilst including change management imperatives to keep up with the ever-changing environment and the supporting requirements for ICS/ICT and information.

The supply factors as addressed by Ward and Griffiths (1996:143) *op. cit.* focus on the ability to establish strategic direction, formalise and implement ICT related master plans that reflect appropriately prioritised ICT requirements with full recognition of a holistic system perspective sustaining cover of the total life cycle of ICT solutions. This once again confirms the requirement for specific structural arrangements and mechanisms in the diversified organization as for any other type of organization.

The nature of change and the manner in which it is managed is directly and indirectly related to the need of the organization of adapting to accommodate the changes in the environment. As represented by Robbins (1979)[170], as well as Brown and Covey (1987)[171], organizational development is an important part of change management. It is indicated by these authors that the people who make up the organization be put through a change process in such a manner that it will contribute towards enhancing the output of the organization. Organizational development[172] is described as "*a collection of change techniques or interventions built on humanistic-democratic values*". In addition to this Brown and Covey (1987) *op. cit.* also state that "*Organisational development values human and organisational growth, collaboration and participative processes, and a spirit of enquiry".* Robbins (1979) *op. cit.* further states that managers can adopt certain strategies to ensure that the collaborative nature of participants can be managed by implementing certain strategies. These should not only address issues of process and capacity, but also management issues to ensure alignment through participation and collaboration. This is once again in line with the "*fallacy of detachment*" as described by Jelinek (1979)[173] and appropriate to the

[170] Robbins, S.P. 1979. *Organizational Behavior, Concepts, Controversies, and Applications*, Fifth Edition. New Jersey: Prentice-Hall International Editions.
[171] Brown, L.D. & Covey, J.D. 1987. Development Organizations and Organization Development: Towards an Expanded Paradigm for Organization Development in *Research in Organizational Change and Developmen*t, vol. 1, edited by R.W. Woodman & W.A. Pasmore. Greenwich, Conn.: JAI Press, p.63.
[172] Robbins, S.P. 1979. *Organizational Behavior, Concepts, Controversies, and Applications*, Fifth Edition. New Jersey: Prentice-Hall International Editions.
[173] Jelinek, M. 1979. *Institutionalizing Innovation: A Study of Organizational learning Systems*. New York: Praeger.

establishment and institutionalisation of a strategic ICT planning process for the DOD.

3.8.1 ICS/ICT Management Strategy

Whilst the ICT strategy focuses in the information systems the focus of the ICS/ICT management strategy is on ensuring that there is sufficient and appropriate capacity and capability to manage the total life cycle and the total system within an appropriate management model, given the nature of the organization. Issues such as centralisation and the degree of autonomy afforded to respective strategic business units will play a role in these decisions. It has the implication that it is part of the governance within the organization over the information management function. Ward and Griffiths (1996:143) *op. cit.* contend that "*The strategy should also contain a concise summary of the individual business IS strategies, and any IT strategies derived for the organisation. It should relate these to its own stated corporate aims and CSFs*".

It is however also indicated by Ward and Griffiths (1996:143) that if the organization consists of "… *a single SBU organisation, or one with complete autonomy, then the IS management strategy can be amalgamated with the business IS strategy*". There is an indication that it separates the strategic management of IS/ICT infrastructure from the ICT strategy where the supporting infrastructure as part of the organizational enabling capacity to manage IS/IT comes into effect. This was the case with the DOD.

In considering the issues presented by Ward and Griffiths (1996:144) *op. cit.* the emphasis is clearly placed on the fact that the ICT management strategy should include all relevant governance, functions and capacity regarding all role players and stakeholders to ensure alignment with organizational requirements and imperatives.

3.8.2 Issues Related to Institutionalisation of the Strategic ICT Planning Process

The ability to increase the potential for success stemming from the realisation of the ICS/ICT related strategies revolve very strongly around the ability to realise strategic leadership within the organization as pertaining to this function. Essentially, this implies that there should be representation at all relevant levels of the organization that can function in accordance with specific management arrangements and objectives as appropriate. Appropriateness relates in this instance to the ability to

manage the process of strategic ICT management in the diversified organization within the organizational construct and mandate related to ICS/ICT process and resource management. This was in fact confirmed by DOD top management as an imperative for the optimisation of Defence ICT Management as taken from Ward and Griffiths (1996:147-152) *op. cit.*

When considering the change management imperatives as presented by for example Lewin (1951)[174] and Bjorkman (1989)[175] as read in conjunction with Ward and Griffiths, the requirement to establish a *"Management Sponsor"* who should preferably be a director of the organization is confirmed. This does, however, have implications for the diversified organization that once again relates to mandate, process as well as management arrangements and mechanisms. The establishment of a *Steering Committee* that "orchestrates the involvement and thereby obtains *commitment from team members"* becomes a confirmed imperative. The ability to support the functioning of such arrangements can be enhanced by establishing *automated support facilities* that can support the electronic management of data captured during the planning process. With the advent of the Enterprise Architecture Planning approach towards information systems management as described by Spewak and Hill (1992)[176] and based on the Zachman Framework (1987)[177] the desire for a comprehensive enterprise architecture toolset is becoming more and more imperative.

The availability of *dedicated physical facilities* then becomes more important the greater the volume of work required in formulating the strategic ICT plan for a diversified organization. This is to decrease the likelihood of interruptions, to get the executives away from day-to-day management problems and commitments as well as to ensure that the supporting "tools" can be accommodated and enhance continuity.

With the expectation that strategic ICT planning should contribute towards sustaining competitive advantage as discussed before, the institutionalisation of an appropriate

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[174] Lewin, K. 1951. *Field Theory in Social Science*. New York: Harper & Row.
[175] Bjorkman, I. 1989. Factors Influencing Processes or Radical Change in Organisational Belief Systems. *Scandinavian Journal of Management*, 1989, vol.5,4, p.251-271.
[176] Spewak, S.H. & Hill, S.C. 1992. *Developing a Blueprint for Data, Applications, and Technology: Enterprise Architecture Planning*. New York: John Wiley & Son.
[177] Zachman, J. 1987. A Framework for Information Systems Architecture. *IBM Systems Journal*, 1987. vol.26, no.3.

strategic ICT planning process as presented by Ward and Griffiths (1996) *op. cit.* and supported by other authors is based on the following critical success factors.

- Creating a centre of excellence representative of all the disciplines involved with strategic ICT planning.
- Gaining the enthusiasm, support and commitment towards the strategic ICT planning process and its subsequent activities to realise the objectives.
- Understanding the full nature of both the internal and the external business environment and its imperatives for ICT systems and solutions.
- Ensuring alignment of the objectives with the maturity of the organization whilst employing a mixture of analytical and creative techniques.
- Ensuring that the business believes in its own recommendations and that it is willing to execute them to achieve the purpose.
- The ability to ensure that the potential utility of ICT cab be leveraged towards the continuous improvement of the organization.

3.9 RELATIONSHIP BETWEEN ORGANIZATIONAL LEARNING AND THE REQUIREMENT FOR STRUCTURE

The logical progression of this research from initially being focused on the strategic ICT planning process and then being augmented by understanding structural issues that surrounds the process required an understanding of strategy as a process of learning. Mintzberg (1998)[178] presented sufficient insight for purposes of this research to this effect when addressing the “five P’s” that serve to enhance the understanding of the process of learning as relevant to the process of strategy formation. The emphasis placed on ‘*intended strategy*’ as opposed to the ‘*realised strategy*’ has the implication for this research that the reasons for deviation have to be understood. This was found to be the case with understanding the necessity to not only focus on the process, as intended, but that the process is influenced by practice and as such can and did in fact alter the outcome of this research from what had initially been expected.

[178] Mintzberg, H., Ahlstrand, B. and Lampel, J. 1998. *Strategy Safari: A guided tour through the wilds of Strategic Management*. New York: The Free Press.

With the consideration that strategy follows a pattern the fact that the progression of this research process follows a pattern that is commensurate with the action research process was also found to be relevant. Establishing governance for the strategic ICT planning process and its relationship with strategic planning in general creates the opportunity to develop a framework that can guide such an appropriate strategic ICT planning process.

When considering the relationship between theory and practice the potential to draw the analogy between this research and the idea of "*emergent strategies*" as presented by Mintzberg *et al.* (1998)[179] and others it is once again confirmed that the findings of this research 'emerged' from putting theory into practice. This serves as a demonstration of the relationship between theory and practice and its relationship to research methodology. The fact that the essence of strategic management (planning) is commensurate to the process of developing the process of strategic planning adds strength to the final conclusions of this research in the opinion of the researcher. As such with the essence of strategy being placed on change management, it is essential to ensure that there can be a firm movement from one state of being to the next.

Unstructured and unmanaged strategic direction has the potential to result in sub-optimal ICT solutions where duplication and omissions as well as an inability to align and integrate become the order of the day. An understanding of the relevant and appropriate 'perspective' as discussed by Mintzberg (1998) *op. cit.* when referring to strategy as a ploy and the particular way in which each company does its business, also becomes relevant to establishing an appropriate strategic ICT planning process. With strategy as a position, the focus is outward, whilst with strategy as a perspective the focus is inward; requiring collaboration and alignment that once again confirm the requirement for structure.

Thompson and Strickland (2003:12)[180] indicate that companies in general have a wide degree of freedom that can spill over into diversification. This phenomenon can in turn result in non-standardisation of policy, structure and even conflicting strategic intent and as such is also appropriate to ICT management. Such diversification can be

[179] Mintzberg, H., Ahlstrand, B. and Lampel, J. 1998. *Strategy Safari: A guided tour through the wilds of Strategic Management*. New York: The Free Press.
[180] Thompson, A.A. Jr. & Strickland, A.J. III. 2003. *Strategic Management Concepts and Cases*. 13th Ed. New York: McGraw-Hill.

broad or narrow and can extend into related or unrelated industries or across national and/or geographic boundaries. Such diversification can be realised through acquisition, joint ventures, strategic alliances, or internal start-up. This characteristic of collaboration and role clarification was found to be relevant to this study; confirming and elucidating the requirement for structure and therefore also influencing the context understanding for strategic ICT planning in diversified organizations.

3.9.1 The Development of Appropriate Structure for Strategic ICT Planning from Learning Experiences

With the intention of sustaining survival and the competitive advantage of the organization through strategies for growth and profitability as presented by Porter (1980:4)[181] and expanded upon by Callon (1996:46)[182] in identifying strategies for innovation, growth and alliance, the focus should be both internal and external. This is confirmed by the idea presented by Introna (1998)[183] when indicating that humans are what they are as a result of their interaction with their environment. This can be the result of explicit or implicit interaction where the interaction can be either conscious or unconscious. This is once again in line with the work done by Giddens (1984)[184] in his "structuration theory" and it appropriateness to learning and therefore the development of an appropriate strategic ICT planning process for diversified organizations. To understand the implications of this perspective and the organizational implication notice can be taken of the advantages and disadvantages of strategy due to the nature of organizations as presented by, for example, Mintzberg *et al.* (1998)[185].

3.9.1.1 Strategy Sets Direction and Structure

Mintzberg *et al. op. cit.* indicate that strategy has the ability to set direction, since it provides the objectives that guide the activities in an organization. These objectives

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[181] Porter, M.E. 1980. *Competitive Strategy: Techniques for Analyzing Industries and Competitors*. New York: Free Press.
[182] Callon, J.D. 1996. *Competitive advantage through information technology*. New York: McGraw-Hill.
[183] Introna, L.D. 1997. *Management, Information and Power*. London: Macmillan Press Ltd.
[184] Giddens, A. 1984. *The Constitution of Society: Outline of the Theory of Structuration*, Cambridge, MA: Polity Press.
[185] Mintzberg, H., Ahlstrand, B. and Lampel, J. 1998. *Strategy Safari: A guided tour through the wilds of Strategic Management*. New York: The Free Press.

provide the framework for the allocation of responsibilities and dependencies which in a diversified organization has the implication of requiring structure to ensure a coordinated effort towards corporate strategic intent. As such the fact that "structure follows strategy" as presented by Chandler (1962)[186] further lends credibility to the necessity for frameworks to provide structure to the strategic ICT planning process. The development of frameworks by Gluck, Kaufmann and Walleck (1980)[187] to not only address the strategic planning process, but specifically the increasing maturity of strategic planning in organization contributes towards this approach.

Ward and Griffiths (1996:48)[188] further apply this same perspective of structure and continuously improving maturity of the strategic planning process to the strategic ICT planning process. The fact that there are distinct relationships between the general strategic planning process and the strategic ICT planning process further increases the need for both processes to be managed and maintained/improved and aligned, or even terminated. Omitting to do so will have serious consequences or risks if not addressed appropriately. This once again confirms the necessity for collaboration between general strategic management and strategic ICT management.

With due consideration of Mintzberg (1998) *op. cit.* and the position on the nature of strategy as being emergent, so that a strategic planning process when properly institutionalised provides continuity and consistency. This should, however, be tempered by the nature of the organization when considering the fact Thompson and Strickland (2003:291)[189] allow for the semi-autonomous nature of organizations that require some kind of corporate governance – direction and policy. The primary advantage according to Mintzberg *et al.* (1998) *op. cit.* is that it promotes coordination of activity and improves the final results and utilisation of resources. What is considered to be necessary is a strong sense of objective without being too restrictive in nature and thereby inhibiting innovation and synergy. It is necessary to prevent 'group thinking' that can occur when efforts are too prescriptive. There could

[186] Chandler, A.D., Jr. 1962 *Strategy and Structure: Chapters in the History of Industrial Enterprise*. Cambridge, Massachusetts: MIT Press.
[187] Gluck, F.W., Kaufmann, S.P. & Walleck, A.S. 1980. Strategic Management for Competitive Advantage, *Harvard Business Review*, July / August 1980.
[188] Ward, J. & Griffiths, P. 1996. *Strategic Planning for Information Systems*. New York: John Wiley and Sons.
[189] Thompson, A.A. Jr. & Strickland, A.J. III. 2003. *Strategic Management Concepts and Cases*. 13th Ed. New York: McGraw-Hill.

therefore be a differentiation between corporate governance and governance for execution.

Mintzberg *et al.* (1998)[190] refer to descriptive management (strategy) as appropriate to the "*learning school*" as an approach to strategic management. The implication of this could be that 'governance for execution' could be prescriptive which in turn could result in a restriction of 'semi-autonomous' executives to consider uniqueness in the nature of specific ICT solutions. Structural relationships and management mechanisms between corporate management and business unit management would therefore have to be structured and managed with due consideration of this implication.

Strategy as also presented by Mintzberg *et al.* (1998) *op. cit* thus becomes the "cognitive structure (story) to simplify and explain the world" and thereby to facilitate action even for diversified organizations. This is also appropriate to strategic ICT planning when considering the shared opinions of authors such as for instance Ward and Griffiths (1996) *op. cit.*

3.9.1.2 Issues for Strategic Management in Diversified Organizations

One of the most important aspects of strategic planning as a vehicle for organizational excellence is captured in the eight characteristics defined by Peters and Waterman (1982)[191]. These characteristics have as its essence the implication that people should perform work that can be performed within a clear set of objectives with appropriate freedom to allow for innovation, given their specific circumstances.

From a vast number of authors that include opinions as far back as those of Mary Parker Follet (1934)[192], to modern opinions on management, it becomes clear that one of the essential elements for management is the ability to coordinate. The institutionalisation of the ability to coordinate is also subject to continuous improvement as an evolutionary process. This opinion is confirmed by authors such as

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[190] Mintzberg, H., Ahlstrand, B. and Lampel, J. 1998. *Strategy Safari: A guided tour through the wilds of Strategic Management*. New York: The Free Press.
[191] Peters, T.J. & Waterman, R.H. 1982. *In Search of Excellence: Lessons from America's Best-Run Companies*. New York: Harper & Row.
[192] Follet, M.P. 1934. *Creative Experience*. London: Longmans and Green.

Kruger and Snyman (2006)[193] as influenced by Pearce and Robinson (2003)[194] on issues of general management and others such as Byrne (1996)[195], Pearce and Robinson (2000), Ward and Griffiths (1998) in describing strategic management as an evolutionary process. Taken from the requirement for collaboration as required for coordination, the ability to integrate the strategic ICT planning process into its environment becomes a fundamental issue.

According to Chaffey (1985)[196] there are a number of areas of agreement on strategy that can serve as confirmation of the inferences drawn from the work done by Mintzberg (1998) *op. cit*., Thompson and Strickland (2003:12)[197] as well as Introna (1998)[198]. From these authors and this research the specific focus of strategy requiring and providing a structured framework that can be applied to ensure the institutionalisation of an appropriate strategic ICT management process for the DOD as an example of a diversified or complex organization, is once again confirmed.

These interpretations provided by Chaffey (1985) indicate that strategy concerns both organization and environment and that an essential substance of strategy is complexity. Strategies in its very nature of effecting change affects the welfare of the organization and as such are influenced by it. With strategies involving issues of both context and process within the diversified organization and its structural relationships between corporate and business unit management as different levels of the enterprise all strategies cannot be seen as being purely deliberate, but involving various thought processes. This is cognisant of the diversified nature and its implication for corporate strategic ICT planning as relevant to the diversified organization.

In the process of comparing Chaffey's definition with the interpretation derived from Sun Zi *op. cit.* it becomes apparent that not only is there great confluence between the organization and strategic management and strategic ICT management, but there has

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[193] Kruger, C.J. & Snyman, M.M.M. 2002. The interdependability between Strategic Management, and the formulation of an Information and Communication Technology Strategy. *South African Journal of Information Management*, 2002, vol.4,2.
[194] Pearce, J.A. & Robinson, R.B. 2003. *Strategic Management: Formulation, Implementation and Control Sited*. New York: McGraw-Hill.
[195] Byrne, J A. 1996. Strategic planning. *Business Week*, 1996, Issue 3490, p.46-51.
[196] Chaffey, E.E. 1985. Three Models of Strategy. *Academy of Management Review*, 1985, vol.10(1), p.89-98.
[197] Thompson, A.A. Jr. & Strickland, A.J. III. 2003. *Strategic Management Concepts and Cases*. 13th Ed. New York: McGraw-Hill.
[198] Introna, L.D. 1997. *Management, Information and Power*. London: Macmillan Press Ltd.

also not been as much change in the basic understanding of the characteristics of strategy as some proponents might want to believe or advocate. To this end the issue can be considered to reside in the application of basic or fundamental characteristics being dependant upon the structural arrangements that are in turn influenced by the nature and focus of the organization. It merely requires confirmation of definition and interpretation within context as confirmed by authors such as those interpreted and contextualised by Kruger and Snyman (2006) *op. cit*, (2001)[199] and even Ruddin (2006)[200].

When considering the process of strategic ICT planning in diversified organizations, it can therefore be considered necessary to provide a clear definition and understanding of the context within which such a process will be defined and utilised. This conforms to the "research principle" of the hermeneutic circle as defined by Klein and Meyers (1999)[201]. In the endeavour to understand the context of the DOD as a diversified organization, a comparison can be drawn to the conceptual implications for the configuration school for strategic management, as presented by Mintzberg, *et al.* (1998)[202]. From this perspective strategy formation is considered to be a process of transformation that provides insight into the considerations and issues that will either directly or indirectly influence strategic planning in diversified organizations.

The configuration school has two specific contextual sides according to Mintzberg, *et al.* (1998) *op. cit.*, being one side that describes the 'states' of the organization and its surrounding context as configurations, and the other side that describes the strategy making process as a process of transformation. The relevance of this resides in the fact that there is a causal relationship between the nature of the organization as structure and the strategy of such an organization according to Chandler (1962)[203]. Therefore both structure and business strategy will have an influence on and be influenced by the ICT strategy of the organization.

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[199] Flyvbjerg, B. 2001. *Making social science matter: Why social enquiry fails and how it can succeed again.* Translated by S. Sampson. Cambridge, UK: Cambridge University Press.
[200] Ruddin, L.P. 2006. You Can Generalise Stupid! Social Scientists, Bent Flyvbjerg, and Case Study Methodology. *Quality Inquiry*, August 2006, vol.12, no.4, p.797-812.
[201] Klein, H.K, & Myers, M.D. 1999. A set of principles for conducting and evaluating interpretive field studies in information systems. *MIS Quarterly*, 1999, vol.23, no.1, p.67-94.
[202] Mintzberg, H., Ahlstrand, B. and Lampel, J. 1998. *Strategy Safari: A guided tour through the wilds of Strategic Management.* New York: The Free Press.
[203] Chandler, A.D., Jr. 1962 *Strategy and Structure: Chapters in the History of Industrial Enterprise.* Cambridge, Massachusetts: MIT Press.

For purposes of this research an understanding of the nature and complexity of the diversified organization and its respective semi-autonomous business units becomes necessary as it will have a strong bearing on the ability interact with the corporate strategic ICT planning process due to potentially differing levels of maturity within the enterprise. Collaboration should take place with the appropriate consideration of such issues that will either have a direct or indirect impact on the organization as a whole as opposed to only being focused on the interests of the respective semi-autonomous business units, given its ability to function as a learning organization. The concept of '*double-loop learning*' as described by Argyris and Schon (1978)[204] becomes important to not only understand the planning process, but also the way in which the organization as a whole interacts and learns.

From a practical perspective the inability to understand the issues that will effect the institutionalisation of an appropriate strategic ICT planning process should therefore be cognisant of the specific issues forthcoming from functional diversity throughout the enterprise. If this collaborative state of functioning can be realised whilst the organization can maintain its focus given its diversity, the ability to not only create strategic competitive advantage, but to continuously improve such an organization as a whole, can be realised.

3.9.2 Relevance Of Strategic Management Framework To Strategic ICT Planning In Diversified Organizations

According to Mintzberg, *et al.* (1998:305) *op. cit.* the Configuration School actually encompasses the premises of the other approaches to strategic management, but each in a well-defined context with due consideration of the nature of the organizations.

With the intention of ICT strategy in the DOD being to ensure that the potential utility of ICT can be realised towards the diversified organization as an enterprise, the requirement for alignment of the strategic ICT plan with the business strategy becomes imperative. As such the causal relationship that exists as being mutually influencing between the organization and its diversity of functions and corresponding enabling ICT systems, should not be ignored. This causal relationship should,

[204] Argyris, C., & Schön, D.A. 1978. *Organizational Learning: A Theory of Action Perspective*. Reading, Massachusetts: Addison-Wesley.

however, not be such that the ICT starts to determine the nature and functioning of the organization itself.

The above-mentioned argument is in line with the opinion held by Kruger and Snyman (2002)[205] in considering the work done by Applegate, McFarlen and McKenny (1999:85)[206]. As such they can be quoted as indicating that "to make full use of the opportunities that IT presents, technical specialists must work in close partnership with managers. It is therefore confirmed as appropriate to and confirmed by this research that business drives the requirements and that ICT provides some of the solutions in response to business requirements. ICT should, however, be allowed to influence the way in which the organization might operate.

Given the above-mentioned argument the relationship between the organization, its strategic intention and the way in which it functions will always have a major causal relationship with the approach towards strategic ICT management and the provision of ICT solutions in any organization. The experiences and timeline of the actual research undertaken in the DOD the initial point of departure was the theory provided by Ward and Griffiths (1996) [207]. As such the next aspect to be discussed would focus on strategic ICT management.

3.10 RELATIONSHIP BETWEEN THE STRATEGIC ICT PLANNING PROCESS AND THE NATURE OF THE DIVERSIFIED ORGANIZATION

With the intention of performing a critical interpretive study of the actual strategic ICT planning process as implemented in the DOD requires that it should be soundly based on theory. To this effect the first chapter provided the introduction and was subsequently followed by an elucidation of the environment (context) of the SA DOD. Following the contextual understanding of the diversified environment within which the research took place an overview of the relevant theory was presented. From this the ability to apply this theory to the research undertaken as presented in this thesis, is

[205] Kruger, C.J. & Snyman, M.M.M. 2002. The interdependability between Strategic Management, and the formulation of an Information and Communication Technology Strategy. *South African Journal of Information Management,* 2002, vol.4,2.
[206] Applegate, L.M., McFarlen, W.F. & and McKenny, J.L. 1999. *Corporate information system management: text and cases*. Boston: Irwin/McGraw-Hill.
[207] Ward, J. & Griffiths, P. 1996. *Strategic Planning for Information Systems*. New York: John Wiley and Sons.

heavily dependant upon the ability to align theory and practice in its application according to authors such as Klein and Myers (1999)[208], Behr (1983)[209], Baskerville and Wood-Harper (1998)[210], and Mårtensson and Lee (2004)[211] amongst others. This will be further expanded upon in this session.

3.10.1 Context for the Relationship between the Nature of the Diversified Organization and its Strategic ICT Planning Process

The theory discussed was duly considered before the following context for its application could be presented. With reference to Lederer and Sethi (1988)[212] as quoted by Ward and Griffiths (1996:96)[213] strategic ICT planning is defined as follows:

> *"…the process of deciding the objectives for organisational computing and identifying computer applications which the organisation should implement."*

This definition is further enhanced by Wilson (1989)[214] as quoted by Ward and Griffiths (1996:96) *op. cit.* when strategic ICT planning is described as follows:

> *"An IS strategy brings together the business aims of the company, an understanding of the information needed to support those aims, and the implementation of computer systems to provide that information. It is a plan for the development of systems towards some future vision of the role of IS in the organisation."*

This focus of this research was therefore to ensure that a process of strategic ICT planning can be institutionalised in the DOD that can also ensure alignment of the direct relationship between the business and the information systems that support it.

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[208] Klein, H.K, & Myers, M.D. 1999. A set of principles for conducting and evaluating interpretive field studies in information systems. *MIS Quarterly*, 1999, vol.23, no.1, p.67-94.
[209] Behr, A.L. 1983. *Empirical research methods for human sciences: An introductory text for students of education, psychology and the social sciences*. Pretoria: Butterworths.
[210] Baskerville, R & Wood-Harper, A.T 1998. Diversity ion information systems action research methods. *European Journal of Information Systems*, 1998, vol.7, p.90-107.
[211] Mårtensson, P. & Lee, A.S. 2004. Dialogical Research at Omega Corporation. *MIS Quarterly (Special Edition)*, September 2004, vol.28, no.3, p.507-536.
[212] Lederer, A.L. & Sethi, V. 1988. The implementation of strategic information systems planning methodologies, *MIS Quarterly*, September 1988.
[213] Ward, J. & Griffiths, P. 1996. *Strategic Planning for Information Systems*. New York: John Wiley and Sons.
[214] Wilson, T.D. 1989. The implementation of information system strategies in UK companies: aims and barriers to success. *International Journal of Information Management (9)*. 1989.

As such it has the added implication that the business environment will influence the process with the process also accommodating the nature of the organisation. It is also considered imperative to support the strategic business intention and strategy with appropriate ICT solutions. The ability to align the information, information systems and ICT utilised to enable information management is of utmost importance to ensure performance and compliance. The benefits of this research became two-fold by firstly benefiting the organization in its requirement to institutionalise and appropriate strategic ICT planning process and secondly benefiting the research/learning dimension as it also entrenches this dimension and therefore encapsulates the action/reflection framework necessary for this research dimension.

From the above it was and still can be considered necessary to retain focus on the ability to manage the information that the organization requires, as well as the enabling information system. This requires not only the ability to manage it, but specifically the institutionalisation of management arrangements and mechanisms in the organization. With the objective of sustaining these characteristics and ensuring a strategic perspective towards strategic ICT planning, continuous improvement becomes a strong driver.

One of the underlying issues is therefore that the process must ensure that the allocation of scarce resources within the organization is coherent and balanced to achieve maximum effect through synergies within the organization as a whole. This has the implication of a holistic and systemic approach towards ICT management in the organization.

3.10.2 Conceptual Relationship between the Strategic ICT Planning Process and the Strategic Management Process of a Diversified Organization

As information is considered a strategic resource for an organization it should be managed as such and exerts an influence on the whole organization in its diversity. The fact that ICT enables the corporate information system that in turn supports the business of the enterprise necessitates continuous alignment as presented by authors such as Luftman (1996)[215]. The ability to align ICT solutions with business requirements as a function of strategic planning requires collaboration between the

[215] Luftman, J.N. 1996. *Competing in the Information Age: Strategic Alignment in Practice*. New York: Oxford University Press.

executors of the respective processes – the planners. As such it is a function of strategic direction, policy and control as appropriate to any other resource that is being utilised in the organization. Given that the ICT system has to be managed with due consideration of its life cycle and the ability of the organization to use it appropriately, such collateral systemic aspects have to be addressed to ensure successful life cycle management and utilisation. All these critical functions have to be managed within their multilateral relationships and influences. The combination of information and system within the context of organization therefore implies not only a systems approach towards information management, but also a systemic perspective towards information management and utilisation.

Given the relationship between the strategic planning function and the strategic ICT planning function any framework should be cognisant of the overall business performance and the strategic management function. It therefore follows that the issues that influence the organization will also influence the strategic planning process. The effectiveness of the ability to execute and align the strategic ICT planning process depends upon the level of maturity of the organization in its ability to execute and align the strategic ICT planning process with the strategic business planning process. The maturity of managing the ICT function is presented on a sliding scale by Marchand and Horton (1986)[216]. Given the potential diversity of ICT solutions and the potential varying levels of maturity of the respective semi-autonomous business units of the DOD, institutionalisation of a corporate strategic ICT planning process should be managed within this context. To this end the respective semi-autonomous business units could be functioning in different modes when considering the three eras[217] of ICT utilisation being focused on mechanisation, automation or competitive advantage.

The intention of strategic ICT planning is therefore focused on ensuring that the maturity of the organization in its ability to manage its information can be improved in a manner that is aligned with the continuous improvements and change of the

[216] Marchand, D.A, & Horton, F.W. Jr. 1986. *Profiting from Your Information Resources.* New York: John Wiley & Sons.
[217] Ward, J. & Griffiths, P. 1996. *Strategic Planning for Information Systems*. New York: John Wiley and Sons.

organization from a holistic and systemic perspective as aligned with the strategic context presented by Marchand and Horton (1986)[218].

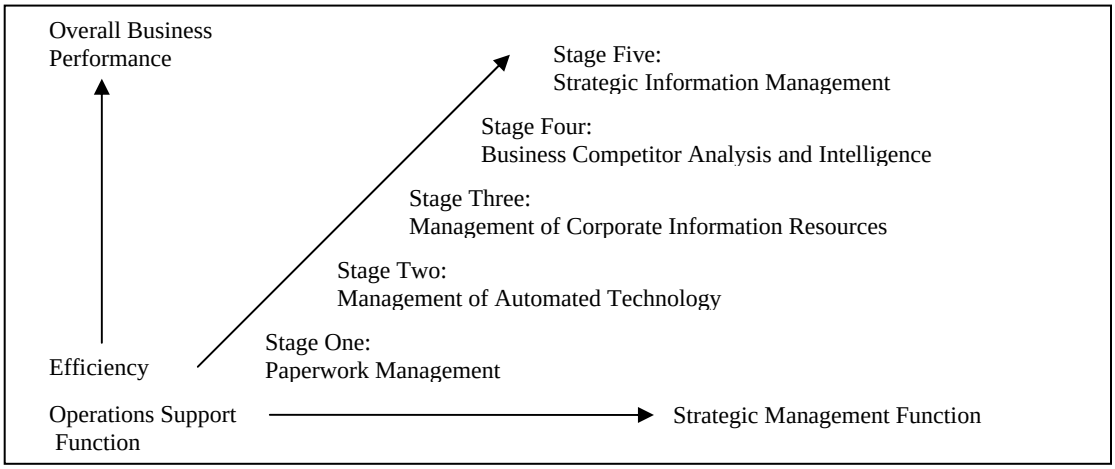

Figure 3.17: Strategic Context of Information as from Marchand, D. A and Horton F. W. Jr. (1986)

Given the context as indicated above Pearce and Robinson (2003)[219] indicate that there are a number of issues that need to be considered during the process of strategising. These revolve around the aspects of managing the environment within which the process of strategising is going to be performed, deciding on the construct and structural arrangements to be utilised during the strategy formulation process.

Given the nature and implications of context as presented by the principle of the hermeneutic circle as described by Klein and Meyers (1999)[220], context becomes more relevant when considering the implication of the requirement for alignment in the diversified organization, given the positions presented by Luftman (1996)[221] and others. According to the position of Luftman it is necessary to establish a stable business strategy for the enterprise which can service as the basis or 'anchor' for all other strategies within an organization. The implication is that it is essential to have an acceptable degree of maturity for at least one of either the business or the ICT strategies within the diversified enterprise.

[218] Marchand, D.A, & Horton, F.W. Jr. 1986. *Profiting from Your Information Resources.* New York: John Wiley & Sons.
[219] Pearce, J.A. & Robinson, R.B. 2003. *Strategic Management: Formulation, Implementation and Control Sited*. New York: McGraw-Hill.
[220] Klein, H.K, & Myers, M.D. 1999. A set of principles for conducting and evaluating interpretive field studies in information systems. *MIS Quarterly*, 1999, vol.23, no.1, p.67-94.
[221] Luftman, J.N. 1996. *Competing in the Information Age: Strategic Alignment in Practice*. New York: Oxford University Press.

A further implication as taken from Luftman (1996) *op. cit.* is that there should be some kind of "method" to ensure that the respective business and ICT strategies can be compared and aligned. Alignment of the two strategies requires collaboration between the two processes to ensure that their resultant strategies are aligned as continuous activity. It is furthermore implied that there should be collaboration between the determination of the strategic ICT planning process and the strategy formulation process by the respective role players to ensure that the ability to align is an integral part of both the strategic business and ICT planning processes. At the very least it implies that the respective strategies cannot be formulated in isolation form each other. This requirement for collaboration and alignment between business and ICT becomes more important when considering the systemic implication of the diversified organization. This should, however, not be done by negating the separation of the responsibilities for strategic management as opposed to functional execution in accordance with the policy and strategic direction. This refers to the separation of duties as relevant to the idea of being 'referee or player' as opposed to being both 'referee and player' within a system of checks and balances.

The focus should be on the realisation of congruency and synergy around the strategic focus of the organization or enterprise. When considering the strategic management process as presented by Pearce and Robinson *op. cit.* as well as Thompson and Strickland (2003)[222] it is clear that there is a high degree of correlation between the basic process as described by both these perspectives. By implication, should one consider other strategic management models, it is clear that there is a large degree of commonality within all the models. The common issues are focused around aspects of strategic intention and ownership that will elicit analysis to provide focus for alignment and action.

With due consideration of the internal and external influences that will impact on or enable the organization to move towards the envisioned state, it should be understood that the more complex an organization, the more complex the environment that requires analysis to ensure that all possible aspects can be appreciated.

[222] Thompson, A.A. Jr. & Strickland, A.J. III. 2003. *Strategic Management Concepts and Cases*. 13th Ed. New York: McGraw-Hill.

From the requirements of the research approach, methodology and expected results it can be considered necessary to ensure sufficient understanding of the nature of the environment that was addressed during this research. The specific environment is in fact considered to have a significant influence on the ability to define and execute the strategic ICT process itself within the diversified organization. To this end the existing literature as relating to the nature of the diversified organization will also be investigated.

As indicated by Ward and Griffiths (1996:120-121)[223] the attempts to develop corporate IS/IT strategies as opposed to strategic business unit IS/IT strategies are not always successful. From this research the problem is further enhanced as follows:

"*The general approaches to strategic information systems and ICT planning, as they are currently formulated by the various models, are based on the premise that the organisation has a single or simple line (or lines) of business. These approaches do not sufficiently address the implications and complications of the strategic information systems planning function in functionally and / or geographically diversified organisations. Such organisations typically have several lines of business, each of which have their own respective issues and drivers that will influence their ICT solutions due to their peculiar set of circumstances. Thus a more comprehensive strategic ICT planning process seems to be required for diversified organisations that has the ability approach the process from a systemic perspective and therefore takes cognisance of the multitude of influences that will effect the execution of the strategic ICT planning process in diversified organisations. This process must not only address these specific criteria, but must also incorporate a number of disciplines related to strategic ICT planning into a single congruent process appropriate to the context within which it is to be utilised*".

3.10.3 The Problematic Nature of the Simple Approaches to Strategic ICT Planning

Currently with the drive to map ICT solution to business requirements there is a strong movement towards Enterprise Architectures, Enterprise Planning and Enterprise Management Systems. These imply that greater integration of systems and processes are being sought. Solutions must therefore span organizational boundaries

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

in multi-company enterprises. Multi-"company" enterprises are made up of semi-autonomous business units, often in diverse industries, geographic regions and countries. Currently the predominant approach to business management is that of empowerment: i.e. local management teams are encouraged and empowered to act according to local circumstances, priorities and opportunities. This necessitates some level of autonomy.

The available IS and ICT strategic models assume that enterprises are hierarchical with central management (i.e. planning, organizing, leadership and control) and that the process comprises of linear top-down direction, and bottom-up response. This approach is clearly in contrast with the reality in the multi-company or diversified enterprise where there is a definite corporate responsibility in addition to managing the business units at strategic level. It is thus confirmed that the diversified organization in fact requires two levels of strategic management, as opposed to one for monolithic organizations, these being a corporate level and a business unit level.

From the discussion regarding process and its implications some inferences can be drawn as specifically relating to the strategic ICT planning process for diversified organizations.

- There should be clear and distinct management structures to support, manage, integrate and align the strategic ICT planning process with due consideration of corporate and SBU strategic ICT planning imperatives.

- There should be a clear and distinct separation between strategists and executors without negating the effect of reality on the strategic ICT planning process and plan.

- The strategic ICT planning process should be managed as such that continuous improvement can be realised regarding the ICT planning process and the strategic ICT plan.

- Specific findings should be made on the management of varying levels of organizational and process maturity to accommodate change related to the respective business requirements for ICT solutions.

- It is necessary to ensure that organizational improvement can be managed congruent with ICT system improvement to prevent dysfunction between the organization and its ICT solutions.

- Strategic ICT planning should be performed in the organization with due consideration of the current implemented ICT baseline.

- Management arrangements should be established that will ensure appropriate representation to realise enterprise related synergy through participation and collaboration.

- It is necessary to ensure that the strategic ICT planning process is institutionalised not only as practice, but as part of the corporate policy framework subject to continuous improvement.

- It is necessary to ensure that the ICT management strategy, the business IS strategies and the IT strategy are appropriately managed at corporate and SBU level.

- Strategic ICT plans must be clear and unambiguous in their intent and direction with an indication of data, application and information infrastructure.

- The principles of change management should be adopted to be adhered to in an effort to realise not only successful planning, but also implementation and improvement.

3.11 THE DISCONNECTION BETWEEN STRATEGIC ICT PLANNING PROCESS AND THE DIVERSIFIED ORGANIZATION

Given the relationship between strategic management and strategic ICT management it is considered appropriate for this research in the opinion of authors on strategic management and strategic ICT management, as well as on research methodology that an appropriate understanding of the nature of the organization within which the function will be performed be provided. It is further accepted that the more complex the organization, the greater the complexity of the planning process. This does not necessarily imply that the actual process would be more complex in its primary actions, but rather that the characteristics of the process would be commensurate with

the complexity and diversified nature of the organization. The complexity is therefore derived from the organization and its structural arrangements and not from the process. The strategic ICT planning process in its application should be cognisant of the complexity of the organization.

The description of a diversified organization provided by Thompson and Strickland (2003:291)[224] infers that there is a specific responsibility towards corporate management that should be performed in relation to the strategic management of the respective strategic and/or semi-autonomous business units. With due consideration of the fact that the best ICT solutions should be provided to the enterprise given the potentially diverse requirements of such organization, the collaboration required for managing such diverse requirements and issues, should be such that synergy can be realised to effect efficiencies and effectiveness. Some assumptions are required to support this synergistic expectation to strategic ICT planning in diversified organizations.

In the first place it is assumed that there is some kind of expectation that corporate strategic intention guides the organization as a whole and this assumption can be expanded upon when concluding that there is a prerequisite participation in the enterprise strategic ICT planning process by all role players and stakeholders within the diversified organization. The third assumption is focused on the issue that there will be appropriate governance to ensure that effective processes can be executed with an acceptable degree of repeatability. Such repeatability is expected to improve the credibility through continuity of the results, especially if there is consistency in the results. The fourth and final assumption is that there will be appropriate management arrangements and mechanisms to ensure that the total systemic implication of strategic ICT planning within the diversified organization can be appropriately addressed.

The avoidance of a corporately orchestrated approach towards ICT management as implicitly required from a holistic systems thinking perspective, can lead to solution differentiation and duplication of effort and solutions. Furthermore it can also be costly and not necessarily focus on nor aligned with or coordinated sufficiently to

[224] Thompson, A.A. Jr. & Strickland, A.J. III. 2003. *Strategic Management Concepts and Cases*. 13th Ed. New York: McGraw-Hill.

deliver appropriate solutions. This risk becomes especially relevant when considering the requirements to realise synergy where the whole diversified organization or enterprise is focused on centrally managed objectives related to the utilisation of ICT to enhance business objectives and imperatives. This is not necessarily always the case for diversified organizations as opposed to single-line-of-business (monolithic) organizations. The inherent risks involved with this approach can be severely exacerbated when longer time frames are planned for as it could result in a continuation of potentially divergent direction for the business units as opposed to a single inclusive corporate direction.

In the opinion of the researcher the problem resides in the fact that general approaches to strategic information systems planning and ICT planning, as currently presented by various models, are based on the premise that the organization has a single or simple line of business. The problem does not necessarily reside in "what" should be done but rather in "how" it should be done.

In the modern era there are strong movements towards Enterprise Architectures, Enterprise Planning and Enterprise Management Systems. These imply that greater integration of systems and processes are being sought. In the past the predominant approach to ICT management in the DOD is that of business-unit level empowerment: i.e. local management teams are encouraged and empowered to act according to local circumstances, priorities and opportunities.

In general the available IS and ICT Strategic models assume that enterprises are hierarchical with central management (i.e. planning, organizing, leadership and control) and that the process is linear top-down direction, bottom-up response. This approach is clearly in contrast with the reality in the multi-company enterprise.

To this end the function of strategic ICT management in the opinion of the researcher requires a firm understanding of the nature and environment of strategic management in diversified organizations in general. This stems directly from the fact that the strategic ICT plan should support, enable and enhance the strategic business plan.

3.11.1 Nature of Strategic Management within Diversified Organizations

There are a number of different approaches towards strategic management as clearly indicated by Mintzberg, *et al.* (1998)[225] and his reference to the respective strategy schools, e.g. the Design School, the Planning School and the Power School. Research in this environment was also done by Martinet (1996)[226], who added by mapping the field into teleologic, sociologic, ideologic and ecologic groups. The correlation between these two schools of thought was identified when Lauriol (1996)[227] mapped the ten schools of Mintzberg into the four divisions of Martinet. These "groupings" may be utilised either as stand alone approaches, or as a combination of approaches. The specific approach or combination of approaches, as selected, is considered to be influenced by the nature of the organization and its environment. One of the primary mechanisms that are constantly being touted as essential to ensure transformation and alignment of any organization and ensure strategic advantage is the utilisation of ICT. The research and results include process transformation as presented by Carr and Johansson (1995)[228], Coombs and Hull (1995)[229], and indicate that the objectives pertaining to re-engineering relate to the ability to support the value creation process of the organization as is the concept behind Porter's (1985)[230] value chain model.

In the opinion of the researcher it is necessary to analyse the processes related to the function which is being transformed to be able to identify the core processes and the supporting processes and therefore the value chain of the enterprise as a whole. This will not only ensure that responsibilities can be clearly identified, but also that the functional relationships with other functions, role players and stakeholders can be identified, taken into consideration and reflected in the transformed organization. The approach to be taken should take cognisance of the context within which the enterprise functions. Coombs and Hull (1995) *op. cit.* present research on issues regarding problems with technology, value adding potential and relationships of

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[225] Mintzberg, H., Ahlstrand, B. and Lampel, J. 1998. *Strategy Safari: A guided tour through the wilds of Strategic Management*. New York: The Free Press.
[226] Martinet, A.C. 1996. Pensée stratégique et rationalités: Un examen épistémologique. *Papier de la récherche, numéro 23.* Lyon, France: Institut d'Administration des Enterprises.
[227] Lauriol, J. 1996. Une analyse des répresentations de la stratégie et de son management dans la production d'ouvrèges de la langue française. Prepared for *La Journée Récherche of AIMS*, for FNEGE, 11 October 1996, France.
[228] Carr, D.K. & Johansson, H.J. 1995. *Best Practices in Reengineering: what works and what doesn't in the reengineering process.* New York: McGraw-Hill.
[229] Coombs, R. & Hull, R. 1995. *The Wider Research Context of Business Process Analysis*. Cromtec: Manchester School of Management.
[230] Porter, M.E. 1985. *Competitive Advantage: Creating and Sustaining Superior Performance*. New York: Free Press.

processes that can be misconstrued as relating to boundary management issues and therefore formal versus informal management processes.

From the afore-mentioned it is clear that the result of changing the working relationships within the transformed organization should also be reflected in the processes and management arrangements and mechanisms. This becomes especially relevant when considering the systemic implications if new ICT solutions support the transformed organization.

The fact that the transformed organization might also change its business focus necessitates a complete revisiting of all strategies. This should manifest as a dynamic iterative process of strategic management that includes strategic ICT planning by the organization. This becomes a serious consideration when considering the opinion of Snyman and Kruger (2004)[231] contending that "*Strategy formulation became an ongoing process, a process of reinventing the organization in order to create the future*" in interpreting the work of Rajogapalan and Spreitzer (1996)[232]. In the diversified organization this in turn necessitates a dynamic re-alignment of the respective strategies which will support the enterprise strategy. It might also necessitate the review of the strategic ICT planning process in diversified organization that forms the basis of this research.

There is usually a correlation between the respective phases of the ICT life cycle management and the allocation of responsibilities to manage the ICT system life cycle. This is manifested in the phenomenon that the ICT system requirements planning (strategy and business plan) is usually separated from the acquisition or the development and procurement responsibility when considering requirements management as opposed to the process of acquisition when considering governance such as the Public Finance Management Act[233] of the RSA and the implications of the RSA Public Service Regulations[234].

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[231] Snyman, M.M.M. & Kruger, C.J. 2004. The interdependency between strategic management and strategic knowledge management. *Journal of Knowledge Management*, 2004, vol.8(1), p.5-9.
[232] Rajopalan, N. & Spreitzer, G. M. 1996. Towards a theory of strategic change: a multi-lens perspective and integrative framework. *Academy of Management Review*, 1996, vol.22(1), p.48-80.
[233] South Africa. Parliament. 1999. *Public Finance Management Act (Act No. 1 of 1999 - as amended).* Pretoria: Government Printers.
[234] South Africa. Department of Public Service and Administration. 2001. *The Public Service Regulations, 2001 (Chapter 1, Part 111 E).* Pretoria: Government Printers.

The responsibility for managing ICT is usually subjected to the same changes as those that influence the organization as a whole. The maturity of an organization, and especially within complex organizations, plays a major role in the manner in which the utilisation of ICT is managed and the corresponding objectives. There could be different levels of maturity for the different business units of the diversified organization as presented by Ward and Griffiths (1996) [235] and these are discussed earlier in this paper.

From a business management perspective as indicated before, the general focus of effort is placed on the primary objective of the respective organizations and their positioning within the market and industry. In terms of managing ICT solutions this has the implication that depending on the approach of the organization the planning could change from simply procuring, towards ICT planning, and finally strategising, aligned with the enterprise strategy. This is in line with the opinion of authors such as Luftman (1996)[236] when discussing ICT and business alignment. This effort should be focused on the attainment and the sustainment of competitive advantage.

Given the scarcity of resources it follows that the right mix of resource allocation across the enterprise should be based on leveraging the optimum potential utility towards realising such competitive advantage. This is applicable to all functions and structures of an organization. The researcher considered this as being especially applicable to the environment of information and information management due to the previously decentralised nature of the function and the resultant disparate ICT solutions. Due to the fact that information permeates throughout the organization, an integrated or at least a coordinated enterprise ICT system is of utmost importance as confirmed by authors such as Ward and Griffiths (1996) *op. cit*.

Forthcoming from the requirement for strategic planning for the enterprise and of information, and the supporting or enabling information system, the problem can be further elucidated.

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[235] Ward, J. & Griffiths, P. 1996. *Strategic Planning for Information Systems*. New York: John Wiley and Sons.
[236] Luftman, J.N. 1996. *Competing in the Information Age: Strategic Alignment in Practice*. New York: Oxford University Press.

In the consideration of the researcher the essential issues revolved around the aspects pertaining to the strategic ICT management environment and the strategic ICT planning process, including alignment of the ICT strategy across business units and with corporate strategy. The requirement for congruency and establishing synergism as a continuous process, is also considered as essential, and thus forms the focus of this research.

The process of management is generally described by authors such Thompson and Strickland (2003)[237] and many others as being centred on the activities of planning, organizing, leading and controlling. These activities relate to management in general and can also be applied to the process of strategic ICT management as confirmed by Ward and Griffiths (1996) *op. cit.* A strong correlation therefore exists between the process of general management and the process of strategic ICT management, even though the focus is different. The relationship becomes even stronger when considering that ICT enables business as the potential utility of ICT is unlocked.

When considering Enterprise Architecture Planning as a methodology as presented by authors such as Spewak and Hill (1992)[238] its appropriateness for both strategic business and strategic ICT management becomes apparent. This is due the fact that it creates architectural baselines at strategic level, at business level and for the ICT solutions that can be utilised as corporate planning baselines. The ability to define functional processes in accordance with the corporate value chain as presented by Porter (1985)[239] brings the organization into context as a system of systems with its different processes and its implication for ICT solutions. This perspective allows for ICT system optimisation given the requirement for corporate solutions and unique ICT requirements as relevant to the respective business units.

The fact that there are different processes and influences that interact within the organization necessitates a systemic approach towards strategic ICT planning in diversified organizations. These influences become all the more prominent in a diversified organization and have an even greater potential business and technological

[237] Thompson, A.A. Jr. & Strickland, A.J. III. 2003. *Strategic Management Concepts and Cases*. 13th Ed. New York: McGraw-Hill.
[238] Spewak, S.H. & Hill, S.C. 1992. *Developing a Blueprint for Data, Applications, and Technology: Enterprise Architecture Planning*. New York: John Wiley & Son.
[239] Porter, M.E. 1985. *Competitive Advantage: Creating and Sustaining Superior Performance*. New York: Free Press.

risk for optimisation due to the increased complexity of the diversified organization and its propensity for duplication and differentiation of ICT solutions.

Given the demand of the whole organization on potentially scarce resources and the ability to corporately coordinate ICT management with corporate management within the construct of the corporate value chain, the objectives should reflect both corporate and business unit objectives. This is in line with the requirement for collaboration and participation between respective functions within the diversified organization as presented by authors such as Thompson and Strickland (2003)[240] and Pearce and Robinson (2003)[241].

When considering the nature of organizations as presented by Mintzberg *et al.* (1998)[242] and the potential for different management paradigms, the approach for strategic business management at corporate and business unit level can be carried through to the strategic management of ICT. From a corporate perspective such issues might be uniquely or transversely related to the diversified nature of the business. This further enhances the requirement for alignment as presented by for instance Luftman (1996)[243].

The nature of performance and compliance for ICT solutions from a corporate perspective, have the added implication that issues such as economies of scale and return on investment become increasingly serious. Centralisation and/or decentralisation should therefore be managed with due consideration of the fact that unique and corporate solutions might still be subjected to issues related to standardisation, interoperability and interconnectivity. From an effectiveness and efficiency perspective this still requires the elimination of duplicate ICT solutions, ICT systems management and ICT system utilisation within a diversified organization.

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[240] Thompson, A.A. Jr. & Strickland, A.J. III. 2003. *Strategic Management Concepts and Cases*. 13th Ed. New York: McGraw-Hill.
[241] Pearce, J.A. & Robinson, R.B. 2003. *Strategic Management: Formulation, Implementation and Control Sited*. New York: McGraw-Hill.
[242] Mintzberg, H., Ahlstrand, B. and Lampel, J. 1998. *Strategy Safari: A guided tour through the wilds of Strategic Management*. New York: The Free Press.
[243] Luftman, J.N. 1996. *Competing in the Information Age: Strategic Alignment in Practice*. New York: Oxford University Press.

The systemic approach in its holistic systems management implication cannot be divorced from the necessity to provide corporate strategic direction that can be further enhanced as appropriate to the respective business units and then executed as either a corporate function or a decentralised function. As such technology solutions cannot be addressed without cognisance of the social implication of the ICT solutions. Ignoring these social and systemic implications might result in conflict and dysfunctioning within the organization and the ICT function with due consideration of the organization as a social system as confirmed by Giddens (1984)[244] and authors such as Baskerville and Wood-Harper (1998)[245]. From this the inherent functioning of the enterprise and its parts as well as its interaction with society, makes the utilisation of a "natural science" approach for strategic ICT planning in diversified organizations inappropriate.

3.11.2 Leading Issues to Guide this Research as from the Nature of Complex Organizations

With due consideration of the research problem and the organizational complexity and imperatives of the DOD issues that relate to the establishment and institutionalisation of an appropriate strategic ICT planning process refer to the establishment of appropriate management structures and arrangements and the ability to ensure alignment throughout the enterprise with due consideration of uniqueness and corporate solutions.

3.11.3 Considerations Relevant to this Research

Given the perspective that strategic management in essence has the focus of change management and that this research relates to the establishment of an appropriate strategic ICT planning process for the DOD as a diversified organization, some very explicit considerations can be deduced from the information presented thus far.

As a basic point of departure it is concluded that the existing theory regarding strategic information management and strategic information systems management was generally insufficiently defined and utilised to guide the strategic management of

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[244] Giddens, A. 1984. *The Constitution of Society: Outline of the Theory of Structuration*, Cambridge, MA: Polity Press.
[245] Baskerville, R & Wood-Harper, A.T 1998. Diversity ion information systems action research methods. *European Journal of Information Systems*, 1998, vol.7, p.90-107.

information and information systems in a diversified organization. In general, as confirmed by Ward and Griffiths (1996), corporate institutionalisation or rather the lack thereof is usually due to a lack of understanding of the issues and influences involved. With the characteristic of institutionalising and appropriate strategic ICT planning process as part of strategic corporate management, the ability to institutionalise such a process as a change management imperative hinges strongly on the theory regarding change management, advocated by for instance, Lewin (1951)[246], Bjorkman (1989)[247], Pearce and Robinson (2003)[248], Lewis, Goodman and Fandt (1998)[249] and Kotter (1995)[250]. As such the institutionalisation of an appropriate strategic ICT planning process throughout the entire organization should be done with clear recognition of the requirements for managing change.

The theory regarding alignment as provided by Luftman (1996)[251] and Chorn (2004)[252] indicates that there should be alignment within business, between business and the ICT environment and within the ICT environment. This has the implication that cognisance be appropriately taken of unique issues peculiar to diversified organizations. From this the work done during the normal process of continuous improvement and alignment within the ever-changing environment can be based on theory as applicable to the ICT industry in general as potentially representative of the diversified organization.

From an interpretation of literature it should not simplistically be accepted that the realisation of improvement objectives being relevant to a true learning organization as discussed by Mintzberg *et al.* (1998)[253] in their definition of the "*learning school*", would be automatic. This is due to the potentially different maturity levels within the

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[246] Lewin, K. 1951. *Field Theory in Social Science*. New York: Harper & Row.
[247] Bjorkman, I. 1989. Factors Influencing Processes or Radical Change in Organisational Belief Systems. *Scandinavian Journal of Management*, 1989, vol.5,4, p.251-271.
[248] Pearce, J.A. & Robinson, R.B. 2003. *Strategic Management: Formulation, Implementation and Control Sited*. New York: McGraw-Hill.
[249] Lewis, P.S., Goodman, S.H. & Fandt, P.M. 1998. *Management: Challenges in the 21st Century, 2nd Edition*. Cincinnati, Ohio: South-Western College Publishing.
[250] Kotter, J.P. 1995. Leading Change: why transformation efforts fail, *Harvard Business Review*, March-April 1995, p.9-67.
[251] Luftman, J.N. 1996. *Competing in the Information Age: Strategic Alignment in Practice*. New York: Oxford University Press.
[252] Chorn, N. 2004. *Strategic Alignment: How to Manage Business Leadership, The commercial Environment and Organisational Culture for Strategic Success*. Maryborough, Vic: McPherson Printing Group.
[253] Mintzberg, H., Ahlstrand, B. and Lampel, J. 1998. *Strategy Safari: A guided tour through the wilds of Strategic Management*. New York: The Free Press.

organization and the fact that institutionalisation has to be done through the innovative utilisation of knowledge and experience when referring to the opinion of Weyrich (1998)[254]. As such there should be a deliberate process of managing the change in the organization to the point where knowledge can be shared with due consideration of the organizational context and structure/capacity. This further necessitates the imperative for structure and the ability to manage the function within the strategic intention of continuous improvement. External perceptions, expectations and influences, and not necessarily the expectations of the organization, are usually focused upon irrespective of the nature of the organization. This is a characteristic of either a mechanisation or automation approach as opposed to a competitive advantage approach for ICT management.

Addressing these issues of functional ICT knowledge sharing throughout the organization once again places great emphasis on the structural arrangements required to institutionalise the process that includes social acceptance (institutionalisation as part of organizational culture) in support of strategic objectives. This is particularly applicable to the information management responsibility and its participation at all levels of activity and responsibility in the organization. Non-participation could cause extensive problems that need to be resolved regarding services and information systems delivery and support. This is further exacerbated when considering the implications of the statement made by Galliers and Land (1987:901)[255] when they indicate that "*…methods must take account of the nature of the subject and the complexity of the real world*" as opposed to merely proceeding from existing perceptions and expectations.

The ability to get people to collaborate and share towards a common corporate objective as opposed to merely focusing on their own immediate business requirements becomes problematic when considering the findings of Checkland and Scholes (1990:18)[256] and their "Soft Systems Methodology" approach. The complexity of this issue and its related complexity related to structural requirements are equally appropriate to the institutionalisation of solutions towards information and

[254] Weyrich, C. 1998. The meaning of innovation. *Electronic News, 44 (2206)*, 1998. p.8-9.
[255] Galliers, R.D. & Land, F.F. 1987. Choosing appropriate information systems research methodologies. *Communications of ACM*, 1987, vol.30(11), p.900-902.
[256] Checkland, P.B. & Scholes, J. 1990. *Soft Systems Methodology in Action*. Chichester, England: John Wiley & Sons.

information systems management in an organization, and IT as an enabler. This should be viewed within the context that there is a distinct difference between data, information and knowledge and the management thereof as presented by, for example, Stair and Reynolds (1999)[257], Drucker (1989)[258] and other authors such as Orna (1998)[259] and Laudon and Laudon (2004)[260]. This primarily relates to people and the way in which they collaborate or can be made to collaborate towards common or corporate objectives.

To this day conflict is being experienced with the definition, acceptance and execution of the roles and responsibilities of the users and the solution providers for information and information systems in a diversified organization as indicated by Ward and Griffiths (1996)[261]. This in spite of the fact that the importance of information as a decision support "mechanism" was already clearly defined as far back as 1971 by Gorry and Scott-Morton (1971)[262] as appropriate to most organizations in its ability to support operational and tactical decisions.

3.11.4 Systemic Problems and Barriers in Information Systems Planning

According to Galliers, Merali and Spearing (1994)[263] from a survey that they conducted in 1992, one of the highest ranking issues for both IS and non-IS managers is "improving IS strategic planning". From this it can be concluded that there should be a formalised strategic ICT planning process that is subject to continuous improvement and appropriate to the whole diversified organization.

From a study performed by Lederer and Mendelow (1988)[264] and presented by Ward and Griffiths (1996:98) *op. cit.* it was found that one of the most important reasons for

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[257] Stair, R.M. & Reynolds, G.W. 1999. *Principles of Information Systems*. 4th Ed. Cambridge, MA: International Thompson Publishing.
[258] Drucker, P.F. 1989. *The New Realities*. New York: Harper and Row.
[259] Orna, E. 1998. *Practical Information Policies*. 2nd ed. Aldershot: Gower.
[260] Laudon, K.C. & Laudon, J.P. 2004. *Management Information Systems. (5th ed)*. New Jersey, Upper Saddle River: Pearson Education.
[261] Ward, J. & Griffiths, P. 1996. *Strategic Planning for Information Systems*. New York: John Wiley and Sons.
[262] Gorry, G.M. & Scott-Morton, M.S. 1971. A Framework for Management Information Systems. *Sloan Management Review*, Fall 1971.
[263] Galliers, R.D., Merali, Y. & Spearing, L. 1994. Coping with Information Technology? How British executives perceive the key information systems management issues in the mid 1990s, *Journal of Information Technology*, 1994, vol.9(3).
[264] Lederer, A.L. & Mendelow, A.L. 1988. Convincing top management of the strategic potential of information systems. *MIS Quarterly*, December 1988.

not developing effective strategic IS plans was an inability to obtain top management commitment. The reasons for not obtaining top management commitment were primarily ascribed to the following reasons concluded from their study.

- Top management lacked the awareness of the potential impact and strategic advantages of IS/IT.
- They perceived a credibility gap between the perception of the IT industry on the ease of delivering claimed benefits and the actual difficulty of delivery.
- Top management do not view information as a strategic resource until they are found without it.
- Despite the difficulty of expressing all the IS benefits in economic terms, top management insists on financial justification for their investment.
- Top management has become, especially during the 1990s, focused on short-term action that is not conducive to long-term strategic planning and the equally long lead time required to realise their benefits.

The above reasons once again serve to demonstrate the necessity of managing all the functional and structural implications of strategic ICT planning to ensure that the necessary strategic collaboration and alignment can be realised to sustain the strategic intent of the diversified organization.

From the study done by Wilson in 1989 *op. cit.* it was indicated that there were some additional reasons for not developing and implementing an effective strategic ICT plan that results in the ability to draw the conclusion that diversity should be managed with due consideration of the nature of the diversified organization and the ability to manage the enterprise in a well-coordinated and orchestrated manner.

From a survey conducted by the Kobler Unit in 1990[265] questions were raised regarding the ability to realise effectiveness and efficiency in ICT solutions and its management. This is primarily due to the potential scarcity of resources and the allocation to corporate requirements within the enterprise that will require corporate

[265] Kobler Unit. 1990. *Regaining Control of IT Investments – A handbook for Senior UK Management, Imperial College*, London.

direction and coordination without negating the uniqueness of the semi-autonomous business units to realise strategic objectives within appropriate rules of scale.

According to Lederer and Sethi (1989)[266] the problems that enhance a potential ability to institutionalise an appropriate strategic planning process in any organization has to do with an inability to involve top management to the point where the imperative for change and institutionalisation is driven from the top down and executed throughout the whole enterprise. This has the implication that there should be a clear and unambiguous plan and/or methodology to manage the strategic ICT planning process.

Earl (1993)[267] further contributed towards the list of problems encountered with the institutionalisation of strategic ICT planning when indicating the imperative for collaboration and participation of all role players and stakeholders with sufficient consensus and acceptance of the strategic ICT methodology and plan. All of these are related to a clear and distinct differentiation between the roles of the respective hierarchical levels of the enterprise – including the corporate and business unit level.

3.12 IMPLICATIONS OF LEADING ISSUES THAT GUIDED THIS RESEARCH

Given the requirement for contextual understanding of the characteristics of institutionalising a strategic ICT planning process in a diversified organization such as the DOD the researcher considered it necessary to summarise the interpretation of theory presented to this point. Given the complexity and therefore diversity of theory appropriate to this study the potential exists that it could become disjunctive and even disconnected. For effective institutionalisation the strategic management process should therefore be cognisant of the following:

- Strategic Management that involves the planning, directing, organizing and controlling of a company's strategy-related decisions and actions.
- Strategy that usually manifests as large-scale, future-orientated plans for interaction with the competitive environment to achieve company objectives – thus the game plan, providing a framework, not the detail.

[266] Lederer, A.L. & Sethi, V. 1989. Pitfalls in planning, *Datamation*, 1 June 1989.
[267] Earl, M.J. 1993. Approaches to strategic information system planning: experience in 21 UK Companies, *MIS Quarterly 17(1)*, 1993.

- A strategy thus provides/reflects a company's awareness of how, when, and where it should compete; against whom it should compete; and for what purpose it should compete.

When considering the fact that strategic management has the intention of improving the competitive advantage of an organization, and indeed producing a sustainable, competitive advantage, then Thompson and Strickland (2003:55)[268] indicate that there are three facets linked to crafting the strategy. These are:

- *Deciding what products/service attributes (lower cost and prices, a better product, a wider product line, superior customer service, emphasis on a particular market niche) offer the best chance to win a competitive edge.*

- *Developing expertise, resource strengths, and competitive capabilities that set the company apart from rivals.*

- *Trying to insulate the business as much as possible from the actions of rivals or threatening competitive developments.*

3.12.1 Dimensions of Strategic Decisions

With due recognition of the characteristics of strategy as an 'instrument' of managing change, Thompson and Strickland (2003) identified the following characteristics as being pertinent to strategic decisions. These are considered to be appropriate to this study by the researcher, due to its potential to contribute towards the necessity for management arrangements and mechanisms that can facilitate collaboration and participation as essential elements for the institutionalisation of a strategic ICT planning process.

- Strategic Issues require Top-Management Decisions. They have the broad top-level perspective and manage resource allocation.

- Strategic Issues require large amounts of the firm's resources. Typically resources are considered as being finance, material, HR and information. These are sourced from either visible resources or from resources based outside the

[268] Thompson, A.A. Jr. & Strickland, A.J. III. 2003. *Strategic Management Concepts and Cases*. 13th Ed. New York: McGraw-Hill.

organization and result in commitments, either internal (for using, and producing) or external (to redeem).

- Strategic Issues often affect the Firm's long-term Prosperity. Strategic decisions cover a period of five years or longer. Resources and the resourcing process are committed.

- Strategic Issues are often future orientated. Based on forecast and not empirical knowledge.

- Strategic Issues usually have Multi-functional or Multi-business Consequences. Decisions might involve a number of Strategic Business Units (SBUs), being sources of resources or customers and clients.

- Strategic Issues require considering the Firm's External Environment. All business forms exist in an open system, and are thus effected by or affect their environment. Some of these conditions might be beyond their control.

3.12.2 Levels of Strategy as Related to Capability

With due consideration of the interpretation presented to this point strategy management is not confined to specific organizational levels or functions within the organization. From a diversified organization perspective cognisance should be taken of the corporate or strategy level that has a strong focus on the long-term direction of the company, whereas the business strategy level has a strong focus on the strategic business units. At functional strategy level the focus is placed on annual objectives with short-term strategies focused on implementing the business strategies in support of the corporate strategies.

The strategies that direct an organization can be considered within a context which indicates the relationship between the resource management system, the support capability within an organization and the primary capability of the organization in support of the strategic objectives of the organization. Cognisance should also be taken of the hierarchical levels which are relevant to the management of the resource management systems. To this end the following presentation can be made as appropriate to a diversified organization.

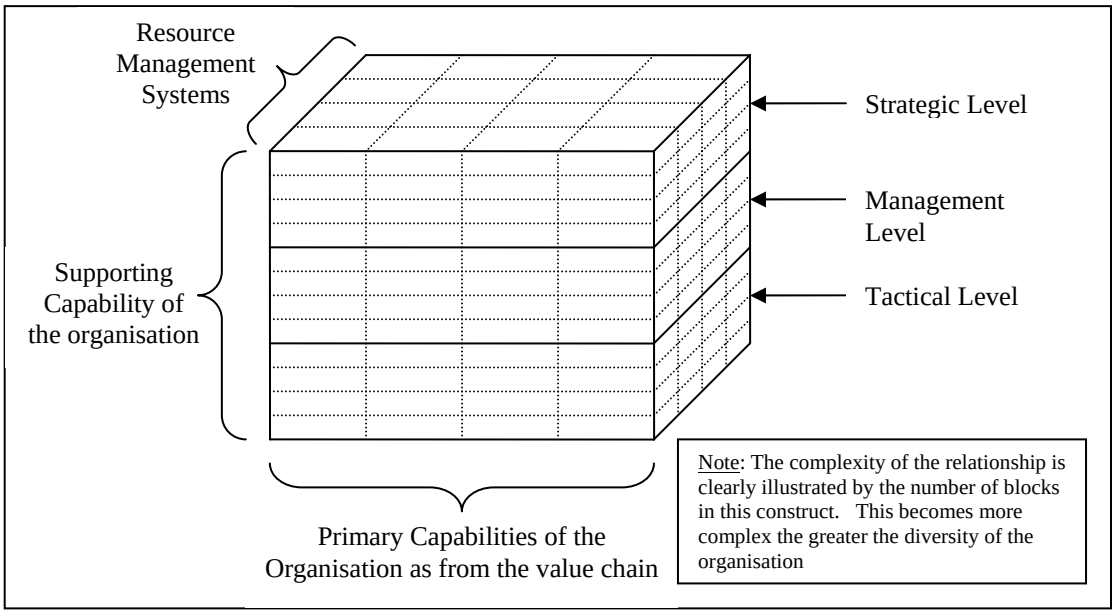

Figure 3.18: Relationship between Organizational Capabilities, Resource Management Systems and Management Levels in Organizations as considered appropriate to this research by the researcher

The above-mentioned relationship manifests itself in an orientation towards strategic management as a process which has the intention of addressing all the relevant issues which will impact on the creation of balance within resource allocation, planning and utilisation. It is, however, imperative that these relationships within the organization, including the responsibility of the executive for strategic management include all components of such an organization. This becomes all the more relevant when considering the intricacies of diversified organizations. The fact of the matter is that there are so many more variables that require consideration during the process of strategy formation, formulation and alignment.

The above implication from a business perspective is also applicable to strategic ICT planning. The focus on resource systems and the process of strategy formation, formulation and alignment is necessary to be performed within a contextual definition of function to ensure understanding of that function. This relationship as contextually appropriate to corporate strategic ICT management can be presented as follows:

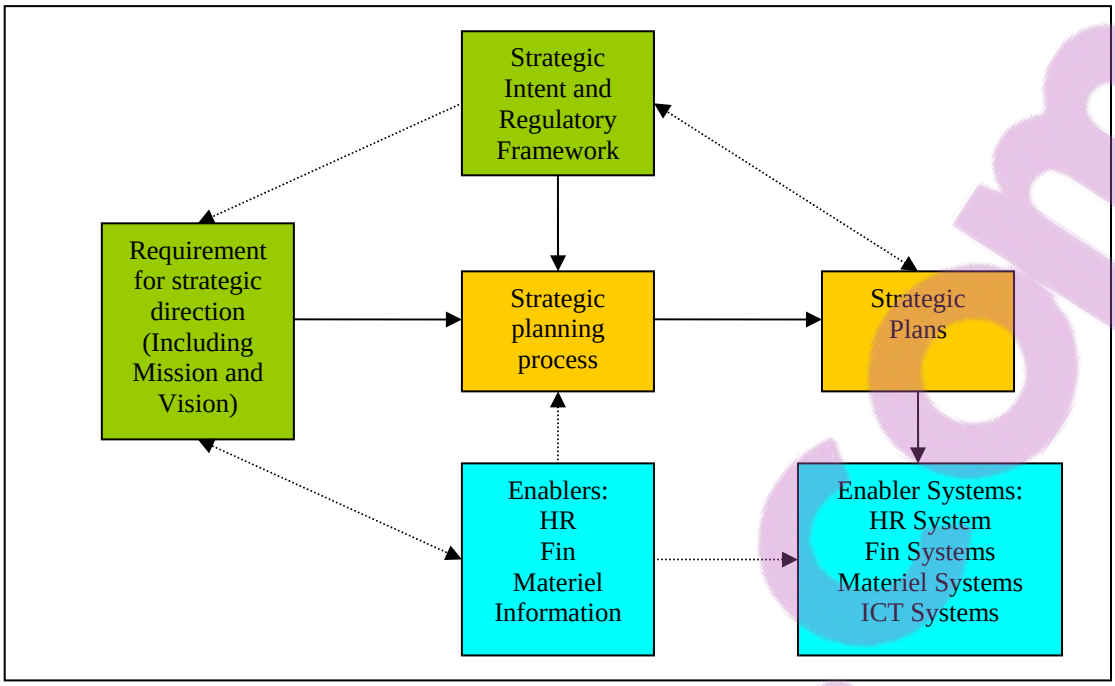

Figure 3.19: Relationship of Strategising Functions as considered appropriate to strategic ICT planning by the researcher

3.12.3 Formality in Strategic Management

According to Mintzberg *et al.* (1998)[269] organizations have the characteristic that there are varying degrees of formality or bureaucratic behaviour which can be noted. These ranges form the entrepreneurial mode, with single individuals deciding everything, to the planning mode where there is participation and collaboration. The planning mode is usually more suited to for complex organizations, whilst medium-sized organizations usually display an adaptive mode. In diversified organizations it can therefore be expected that there could be different approaches to strategic management that are commensurate to the organizational maturity and the nature of its business. These were found to have an impact on the ability to institutionalise a strategic ICT planning process as a corporate activity within the DOD.

3.12.4 The Strategy Makers

Strategy is a continuous process which takes place within an organization and has in accordance with the nature of the organization, varying degrees of complexity. The fact of the matter is that the process is executed by people in the final instance and is usually supported by some form of technology. Thus the combination of technology

[269] Mintzberg, H., Ahlstrand, B. and Lampel, J. 1998. *Strategy Safari: A guided tour through the wilds of Strategic Management*. New York: The Free Press.

and people to perform a process can be construed as the strategic management of a planning system. The people, working in teams, who are responsible for strategic planning in complex organizations such as diversified organizations, according to Mintzberg, Ahlstrand and Lampel (1998) *op. cit.* usually function in teams that ideally consist of representatives from all three levels of the company with top management providing the direction, middle management the implementability and lower management the actual implementation. The CEO was originally considered as the primary direction giver. This opinion is not necessarily shared by Beer, Eisenstat, and Spector (1990)[270], who for instance, argued that "*change should not be a top-down process*" and suggested that "*the most successful transformations and strategies should start at the periphery of the organization, and be led by general managers, not the CEOs*". In the case of this research it was found that given the hierarchical nature of the DOD and specifically the military milieu, a top-down approach prevailed.

3.12.5 Benefits of Strategic Management

When organizations start to require strategic planning in a coordinated manner due to its complexity, as is the case with diversified organizations, more formal collaborative and complimentary strategising becomes a necessity. This is due to the interpretation that strategy formulation activities enhance the whole firm's ability to prevent problems and provide continuity between planning and execution, with control traditionally being seen as part of strategic planning. In addition to this implication group-based strategic decisions require a wider consultative base and could thus provide better alternatives through the involvement of employees in the strategy process that in turn improves motivation by improved understanding of the productivity versus reward relationship. Gaps and overlaps in activities among individuals and groups are reduced as participation in strategy formulation clarifies differences in roles which enhance the ability to reduce resistance to change. This adds to the incentive for appropriate strategic ICT management arrangements and mechanisms.

3.12.6 Relationship between the Business System and the ICT System

[270] Beer, M., Eisenstat, R. A. & Spector, B. 1990. Why change programs don't produce change. *Harvard Business Review*, November – December 1990, p.158-166.

Should the relationship between business systems management and resource systems management in support of the higher order business system be investigated, the following representation can be made of the interaction. The model indicates that there are definite dimensions that need to be considered during the strategic planning process for resources management. When extrapolating the model over the systems management life cycle as presented by Sage and Rouse (1999)[271] the requirement for planning and control, to ensure that the required performance is realised, becomes apparent. Control is an essential function to ensure that deviations can be detected from the influences which will require consideration during re-planning.

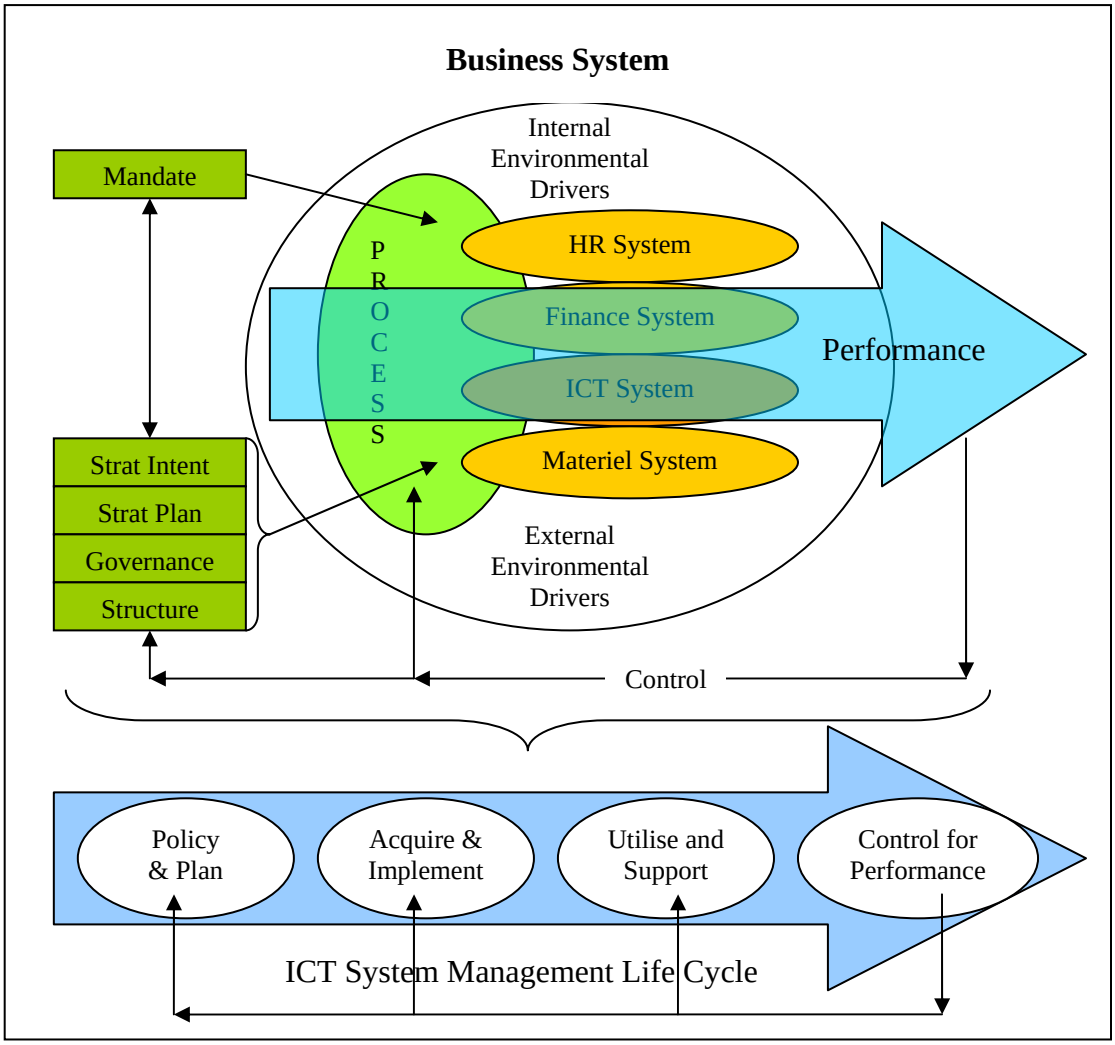

Figure 3.20: Relationship between the Business System and the ICT System Management Life Cycle as interpreted by the researcher

When considering the influences that will impact on the process of strategic ICT planning as forthcoming from strategic business planning, then the area of impact can

[271] Sage, A.P. & Rouse, W.B. 1999. *Handbook of Systems Engineering and Management*, New York: John Wiley and Sons.

be demonstrated graphically as indicated below. These influences will impact on all activities pertaining to the process of strategic ICT planning in diversified organizations. This model will be progressively improved and expanded upon throughout this literature study to be concluded in the full proposed model.

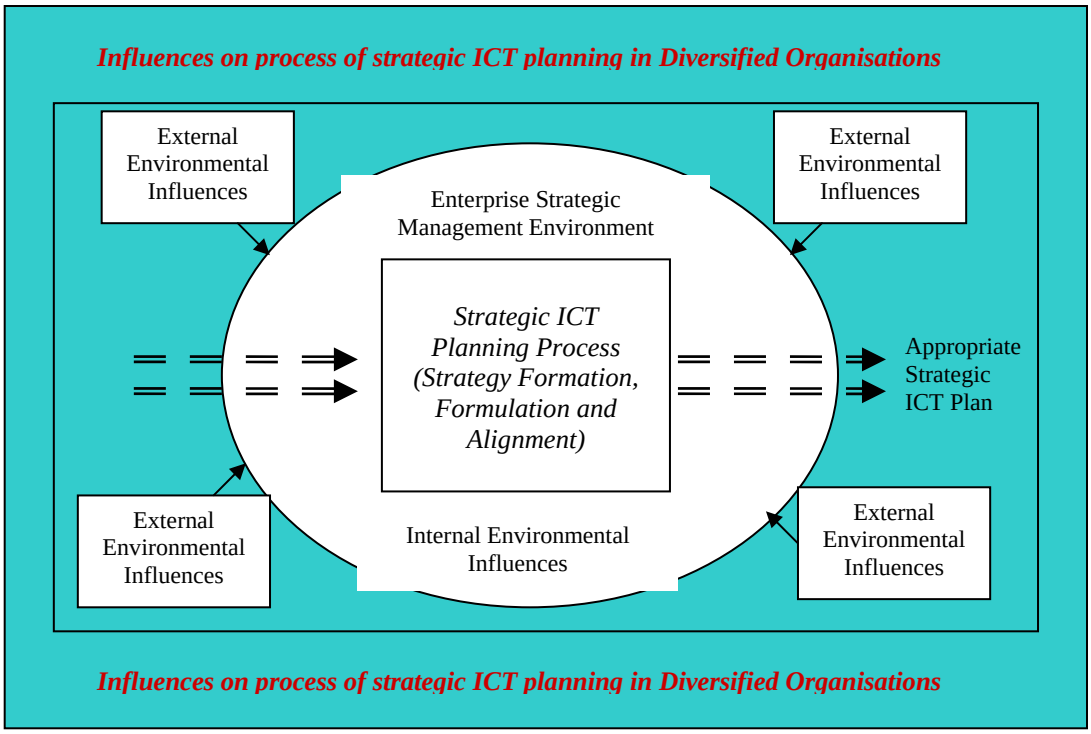

Figure 3.21: Contextual Definition of Strategic ICT Planning Process in Diversified Organizations

3.12.7 Setting and Managing Strategic ICT Objectives for the Diversified Organization

The setting of strategic ICT objectives for the diversified organization from the literature should address the total organization. This includes setting corporate objectives that are focused at grand strategy level and as such has the implication of being overarching in nature as indicated before. These objectives can be specific as relevant to the uniqueness of the respective individual business units, or more generic in nature as transversally appropriate to most or all of the business units. Those corporate objectives which might be more specific in nature were found during this research to tend to revolve around the line functions of the respective business units, whilst the more generic objectives would be centred on the supporting functions and would in all possibility have a strong potential to realise savings or effect improvements by applying rules of scale.

3.12.8 Activities that Constitute the Setting of Strategic ICT Objectives for the Diversified Organization

The primary activities related to the setting of strategic ICT objectives for the diversified organization focus on an interpretation of the environmental aspects and characteristics that impact on the diversified organization in its total diversity. The ability to formulate scenarios that are relevant and appropriate to both corporate strategic intent and business unit strategic intent and then to ensure alignment between these perspectives becomes the focus of strategic management that includes ICT management and planning.

Internal Environmental Analysis has the imperative to understand the organization in its functioning and can be adequately supported and enhanced through the utilisation of an EAP approach. Such architectures provide a firm baseline for planning and evaluation of not only the enterprise as a business, but ensure that the same definition can be utilised towards appropriate ICT solutions. An appropriate strategic ICT planning methodology and supporting tools should be appropriate to the nature of the line of business, with due consideration of common or transverse functions.

External Environmental Analysis has the following activities which can be ascribed to the setting of strategic objectives.

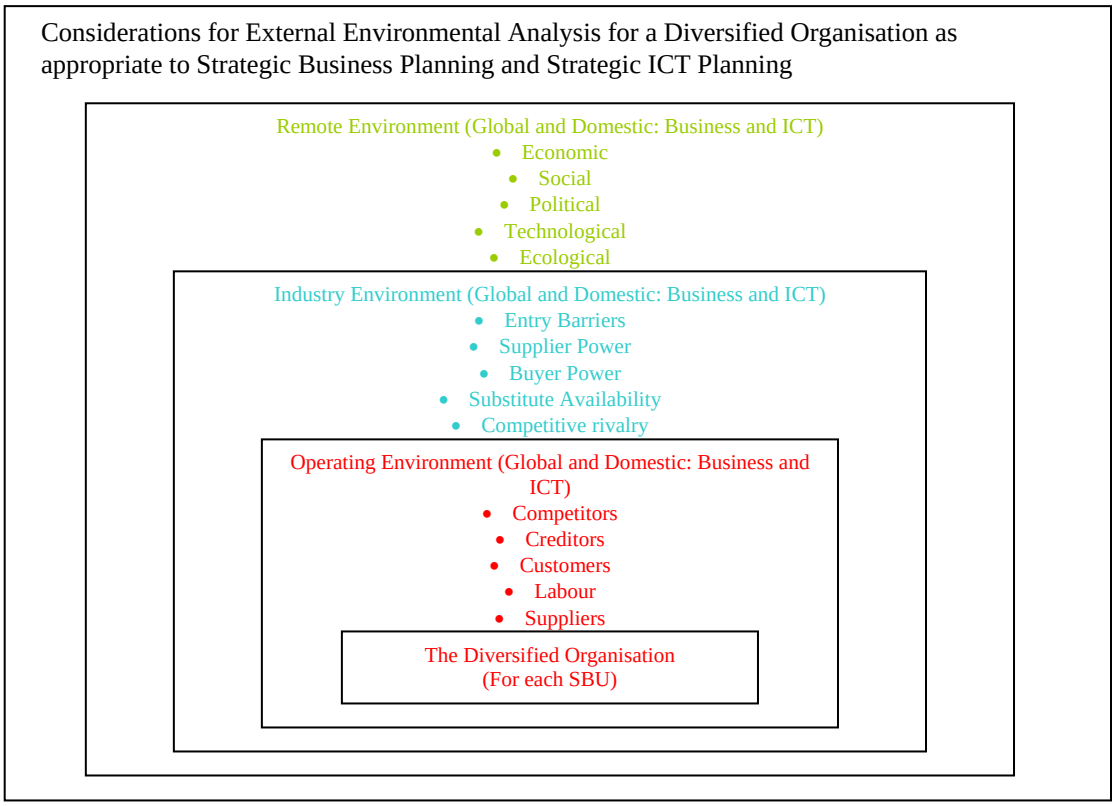

Figure 3.22: The External Environment as Appropriate to Strategic Business and Strategic ICT Planning as adapted from Pearce and Robinson (2003:57)

Due cognisance should be taken of the potential cross impact of the competitive forces operating in the market as already mentioned in the research. These cross-impact implications can lead to drivers (imperatives) for change in the ICT solutions as derived from the ability to sustain ICT solutions given the requirement for shorter planning cycles as a result of the half-life of certain technologies.

The result of these ‘competitive force’ assumptions can be reflected within the following considerations which can impact on the respective scenarios which can deal with business considerations such as rules of scale, centralisation or decentralisation of ICT systems and responsibilities, standardisation or unique solutions, integration or stand-alone solutions and even with consideration of reaction or compliance to governance. The degree of application or influence of the afore-mentioned will be determined by the nature of the strategic business unit as appropriate to its line function, management style and organizational culture and relationships within the enterprise or diversified organization. The stakeholder analysis will play a big role in making these determinations.

The considerations will necessitate the standardisation of an appropriate strategic ICT planning process and could be considered to have a high degree of correlation with the drivers that necessitate strategic planning in multi-domestic industries and global companies that are akin to diversified organizations. These, according to Pearce and Robinson (2003:107)[272], revolve around the ability to address *"the increased scope of the global management task, the increased globalisation of firms, the information explosion, the increase in global competition, the rapid development in technology* and *the fact that strategic management planning breeds managerial confidence."*

The contextual application of these implications to strategic ICT planning in diversified organizations can be managed at group level and business unit level as appropriate and presented in the "Management Structures for the Strategic ICT Planning Process in Diversified Organizations" above.

The requirement for continuous alignment necessitates that alignment between the business strategies and the ICT strategies at corporate and at business unit level should run in parallel and be dynamically interactive between corporate management and business unit management functions.

The process described above can be graphically presented as follows:

[272] Pearce, J.A. & Robinson, R.B. 2003. *Strategic Management: Formulation, Implementation and Control Sited*. New York: McGraw-Hill.

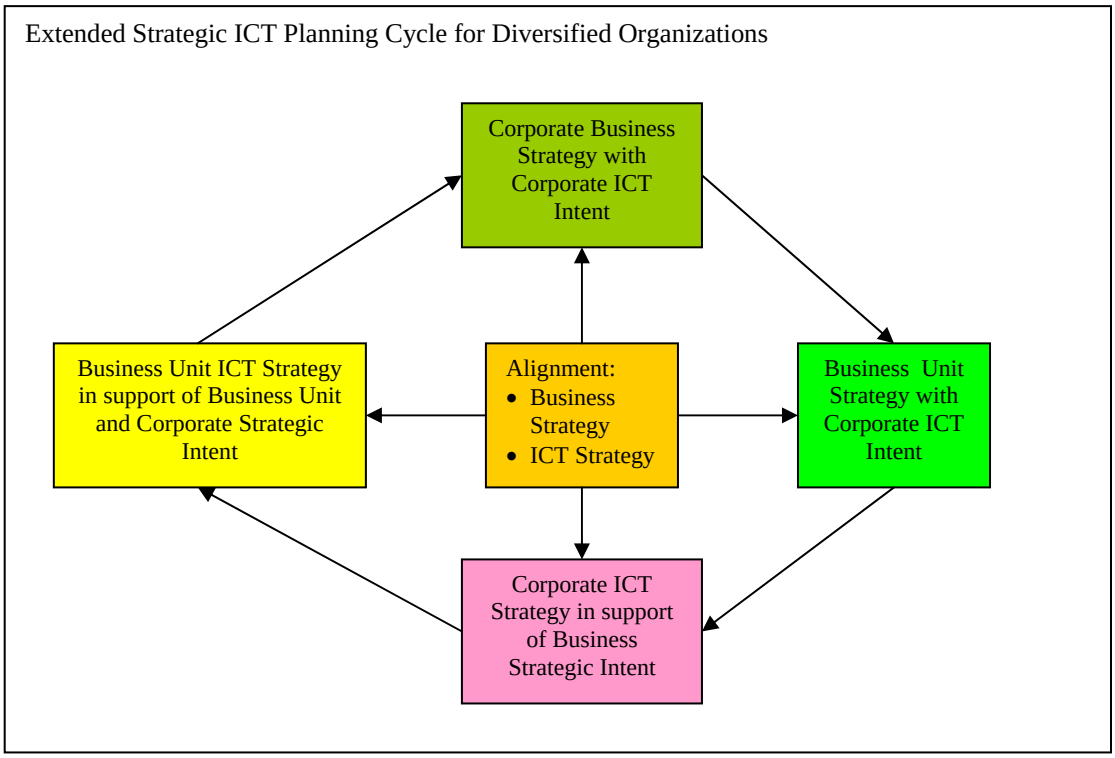

Figure 3.23: Extended Enterprise ICT Planning Model Indicating Primary Planning Cycles as adapted by the researcher from Luftman (1996)

To ensure that there is a formalised process by means of which alignment can be effected in a dynamically iterative process which not only supports the objectives of integration and coordination, but also the requirements to ensure alignment between business objectives and the ICT objectives, the following framework can be utilised as deduced from Luftman (1996)[273]. This clearly depends, however, upon the conscious evaluation and decision stemming from the nature of the respective business units, on the '*anchor domain*', the '*pivot domain'* and the '*impact domain'*.

The alignment exercise will result in the improved transparency, participation and collaboration with a clear understanding of both common or transverse issues and unique requirements and solutions. It will as a fundamental issue also ensure that there is greater alignment between business and ICT.

3.13 A CONCEPTUAL FRAMEWORK AS INTERPRETED FROM LITERATURE TO GUIDE THE INSTITUTIONALISATION OF THE STRATEGIC ICT PLANNING PROCESS IN THE DOD AS A DIVERSIFIED ORGANIZATION

[273] Luftman, J.N. 1996. *Competing in the Information Age: Strategic Alignment in Practice*. New York: Oxford University Press.

The establishment of a framework to guide the actual action research should be such that it conforms to the requirements of the research methodology to ensure its appropriateness as science and in its practical application when considering the opinions of Baskerville and Myers (2004)[274].

3.13.1 Prerequisites for Corporate ICT Management Structures

In accordance with the definition of strategic leadership as presented before strategic leadership input is considered to be a prerequisite for the formulation of the ICT strategic direction and policy. As such these activities should ensure that corporate and business unit management at least work from the same basic point of departure.

According to authors such as Pearce and Robinson (2003)[275] with the focus of strategic leadership as part of strategic management focusing on the ability to manage the strategic intent of the organization whilst at the same time managing appropriate capacity within an acceptable organizational culture is as appropriate to strategic ICT management as it is to business management. As such the strategic intention should be clarified and reflected in both the strategy and its strategic business plans that will guide execution. With the essence of strategic management, and therefore also strategic planning, being centred on the ability to manage change as indicated during the analysis of theory both strategic intention and appropriate capacity has to be addressed with the expectation and intention to ensure structured change.

From authors as far back as Chandler (1962)[276] the ability to institutionalise the relationship between business and its enabling structure within the diversified organization requires a defined relationship that is commensurate with the priorities of the organization as relevant to the nature of the enterprise's value chain. This is appropriate to considering business from a corporate and from a business unit level. It is imperative that strategic management understands not only the relationship as it currently functions, but also the nature of the changes in these relationships which are to be effected over time.

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[274] Baskerville, R & Myers, M.D. 2004. Special Issue on Action Research in Information Systems: Making IS Relevant to Practice – *Foreword: MIS Quarterly*, September 2004, vol.28(3), p.329-335.
[275] Pearce, J.A. & Robinson, R.B. 2003. *Strategic Management: Formulation, Implementation and Control Sited*. New York: McGraw-Hill.
[276] Chandler, A.D., Jr. 1962 *Strategy and Structure: Chapters in the History of Industrial Enterprise*. Cambridge, Massachusetts: MIT Press.

According to authors such as Ward and Griffiths (1996)[277] and Kruger and Snyman (2002)[278], a clear understanding is to be established of the role that ICT solutions will play in this diversified organization and the fact that there is a direct correlation between the nature of structure and the business. This must be facilitated by the vision and mission and it contributes towards economies of scale and shared value/utility within the diversified organization.

The ability to manage change has the added implication that it requires management to define and sustain the strategic culture of the diversified organization. Due to the differentiated and diversified nature of the organization it is accepted that each business unit including corporate level, will have its own organizational culture and management culture which is commensurate with the nature of its function. This can cause severe conflict if the required (desired) management styles and organizational cultures are not managed actively. It is deemed inappropriate to simplistically enforce a single culture upon the diversified organization as it might stifle innovation and continuous improvement. This is a further driver of alignment and change management. It also has a significant impact on the management structures and responsibilities. The responsibility of "orchestrating" the respective cultures as appropriate to the diversified organization is the task of top management. This does not imply that there should not be an overarching corporate culture which can represent the commonality that exists.

Given the imperative to manage change according to Lewin (1947)[279] and others, the capacity to manage such change will ensure that the change can be managed as the ability to define and sustain the diversified and differentiated skills of the diversified organization addressing this activity. The respective value chains of the diversified organization and the functions or tasks to be performed can be utilised to define those functions which can be managed corporately or transversely throughout the organization. It provides the opportunity to also identify those functions which are unique not only to the diversified organization as a whole, but also within the diversified organization. The vision and mission can now provide direction for the

[277] Ward, J. & Griffiths, P. 1996. *Strategic Planning for Information Systems*. New York: John Wiley and Sons.
[278] Kruger, C.J. & Snyman, M.M.M. 2002. The interdependability between Strategic Management, and the formulation of an Information and Communication Technology Strategy. *South African Journal of Information Management*, 2002, vol.4,2.
[279] Lewin, K. 1947. Frontiers in group dynamics II. *Human Relations*, 1947, Issue 2, p.143-153.

realisation of economies of scale and sustainment of the competitive advantage or the diversified organization. It should be considered that competitive advantage is an objective of primarily the lines of business that are orchestrated or corporately managed at corporate level.

3.13.2 Characteristics, Roles and Responsibilities that would Influence Structural Arrangements in the DOD as Appropriate ICT Planning Process

According to authors such as Thompson and Strickland (2003)[280] and Ward and Griffiths (1996)[281], the requirement to manage the ICT function as a collaborative activity between corporate management and business unit level management should ensure that the "What" and the "How" can be realised though the execution of the strategy. To this extent all relevant role players and stakeholders at corporate and business unit level must be part of the process. This does not imply that corporate management and business unit management can establish separate yet appropriate structures in accordance with their respective mandates. In managing diversity it brings the opportunity to be more representative and informed across a wider range of skills and therefore functions. This can strengthen the diversified organization. The principles of delegation and performance management with consciously considered centralised coordination and integration becomes more and more pertinent for the diversified organization. All of this has the implication that it requires the dynamically iterative process that shuttles between the corporate and business unit level of the organization. It also creates interaction between the business strategy and the ICT strategy within the organization. This is appropriate to an aligned organization as well as for each respective business unit.

3.13.3 Mechanisms or Enablers Appropriate to the Formulation of the ICT Vision and Mission for Diversified Organizations

With due consideration of the fact the enterprise is a complex organization that might be comprised of a number of different line functions, or products and even an international distribution of functions, it becomes necessary to manage the

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[280] Thompson, A.A. Jr. & Strickland, A.J. III. 2003. *Strategic Management Concepts and Cases*. 13th Ed. New York: McGraw-Hill.
[281] Ward, J. & Griffiths, P. 1996. *Strategic Planning for Information Systems*. New York: John Wiley and Sons.

forthcoming complexity and volume of data required to support the planning process. This necessitates the utilisation of standardised management mechanisms, methodologies and even planning tools to support and enable the planning process. This is not only considered appropriate to the function of strategic business planning, but also for strategic ICT planning.

The nature of *Enterprise Architecture Planning* (EAP) as presented by Spewak and Hill (1992)[282] and others, lends itself to this purpose. It is, however, considered necessary that the utilisation thereof be a conscious decision with due consideration of the requirement for such an approach. If the organizational complexity does not warrant the utilisation of such an approach then it should be avoided. The decision to utilise such an approach should, however, be based on the same considerations to be utilised for organizational development and for ICT solutions. This is due to the fact that an EAP approach has the characteristics of function which require the allocation of responsibility, commensurate structure and resources with the consideration of full systems management and total life cycle management. This is due to the fact that the Enterprise Architectures describe the enterprise as a system, which is to be kept under full configuration management if it is required to support strategic change management by ensuring appropriate and approved architecture baselines. As such it has the implication that not only the methodology, but also the enabling integrated EAP toolset should be addressed as part of the strategic ICT planning process.

As a synthesised interpretation by the researcher from the above the requirement for *formalised management mechanisms* is such that it should reflect the construct of the diversified organization and should ensure collaboration of all strategic ICT management responsibility areas. It is considered advisable that the mechanisms should focus on the ability to manage the ICT solutions as a total ICT systems management system and process that addresses the total system and the total life cycle. An approach that addresses a clear allocation of responsibility within the principles as derived from the rules of scale, with due consideration of uniqueness can enhance this approach and should also recognise the respective mandates as appropriate to corporate management and business unit management. The possibility of a matrix management relationship should not be ignored as ignoring it could lead to

[282] Spewak, S.H. & Hill, S.C. 1992. *Developing a Blueprint for Data, Applications, and Technology: Enterprise Architecture Planning*. New York: John Wiley & Son.

"stove-pipe" solutions. It is considered that the maturity of the organization and its cultural diversity will play a large role in the constitution of management mechanisms and the institutionalisation of tools and methodologies.

3.13.4 Alignment of Corporate Business Strategy and Policy with Strategic ICT Planning and Policy

It is necessary that the process of alignment be appropriately applied as a basic process to ensure that there are standardised information elements for purposes of comparison and thus alignment. In view of the fact that the mission and visions are appropriate to and strongly focused on the line of business, but provides the high level context and construct for rules of scale as well as the management thereof, it is essential that mission and vision alignment takes place. Such alignment will not only provide definition of the commonalities, but will also serve to institutionalise uniqueness. As per the deductions and conclusions noted resultant from this research, the dynamically iterative nature of strategic ICT planning is a part of overall strategic business planning that can be presented in the following diagram. A point of departure to develop a construct which will contribute towards alignment could be to approach it from the issues analysed as referenced from Porter's (1979)[283] construct of competitive market forces. Determining those specific issues that could be utilised to focus alignment is considered to be outside the paradigm of this research, but could provide a basis for further research.

When considering that in accordance with the early approaches presented by Ward and Griffiths from the research and findings of people such as Gibson and Nolan (1974)[284], Anthony (1965)[285] King and Kraemer (1984)[286], Wiseman (1985)[287] and Friedman (1994)[288], as well as Ward and Griffiths' interpretation of the work

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[283] Porter, M.E. 1979. How Competitive Forces Shape Strategy, *Harvard Business Review* (*57:2),* March-April 1979, p.137-45.
[284] Gibson, C. F. & Nolan, R. L. 1974. Managing the four stages of EDP growth. *Harvard Business Review (52),* January/February 1974, p.76-88.
[285] Anthony, R.N. 1965. *Planning and Control: A Framework for Analysis*, Cambridge, MA: Harvard University Press.
[286] King, J.L. & Kraemer, K.L. 1984. Evolution and organizational information systems: and assessment of Nolan's stage model, *Communications of the ACM,* 1984. vol.27(5).
[287] Wiseman, C. 1985. *Strategy and Computers*, Homewood, IL: Dow Jones-Irwin.
[288] Friedman, A. 1994. The stages model and the phases of the IS field. *Journal of Information Technology*, 1994. vol.9, p.137-148.

published in the EDP Analyser[289], where the emphasis is being placed on the movement from computer or DP management to information (systems) management with due consideration of the roles and functions as presented below.

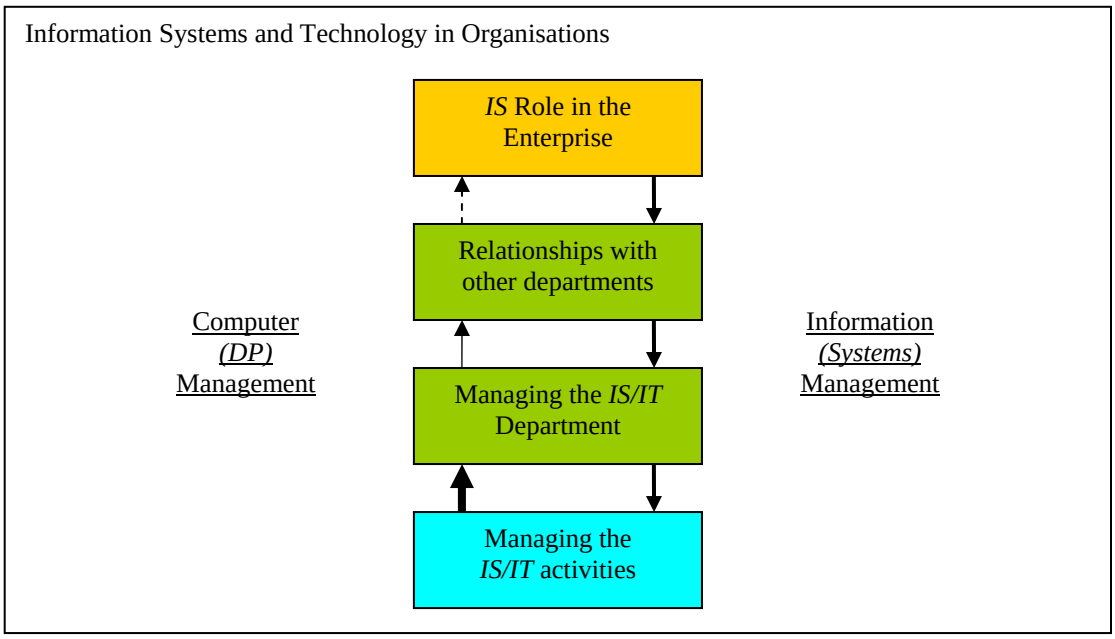

Figure 3.24: Transition between computer and information management: relationships and emphasis as from Ward and Griffiths (1996:6)

Given the nature of the diversified organization it is considered important in the opinion of this researcher that clear cognisance of the complexity of the organizational environment should be taken to ensure that the problem is not simplistically tackled from a process perspective alone, but with full consideration of the organizational complexities and the requirement for collaboration. This is in enhancement of the work done by Ward and Griffiths (1996)[290] where the organization is constantly represented as a single monolithic entity.

[289] United States of America. EDP Analyser. 1984. *Transition between computer and information management: relationships and emphasis*. USA: EDP Analyser, June 1984, vol.22, no.6,
[290] Ward, J. & Griffiths, P. 1996. *Strategic Planning for Information Systems*. New York: John Wiley and Sons.

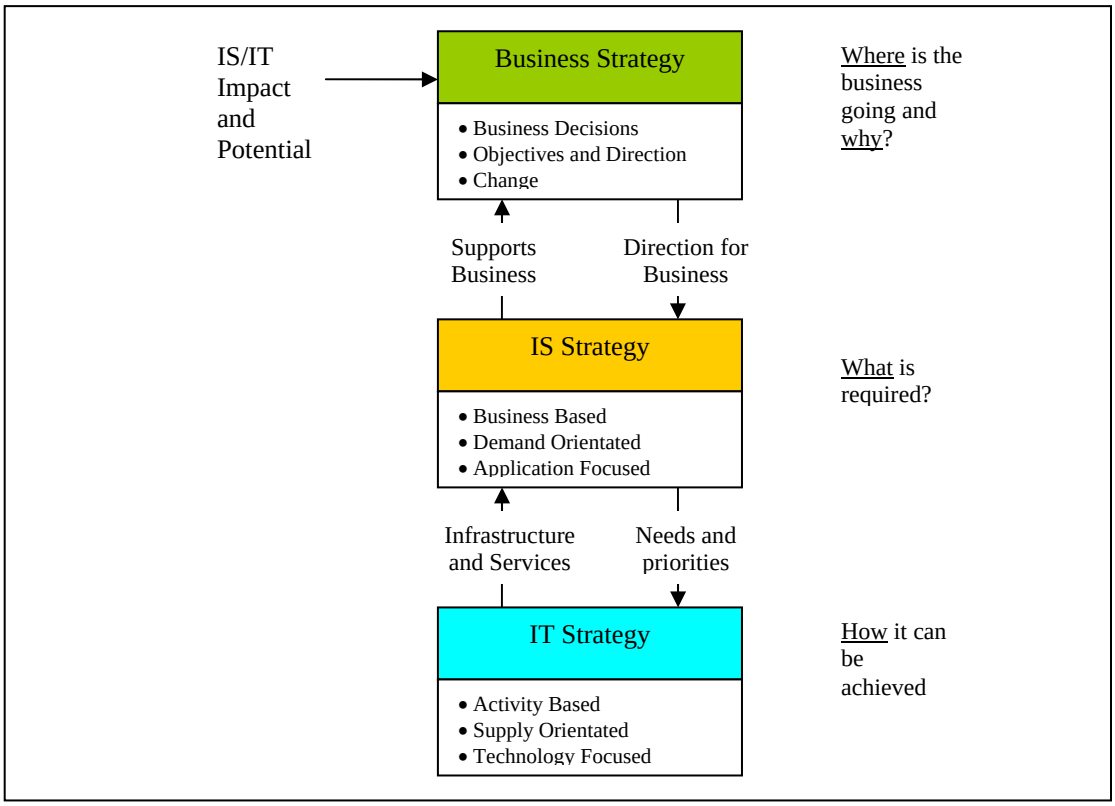

Figure 3.25: The relationship between business, IS and IT Strategies from Ward and Griffiths (1996:31)

The focus or emphasis is on the fact that there is a direct relationship and requirement for collaboration between business management and information systems management. This should be reflected in the organizational arrangements and structures.

3.13.5 Contextual Focus for Alignment for extended Strategic ICT Planning Model

With full consideration of the contributions made by authors on strategic management, change management, functional ICT management and on research methodology as discussed previously, the strategic management context of ICT can be synthesised. This is done with full consideration of the necessity to ensure alignment that can be managed as a requirement for both business strategy and ICT strategy. As such it can serve to guide specific structural arrangements as a generic interpretation. Deviation and tailoring of this model can then be managed in accordance with the specific characteristics of the organization and specifically this research. To this end the following as interpreted can serve to guide structural arrangements as appropriate to strategic management and planning functions for the DOD.

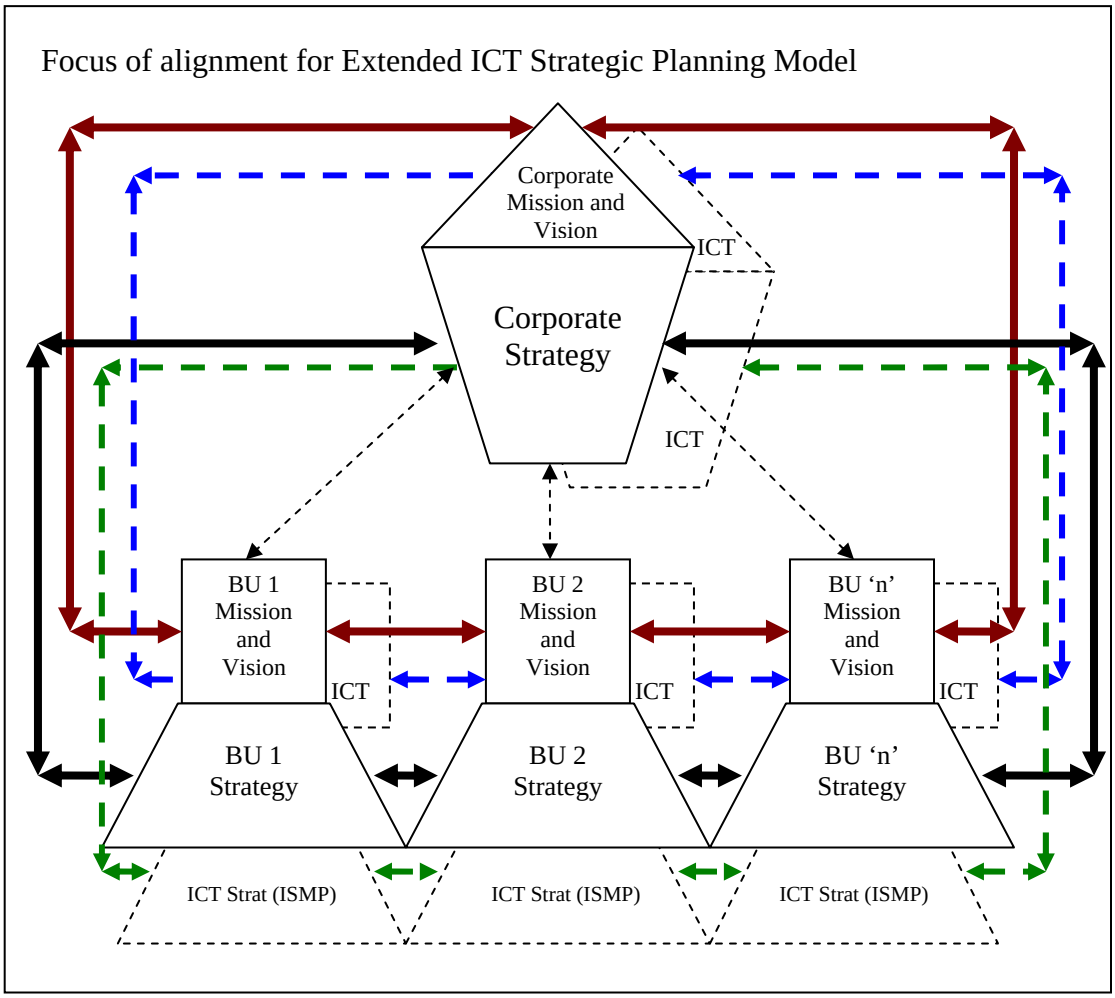

Figure 3.26: Integrated and Aligned Strategic ICT Management Model as interpreted by the researcher from existing theory

The deduced presentation has the implication that it indicates the collaboration of specific functional and structural arrangements as appropriate to both strategic business management and ICT management. It has the added implication that alignment is not a 'stand-alone' endeavour, but is an integral part of both business management and ICT management and should be performed as part of the integrated and continuous strategic management process. It furthermore indicates that there is a strong continuous and dynamically iterative interaction between corporate management and business unit level management.

When considering the complexity of the diversified organization and the opinion presented by authors such as Ward and Griffiths regarding strategic ICT management in diversified organizations, it becomes apparent that the process is not necessarily the problem, but it is the number of iterations thereof as well as the requirement for continuous alignment which causes the challenge. The volume of activities and the

repetitive nature of executing the process as well as the number of entities involved are a direct result of the complexity of the organization. It is thus concluded by the author/researcher that the greater the diversity of the enterprise, the greater the complexity of executing the strategic ICT planning process.

When considering the implication of the respective organizational cultures on the execution of the strategic ICT planning process, and the fact that the process is in essence focused on defining and managing the change required to sustain the competitive nature of the enterprise across its diversity, the necessity for the utilisation of supporting or enabling tools becomes a necessity. This becomes the primary driver for the utilisation of an EAP approach and supporting methodology and toolset within complex or diversified organization. The inverse can also be stated, namely that the less complex the organization, the lower the necessity for the utilisation of supporting enterprise-orientated methods and tools. The specific tools and methods to be utilised can form the basis for further research. These tools can in all possibility be such that it comprises an integrated EAP toolset which covers the process from strategy to systems development and life cycle support.

3.13.6 Organizational Structures Appropriate to Strategic ICT Planning and Management in the Diversified Organization.

With due consideration of the above-mentioned process and contextual influences which are appropriate and relevant to the strategic ICT planning framework and the strategic ICT planning process the management structures that are to be utilised can be managed around the deduced yet generic management structures presented below.

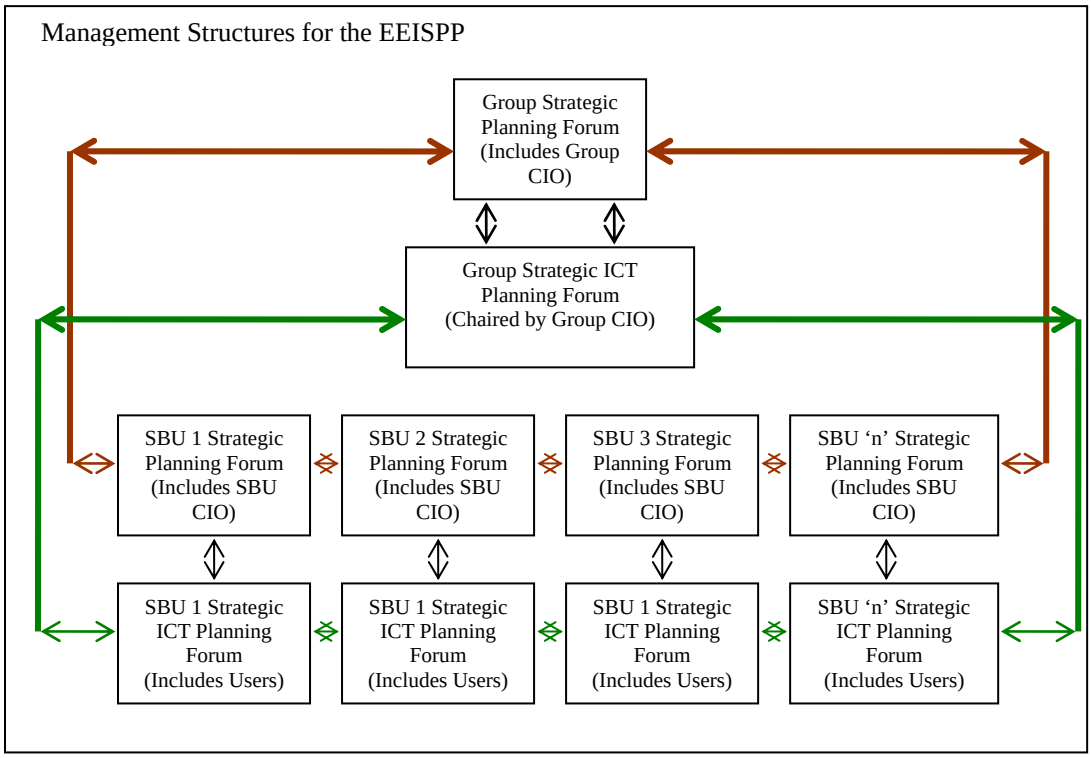

Figure 3.27: Management structures to manage the Enhanced Enterprise ICT Strategic Planning Process for Diversified Organizations

It is considered imperative by this researcher that the requirements for integration and system optimisation within the constraints of total systems management be realised through managed collaboration with a clear and unambiguous distinction of roles and responsibilities as interpreted from existing theory.

As such there should be a duly mandated corporate management mechanism charged with the responsibility of managing the enterprise in its entire value chain as a system. The Corporate CIO forms part of this forum and it has the distinct responsibility to manage corporate ICT strategic intention, corporate ICT policy, the strategic management of resources and structure in accordance with approved strategic business plans and to exercise corporate risk, performance and compliance management of the ICT function.

There should also be an operations-orientated forum at business unit level that is charged with the overall responsibility of managing the ICT system within and throughout the diversified organization. This forum is representative of ICT functionaries as appropriate to Information Management, Information and Communication Systems Management and ICT Management. This forum also has

functional user representatives as members to ensure collaboration and alignment of ICT solutions to information management requirements.

The respective strategic business units (SBU) Strategic Management forums have the responsibility and mandate to manage the respective business units as semi-autonomous entities, with clear consideration of corporate guidance. The “CIO” of the semi-autonomous business unit form part of this mechanism. In support of the strategic management of the SBU as managed by the SBU Strategic Management forum, the SBU Strategic ICT Planning (“Management”) forum is charged with the overall responsibility of managing the ICT function of the SBU. This forum is representative of ICT functionaries as appropriate to Information Management, Information and Communication Systems Management and ICT Management. This forum also has functional user representatives to ensure collaboration and alignment of ICT solutions to information management requirements.

The Strategic ICT Management mechanisms have the obligation to ensure alignment of the ICT strategy at business unit level with the business strategy. The Group Strategic ICT Planning mechanism has the responsibility to coordinate, integrate and align the respective ICT strategies with each other and with corporate direction. The Group CIO has the responsibility to manage the ICT function at enterprise level as an integral part of enterprise strategic management. The flow of activities between business unit level and group level has a dynamically iterative nature to ensure constant alignment throughout the strategic ICT planning process as appropriate to a diversified organization.

The enabling specialist planning methodologies and toolsets to support the strategic ICT planning process should be managed in accordance with the standard ICT systems life cycle management process as appropriate to support the process. The same consideration that functional requirements will drive the ICT solutions to support this function should apply as for any other function.

3.13.7 Summary of Influences

In summary the following are relevant to the process of strategic ICT planning in diversified organizations to guide the institutionalisation of the strategic ICT planning process for the DOD. It should not only be applied to the institutionalisation of the

strategic ICT planning process, but also to the institutionalisation of the management arrangements and mechanisms. To this end the change management should be effected towards the institutionalisation of the function within the DOD. Given this intention there are definite aspects that could be expected to contribute towards the contextual definition and management of the DOD ICT strategy.

From the above it is considered necessary to provide a clear understanding of the organizational dynamics and configurations as relevant to diversified organizations involved in strategy formation, formulation and alignment. The intention to increase the organizational dynamics and cohesion given the differentiated nature of ICT management as defined by Whitley (1984)[291], when he describes it as being essentially pluralistic with "very limited intellectual and organizational cohesion or standardisation of methods".

It can also be expected that the process of institutionalisation of an appropriate strategic ICT management (planning) process could be seen as a transition between archetypes and strategic and structural change as quantum rather than incremental as expanded upon by Miller and Friesen (1984)[292] and Miller (1990)[293] and also Kruger and Snyman (2002)[294]. This is considered to be equally applicable to the activity of strategic ICT planning in an organization. The strategic management of ICT can in all probability be expected to follow the same cycle as the organizational change when applied to the DOD.

When considering the implication of strategic ICT management in diversified organization it can be expected that there would be a strong causal relationship between the organization and its functioning and the type of ICT solutions and its functioning within such an ever-changing organization.

In a situation where there are diversified or semi-autonomous business units with diversified lines-of-business, the requirement for collaboration or integration becomes

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[291] Whitley, R. 1984. *The Intellectual and Social Organization of the Sciences*. Oxford: Clarendon Press.
[292] Miller, D. & Friesen, P.H. 1984. *Organizations: A Quantum View*. Englewood, New Jersey: Prentice Hall.
[293] Miller, D. 1990. *The Icarus Paradox*. New York: Harper Business.
[294] Kruger, C.J. & Snyman, M.M.M. 2002. The interdependability between Strategic Management, and the formulation of an Information and Communication Technology Strategy. *South African Journal of Information Management*, 2002, vol.4,2.

all the more imperative. There should be a strong causal relationship between the business strategy and the Strategic ICT plan of the diversified organization consisting of the whole of its semi-autonomous business units.

The strong correlation between the process to be followed for strategic business planning and the process to be used for strategic ICT planning in diversified organizations could be expected to have characteristics where strategic decisions for ICT planning in diversified organizations are pertinent to requiring decision by top management regarding strategic issues such as resource allocation and providing a broad top-level perspective. Typically resources are considered as relevant to finance, material, HR and information. These are sourced from either visibly within or outside the organization and could inevitably result in commitments, either internal (for using, and producing) or external (to redeem).As such these issues often affect the organization's long-term prosperity and as such should be addressed within an appropriate time frame. The ability to influence the long term requires forecast and not necessarily empirical knowledge.

Overall strategic issues usually have multi-functional or multi-business consequences in as much as it involves a number of Strategic Business Units (SBU's), being sources of resources or customers and/or clients. In its interaction with its external environment all business forms exist in an open system, and are thus effected by, or effect their environment with some conditions being beyond their control. As such a strategy is not confined to specific organizational levels or functions and it can be considered necessary to ensure that the interaction within and between the respective levels of the diversified organization is managed dynamically.

The more complex the organization, the more prescriptive the process can be expected to be, whilst still accommodating the diversity of content as required from strategic ICT planning. Such content will be commensurate with the diversified nature of the core business of the diversified business units and the respective value chains, within the context and construct of the corporate value chain.

The corporate ICT strategy of a diversified organization can therefore be expected to be performed as a complimentary and collaborative effort by representatives of the respective semi-autonomous business units of the diversified corporation. The

primary functionary for this process would be at corporate level with full participation of top management of the diversified business units. The nature of the strategic ICT planning process is such that it should be executed as a dynamic and iterative process within and throughout the corporation.

3.13.8 Utilisation of Influences

These influences as defined will be used to identify those aspects which will impact on the process in its formulation, the actual utilisation of the process to formulate the strategic ICT plan and the alignment of such a plan with the business strategy. The basic premise is that there should be a high degree of correlation between the strategic planning process as appropriate to business strategy formation, formulation and alignment and the process used for strategic ICT planning. This is to be viewed within the construct of a diversified organization and its unique complexities.

3.14 CRITICAL ISSUES THAT WILL ENSURE SUCCESSFUL STRATEGIC ICT PLANNING IN A DIVERSIFIED ORGANIZATION

In final summary of the issues that will affect the ability of the diversified organization to ensure that its ICT strategy is aligned with its business strategy the following critical issues are concluded:

- Systemic Relationship between the Diversified Organization and the Strategic ICT Planning Process
- Systemic Issues that will elucidate the Connect/Disconnect issue between the Diversified Organization and the Strategic ICT Planning Process
- Critical Success Factors for Strategic ICT Planning in a Diversified Organization
- Framework for Strategic ICT Planning in Diversified Organizations

3.15 CONCLUSION

To elucidate the implications of these issues as interpreted from existing theory, whilst at the same time ensuring that the results of this research can be scientifically substantiated, it is necessary that an appropriate methodology be followed to ensure

that the results of this research can be considered appropriate. To this end the following chapter will provide insight into what is considered as an appropriate research approach and methodology to ensure the reusability of this research.

4 CHAPTER 4: RESEARCH APPROACH AND METHODOLOGY

4.1 INTRODUCTION

The initial chapters of this report provided insight into the nature of the research problem encountered and the nature of the environment within which the research was done. Following from this the interpretation of relevant theory provided a firm basis for the researcher to interact with the research environment. This theoretical reference framework within the context of this research provided the basis for both the comparison of theory and practice and also allowed for the utilisation of an appropriate research methodology.

With this research primarily focused on the ability to realise change within the SA DOD as an enterprise, cognisance had to be taken of the specific characteristics or context that surrounded the research. The development of appropriate structural arrangements eventually became the focus for establishing an appropriate strategic ICT process for the DOD that could be utilised to ensure that strategic planning could be performed as an institutionalised function.

To the end of establishing an appropriate strategic ICT planning process for the DOD with due consideration of the triangular relationship between an appropriate research methodology, scientific theory and practice, the ability to successfully apply research methodology appropriately to the practical application of theory has been an ongoing endeavour for both researchers and practitioners. This stems from the requirement of both practitioners and theorists to be able to ensure that the relationship between practical knowledge and experience as gained in the workplace can be realistically based in theory with due consideration of the requirement for theory to be based on practice.

4.2 AIM OF THIS CHAPTER

The aim of this chapter is to elucidate the practical application of the action research methodology as part of an actual case study. The case study was undertaken with the imperative to develop an appropriate strategic ICT planning process for the South African National Defence Force as an example of a diversified (complex) organization with due consideration of the existing body of theoretical knowledge.

The intention is therefore to provide some insight into the application of the action research methodology in the DOD and so to ensure that the practical requirements for learning and delivery of output can be aligned with the imperatives for research as a scientific process. To this end the framework utilised as interpreted by the researcher will be presented and discussed in this chapter.

A short synopsis of the actual case study undertaken will also be provided to elucidate the context for the research. The analysis of the research findings and related conclusions given the existing body of knowledge and the specific circumstances of this research will serve to guide the confirmation or falsification of existing theory. These research findings can then also be used to present the contributions of this research as a single case study to the existing body of knowledge.

To provide context for the utilisation of a specific research approach and methodology that was cognisant of the actual research undertaken the following contextual depiction can be presented.

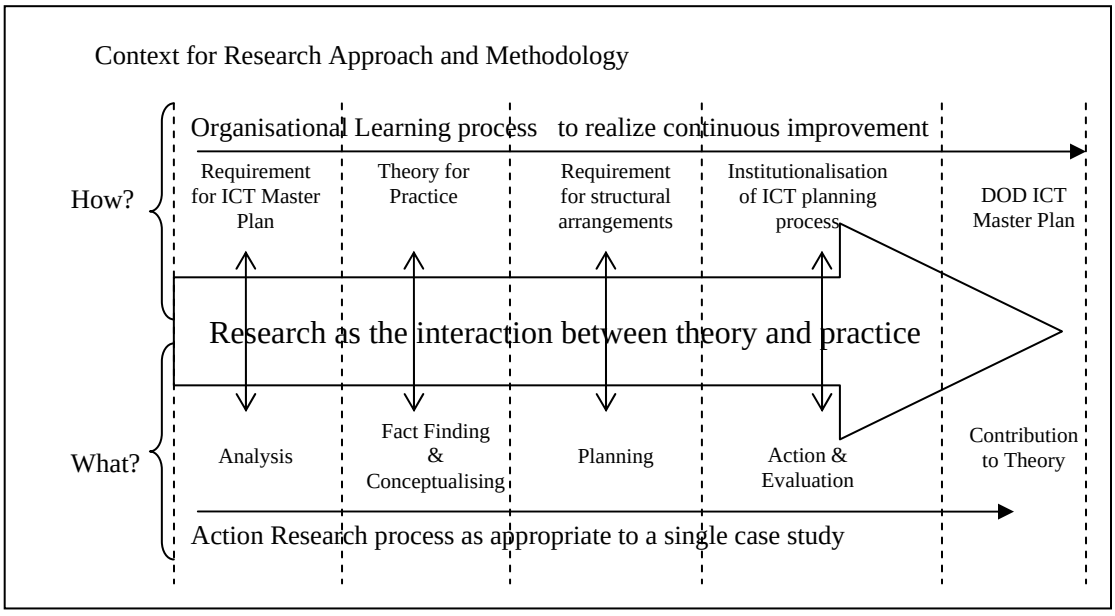

Figure 4.1: Context for Research Approach and Methodology

From the above depiction the ability to apply the principles and methodology of research to the point where the practical application of theory can dynamically and interactively be subjected to scientific scrutiny to augment existing theory, becomes the overall objective.

4.3 APPROPRIATENESS OF USING A SINGLE CASE STUDY

Researchers such as Klein and Myers (1999)[295] indicate that IS research is qualitative and interpretive in nature when focusing on its organizational implications as is relevant to this research as a case study. The issues of research complexity also come into effect when considering that the multi-disciplinary nature of IS research is described by Whitley (1984)[296] as a fragmented adhocracy. The ability to therefore identify those aspects that are considered relevant to the specific research undertaken during the specific case study will lead to a clear definition of the research paradigm in terms of the 'principles' defined by Klein and Myers (1999) *op. cit.*

From a research perspective the utilisation of case studies as scientific research within the ICT environment poses its own set of challenges that is has for a long time been a serious topic of discussion in the scientific community as clearly defined by Campbell and Stanley (1966:6-7)[297] when they stated that *"Such studies (*case studies*) have a total absence of control as to be of almost no scientific value"*. These discussions, however, do not distract from the requirement to be able to bring the science (theory), research methodology and practice together to scientifically enable the intention for learning and continuous improvement of both theory and practice. The use of single case studies is disputed by authors such as Campbell (1975)[298], who initially disputed the value of single case studies, but has changed to support the acceptance of single case studies as not being representative to the point where it supports the generalisation of research findings.

Authors such as Lincoln and Guba (1985)[299], also held the position that a single instance of deviation is not necessarily sufficient proof to support the generalised application of research findings. They - Lincoln and Guba (2000)[300] - have later also changed their position on the use of single case studies when referring to

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[295] Klein, H.K, & Myers, M.D. 1999. A set of principles for conducting and evaluating interpretive field studies in information systems. *MIS Quarterly*, 1999, vol.23, no.1, p.67-94.
[296] Whitley, R. 1984. *The Intellectual and Social Organization of the Sciences*. Oxford: Clarendon Press.
[297] Campbell, D.T. & Stanley, J.C. 1966. *Experimental and Quasi-Experimental Designs for Research*. Rand-McNally: Chicago.
[298] Campbell, D. 1975. Degrees of freedom and the case study. *Comparative Political Studies*, 1975, vol.8(1), p.178-191.
[299] Lincoln, Y. & Guba, E. 1985. *Naturalistic inquiry*. Newbury Park, CA: Sage.
[300] Lincoln, Y. & Guba, E. 2000. The only generalisation is: There is no generalisation. In *R.Comm (Ed.) Case Study Method*, 2000, London, Sage, p.27-44.

"transferability" as opposed to "generalisation". The basis for this change in opinion was that it becomes very difficult to exactly "reproduce" or experience an exactly identical set of circumstances for any research undertaken to that which produced the original results.

Given the general requirement to develop a set of guidelines for any research as opposed to enforcing principles stringently, whilst at the same time ensuring and allowing for deviations from the current body of knowledge, Flyvbjerg (2001) *op. cit.* presents his "*Five misunderstandings about case-study research"*. These misunderstandings are summarised by Ruddin (2006:799)[301] as follows:

- Misunderstanding 1: Theoretical knowledge is more valuable than practical knowledge.
- Misunderstanding 2: One cannot generalise on the basis of an individual case; therefore, the case study cannot contribute to scientific development.
- Misunderstanding 3: The case study is most useful for generating hypotheses, that is, in the first stage of a total research process (followed by a rigorous approach).
- Misunderstanding 4: The case study contains a bias towards verification, that is, a tendency to confirm the researcher's preconceived notions.
- Misunderstanding 5: It is often difficult to develop general propositions and theories on the basis of specific case studies.

Eckstein (2000)[302] further confirms the opinion that case studies are in fact very appropriate to test existing theory in practice. Given that the focus of this research was to not only define a strategic ICT planning process, but also to institutionalise it, the establishment of an appropriate reference framework that addresses both the "what" and the "how" of the research methodology becomes a necessity. This is in line with

[301] Ruddin, L.P. 2006. You Can Generalise Stupid! Social Scientists, Bent Flyvbjerg, and Case Study Methodology. *Quality Inquiry*, August 2006, vol.12, no.4, p.797-812.
[302] Eckstein, H. 2000. *The case study and theory in political science: Case study method.* Edited by R. Comm. London: Sage, p.119-164.

the questions posed by Mårtensson and Lee (2004)[303] on issues of theoria and praxis and is once again confirmed as relevant to this research.

The issues of context as related to reflexivity and hermeneutics as described by Giddens (1984)[304] and Klein and Myers (1999)[305], and even Whitley (1984)[306] when referring to research complexity, impacts on the ability to understand complexity with the specific research objective to determine the nature of the relationship between theory and the specific practical circumstances to the point where the findings can be presented as specific to the research undertaken and not as generalised findings. The acceptability of a single case study to indicate deviation from generalised theory as presented by Popper (2000)[307] when referring to 'falsification' as opposed to 'generalisation' further legitimises limiting this research to the research undertaken in the DOD.

In presenting his *"Five misunderstandings about case-study research"* Flyvbjerg (2001)[308] expresses the opinion that case studies are in actual fact very appropriate to test existing theory in practice. This opinion is also held by Eckstein's (2000)[309], who points out that case studies can be used to determine deviations from the existing body of knowledge and that these can be considered to be appropriate to make a scientific contribution. The intention of this research to provide an indication of not only what should be done to do strategic ICT planning, but also how it should be done, renders the issues of combining theory and practice as appropriate to the specific circumstances and therefore it became acceptable. This is especially relevant when the research to be undertaken is steeped in the existing body of knowledge and the intention is to expand upon the understanding of the practical implications of the relevant theoretical body of knowledge. This is in line with the questions posed by

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[303] Mårtensson, P. & Lee, A.S. 2004. Dialogical Research at Omega Corporation. *MIS Quarterly (Special Edition),* September 2004, vol.28, no.3, p.507-536.
[304] Giddens, A. 1984. *The Constitution of Society: Outline of the Theory of Structuration*, Cambridge, MA: Polity Press.
[305] Klein, H.K, & Myers, M.D. 1999. A set of principles for conducting and evaluating interpretive field studies in information systems. *MIS Quarterly*, 1999, vol.23, no.1, p.67-94.
[306] Whitley, R. 1984. *The Intellectual and Social Organization of the Sciences*. Oxford: Clarendon Press.
[307] Popper, K. 2000. *The logic of scientific discovery*. 6th ed. London: Routledge.
[308] Flyvbjerg, B. 2001. *Making social science matter: Why social enquiry fails and how it can succeed again.* Translated by S. Sampson. Cambridge, UK: Cambridge University Press.
[309] Eckstein, H. 2000. *The case study and theory in political science: Case study method.* Edited by R. Comm. London: Sage, p.119-164.

Mårtensson and Lee (2004)[310] on issues of theory (theoria) and practice (praxis) and is once again confirmed in the opinion of this researcher as being considered relevant to this specific research. "*Naturalistic generalisation*" as referred to by Ruddin (2006:804)[311] when quoting Stake (1982)[312] has the implication that it places emphasis on the perspective of the reader and that the researcher should provide "*sufficient contextual information to facilitate the reader's judgement as to whether a particular case can be generalised to a specific field of practice*". This once again tends to focus on the ability to balance theory and practice and ensure application of theory in specific practice by enlightened practitioners as is also the opinion of this researcher. This also adds emphasis to the layout of this thesis.

4.4 ACTION RESEARCH AS A RESEARCH METHODOLOGY

4.4.1 General Comments on Action Research

Due consideration of authors such as Klein and Myers (1999)[313], Behr (1983)[314], Baskerville and Wood-Harper (1998)[315] as well as Mårtensson and Lee (2004)[316] on action research as well as the critical analysis and interpretation of theory towards its application in practice, served to guide this research. The characteristics of action research are provided by these authors and others served to provide a clear understanding and focus for the use of action research to guide this specific research. A sound theoretical reference framework became particularly relevant given the imperative to institutionalise an appropriate strategic ICT planning process and to conduct the research in a scientific manner. This aspect was further necessitated by the requirement to contribute to both science and practice through the process of structured research and practical continuous improvement.

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[310] Mårtensson, P. & Lee, A.S. 2004. Dialogical Research at Omega Corporation. *MIS Quarterly (Special Edition)*, September 2004, vol.28, no.3, p.507-536.
[311] Ruddin, L.P. 2006. You Can Generalise Stupid! Social Scientists, Bent Flyvbjerg, and Case Study Methodology. *Quality Inquiry*, August 2006, vol.12, no.4, p.797-812.
[312] Stake, R. 1982. Naturalistic generalisation. *Review Journal of Philosophy and Social Science*, 1982, vol.7, p.1-12.
[313] Klein, H.K, & Myers, M.D. 1999. A set of principles for conducting and evaluating interpretive field studies in information systems. *MIS Quarterly*, 1999, vol.23, no.1, p.67-94.
[314] Behr, A.L. 1983. *Empirical research methods for human sciences: An introductory text for students of education, psychology and the social sciences*. Pretoria: Butterworths.
[315] Baskerville, R & Wood-Harper, A.T 1998. Diversity in information systems action research methods. *European Journal of Information Systems*, 1998, vol.7, p.90-107.
[316] Mårtensson, P. & Lee, A.S. 2004. Dialogical Research at Omega Corporation. *MIS Quarterly (Special Edition)*, September 2004, vol.28, no.3, p.507-536.

From a business perspective the imperatives that drive the requirement for constant improvement have by implication been advocated for some time starting as far back as Sun Zu, John Adams and latter-day proponents such as Porter and Mintzberg. This is further expanded upon in articles related to for instance the interdependencies between strategic management, and the formulation of an ICT strategy as presented by for instance Kruger and Snyman (2002)[317] and many other authors.

The ability to combine theory (theoria) and practice (praxis) and to utilize an appropriate research methodology that can support this intention is advocated fairly vociferously by proponents such as Baskerville and Myers (2004)[318], Lindgren, Henfridsson and Schultze (2004)[319], Mårtensson and Lee (2004)[320], Baskerville and Wood-Harper (1998)[321], as well as Korpela, Mursu and Soriyan (2004)[322]. All of these authors refer to the action-research characteristic and the fact that the complexity of the research environment and the ability to ensure collaboration and participation between the researcher and the research environment and subjects should be deemed extremely important.

In terms of the continuous improvement imperative for both theory and practice Lindgren, Henfridsson and Schultze (2004) *op. cit*. refer to competencies within the context of *competence-in-stock, competence-in-use* and especially interesting aspects of *competence-in-the-making.* C*ompetence-in-stock* refers to the total ability that the organization (people) has as opposed to *competence-in-use* that refers to only that portion of the ability that is being used by the people in the organization. *Competence-in-the-making* on the other hand has the implication that this is the result of continuous improvement and learning that augments and enhances both the *competence-in-stock* and the *competence-in-use*. When combining 'competency-in-

[317] Kruger, C.J. & Snyman, M.M.M. 2002. The interdependability between Strategic Management, and the formulation of an Information and Communication Technology Strategy. *South African Journal of Information Management*, 2002, vol.4,2.
[318] Baskerville, R & Myers, M.D. 2004. Special Issue on Action Research in Information Systems: Making IS Relevant to Practice – Foreword. *MIS Quarterly*, September 2004, vol.28(3), p.329-335.
[319] Lindgren, R., Henfridsson, O. & Schultze, S. 2004. Design Principles for Competence Management Systems: A Synthesis of an Action Research Study. *MIS Quarterly*, September 2004, vol.28, no.3, p.435-472.
[320] Mårtensson, P. & Lee, A.S. 2004. Dialogical Research at Omega Corporation. *MIS Quarterly (Special Edition)*, September 2004, vol.28, no.3, p.507-536.
[321] Baskerville, R & Wood-Harper, A.T 1998. Diversity ion information systems action research methods. *European Journal of Information Systems*, 1998, vol.7, p.90-107.
[322] Korpela, M.; Mursu, A. & Soriyan, H.A. 2002. Information Systems Development as an Activity. *Computer Supported Cooperative Work*, 2002, vol.11, p.111-128.

the-making' with the concepts of theoria and praxis as discussed by Mårtensson and Lee (2004) *op. cit.* the identification of a specific application of action research as a critical methodology falls into this category of learning.

At the same time as the development of the ability to continuously improve business (practice), given the common adage that the only constant in life is change, the imperative to constantly improve research approaches and enabling methodologies can be considered to be subjected to similar changes towards continuous improvement and its ability to guide and enable research. The conclusion reached by this researcher is that just as functional theory is subject to continuous improvement given the imperative for change, research theory can also be considered to be subject to change and continuous improvement.

4.4.2 Contextual Aspects of Action Research

According to authors such as Klein and Myers (1999)[323] the ability to perform qualitative research with interpretation as an essential element requires a clear and unambiguous understanding of the nature of both the research methodology and its ontological dimensions. Baskerville and Myers (2004)[324] indicate that there are primarily two stages involved in action research being the *diagnostic stage* and the *therapeutic stage*. The enabling activities for these two stages place the focus firmly on analysis, fact finding, conceptualisation, planning, implementation of action and evaluation. The underlying focus of such research is the issue of problem solving where it is necessary to be able to understand the problem encountered given the overall objective, and then finding solutions whilst at the same time being able to define the improvement and its related learning.

The undertaking of such research is influenced by both theory and practice and the relationship between all three perspectives forms the basis of good research. As referenced from Baskerville and Myers (2004) *op. cit.* and their reference to the requirement for pragmatism they provide a framework to ensure that empirical answers can be obtained from the actual research undertaken.

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[323] Klein, H.K, & Myers, M.D. 1999. A set of principles for conducting and evaluating interpretive field studies in information systems. *MIS Quarterly*, 1999, vol.23, no.1, p.67-94.
[324] Baskerville, R & Myers, M.D. 2004. Special Issue on Action Research in Information Systems: Making IS Relevant to Practice – Foreword. *MIS Quarterly*, September 2004, vol.28(3), p.329-335.

Given that both the action research process and the practical work followed a distinct process it is deemed appropriate that a clear understanding of the characteristics that influence both the application of methodology and the actual research undertaken should be made. It was furthermore considered important for purposes of this research that cognisance should be taken of the specific research context as being relevant to the research findings. As already indicated the research context, with due consideration of the arguments presented by Flyvbjerg (2001) *op. cit.* and Ruddin (2006) *op. cit.*, can be presented as follows:

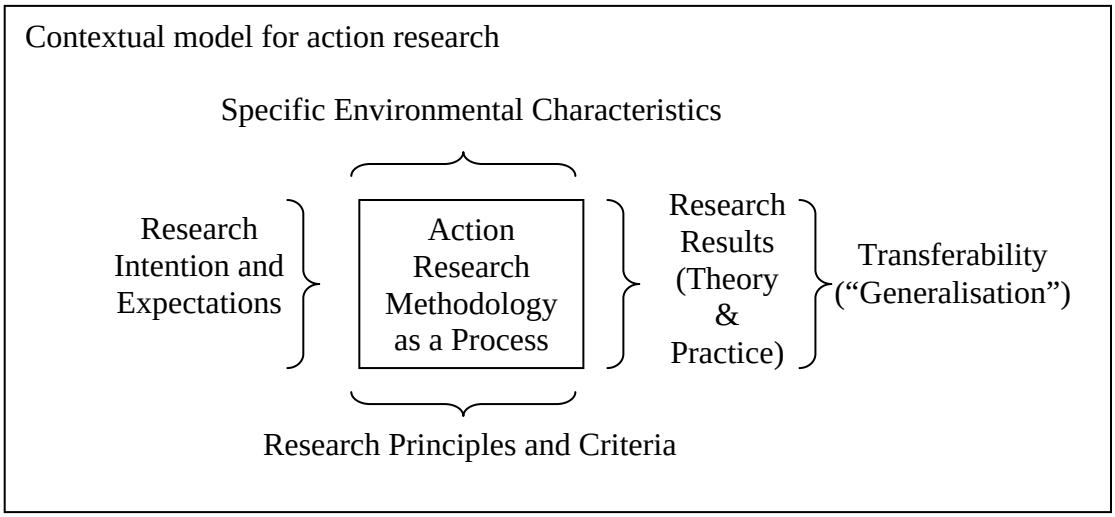

Figure 4.2: Context for Action Research Process

4.4.3 Action Research as an Appropriate Research Methodology

Baskerville and Wood-Harper (1998)[325] refer to the three dilemmas that are referred to, namely the "*goal*" dilemma, the dilemma where "*the role of the researcher and the consultant individual is served in a single individual*" and the dilemma that relates to the "*concomitant value*" of the research. Addressing the three dilemmas with due consideration of the interpretation of the 'progression of learning' as presented by Giddens (1984)[326], the ability to separate the roles of the researcher and the practitioner becomes very important to support the requirement for objectivity. If this aspect is not appropriately managed it could result in a potential conflict of interests between the practitioners and the researchers and could impact negatively on the research findings from both the science perspective and practical perspective. This

[325] Baskerville, R & Wood-Harper, A.T 1998. Diversity ion information systems action research methods. *European Journal of Information Systems*, 1998, vol.7, p.90-107.
[326] Giddens, A. 1984. *The Constitution of Society: Outline of the Theory of Structuration*, Cambridge, MA: Polity Press.

separation of roles becomes especially relevant to the issue of using single case studies and the requirement for this research to insure research integrity. This implication further contributes to the necessity of establishing a set guidelines or a framework for the research to be undertaken. The researcher then follows the guidelines or framework for the research to be undertaken to avoid conflict and increase the integrity of the research.

To further enhance the objectivity of the researcher and the framework for the research methodology in addition to the three dilemmas as presented by Baskerville and Wood-Harper (1998) *op. cit.*, an appropriate understanding and application of the five methodological principles for research as presented by Davison, Martinsons and Kock (2004)[327] are required. These relate to aspects of *researcher-client agreement*, the *cyclical process model*, the *principle of theory*, as well as *change through action* and *learning through reflection*. Once again this is a clear indication of process with a clear understanding of the context as a strong prerequisite for rigorous action research.

Given the relationship between the research environment and objective and the research methodology Schein (1987, 1969)[328, 329] contributes by indicating that there is an increasing association between action research and organizational consulting. It is furthermore contended by Clark (1972)[330] that the ability to sustain objectivity becomes even more blurred when the implications of authority and power, or being beholden to role players and stakeholders start to influence the research undertaken and by implication the research methodology. The imperative for participation without negating the ability to maintain objectivity throughout the research project has the implication that there should be a clear and distinct definition, understanding and exercising of roles and functions within the research project. This was also found to be the case in the specific research undertaken.

[327] Davison, R.M., Martinsons, M.G. & Kock, N. 2004. Principles of Canonical Action Research, *Information Systems Journal*, 2004, vol.14, p.65-86.
[328] Schein, E. 1987. *The Clinical Perspective of Fieldwork.* Newbury Park: Sage.
[329] Schein, E. 1969. *Process Consultation: It Role in Organizational Development*. Reading: Addison-Wesley.
[330] Clark, P. 1972. *Action research and Organizational Change*. London: Harper & Row.

Given the potential for 'double-loop learning' as presented by Argyris and Schon (1978)[331] the relationship between reflection and action becomes necessary to manage change. This relationship is further elucidated by some of Lewin's (1947)[332] concepts for change management and the perspective presented by Checkland (1981)[333], emphasising the relationship between action research and systems thinking as influenced by Soft Systems Methodology where cooperation and collaboration become problematic. According to Baskerville and Wood-Harper (1998) *op. cit*. the five streams that developed were related to social and organizational science, organizational learning, process consultation, system science and IS Action Research. The issue of context and its influence on the ability to apply the action research methodology appropriately in an environment that is dependent upon collaboration and cooperation becomes more evident when it is done with recognition of these 'streams' that characterised the development of the action research methodology.

4.4.4 Dialogical Action Research

Given that there is a specific relationship that is expected to be sustained between the researcher and the practitioners (subjects) the ability to constantly manage the interaction between these two in accordance with the relevant criteria (characteristics) require specific skills from both the researcher and the practitioners. It is therefore considered appropriate by this researcher that an understanding of dialogical action research as presented by Mårtensson and Lee (2004:512)[334] be established to support this research. From the theory and also as experienced during the specific research undertaken it was confirmed that there is a constant and dynamically iterative and interactive relationship between the researcher and the subjects as influenced by their environment. This relationship and the ability to sustain it is dependent upon the fact that the researcher should "*pose a wide range of technical skills for carrying out scientific work*" as confirmed by Flyvbjerg (2000:424) *op. cit* with reference to the research done by Thomas Kuhn. These technical skills that are required to facilitate an interactive relationship is also appropriate to both the researcher/subjects and the

[331] Argyris, C., & Schön, D.A. 1978. *Organizational Learning: A Theory of Action Perspective*. Reading, Massachusetts: Addison-Wesley.
[332] Lewin, K. 1947. Frontiers in group dynamics II. *Human Relations*, 1947, Issue 2, p.143-153.
[333] Checkland, P. 1981. *Systems Thinking Systems Practice*. Chichester: Wiley.
[334] Mårtensson, P. & Lee, A.S. 2004. Dialogical Research at Omega Corporation. *MIS Quarterly (Special Edition)*, September 2004, vol.28, no.3, p.507-536.

organization with due cognisance of the concept of critical social theory and its focus on dialogical action research as presented by Mårtensson and Lee (2004:512)[335].

Mårtensson and Lee (2004) *op. cit.* indicate that there is an instantiation of two of Schutz's (1962)[336] concepts being "*the scientific attitude"* and "*the natural attitude of everyday life"*. The relevance of this comes to the fore when considering the research of Scarborough and Corbett (1992:157)[337] that indicates that "*the relationship of (between) technology and organization is neither one of "impacts" (of IT) nor of "choice" (made by managers) per se. Rather that technology and organizations are closely intertwined through the flows of knowledge and ideas which transcend the individual organization, but which find expression in, and are reinforced by, political interests and agendas at the organizational level. Therefore destinations between a hard and a soft approach would not even remotely be realistic*". The emphasis of this statement as specifically relating to the organizational and social issues is of interest for the purpose of this research.

The relationship indicated above pre-empts the possibility of there being a combination between the hard scientific theory and the ability to manage the organizational implications and as such the research methodology should indicate these 'flows of information' between the two instances. As such any framework should present this flow of information between theory and practice in such a manner that it enhances the integrity and veracity of the research and its findings with due consideration of the specific characteristics as appropriate to the specific research environment.

In describing action research Baskerville and Wood-Harper (1998)[338] characterise it as being iterative and reflective and having the requirement to be based in pragmatism. As such there are four primary tenets that provide the premises that arise from the whole approach towards pragmatism. These are the fact that pragmatisms relate the fact that "consequences define human concepts" described by Pierce (1839-

[335] Mårtensson, P. & Lee, A.S. 2004. Dialogical Research at Omega Corporation. *MIS Quarterly (Special Edition),* September 2004, vol.28, no.3, p.507-536.
[336] Schutz, A. 1962. *"Concept and Theory Formation in the Social Sciences," Collected Papers, Volume 1, M. Nijhoff,* The Hague, p.3-41.
[337] Scarborough, H. & Corbett, J. 1992. *Technology and Organisation*. London: Routledge.
[338] Baskerville, R & Wood-Harper, A.T 1998. Diversity ion information systems action research methods. *European Journal of Information Systems*, 1998, vol.7, p.90-107.

1914), the fact that "practical outcomes embodies truth" presented by James (1842-1909), the "logic of controlled enquiry" from Dewey (1859-1952) and the issues of the "social context of action" as presented by Mead (1862-1931). When considering these premises and therefore the related characteristics or expectation of action research as presented by Mårtensson and Lee (2004) *op. cit.*, as well as Korpela, Mursu and Soriyan (2004)[339] the issues of synthesis become all the more important as presented by Lindgren, Henfridsson and Schultze(2004)[340].

When considering the dynamic yet appropriate interaction between all of these characteristics of action research it can be presented as follows as a conceptual construct.

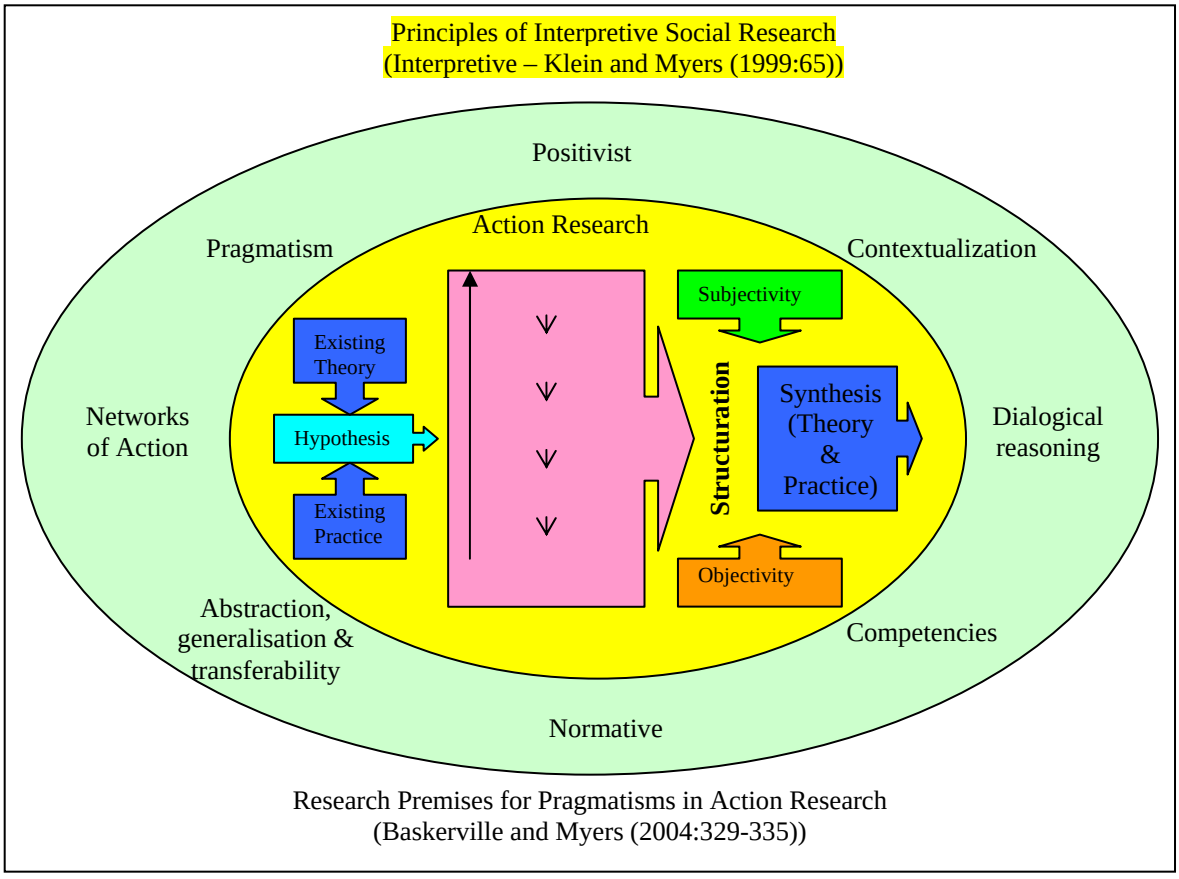

Figure 4.3: Contextual Construct for action research as an interpretation of theory and practice

The picture above at its core provides an indication of the process that would allow the research to be undertaken with due consideration of the characteristics and

[339] Korpela, M.; Mursu, A. & Soriyan, H.A. 2002. Information Systems Development as an Activity. *Computer Supported Cooperative Work*, 2002, vol.11, p.111-128.
[340] Lindgren, R., Henfridsson, O. & Schultze, S. 2004. Design Principles for Competence Management Systems: A Synthesis of an Action Research Study. *MIS Quarterly*, September 2004, vol.28, no.3, p.435-472.

activities of the research approach and the actual research undertaken. The outer circle provides some insight into the potential contextual considerations that might influence the execution of the process whilst still being required to sustain its scientific integrity the ability to make conscious decisions with due consideration of both the scientific objectives and the practical objectives of the research.

Given the relationship between the relevant theory of the research methodology and its practical application explicit contextual definition thereof becomes useful for the researcher to serve as a baseline reference for the research undertaken. Being appropriate to both the academic and practical perspectives, cognisance was taken of the implications of the issues relating to the "duality of structure" as defined by Giddens (1984:25) when defining the characteristics of structure as being contained in rules and resources and structuration as the ability to apply such rules.

4.5 ALIGNMENT BETWEEN THE RESEARCH ENVIRONMENT AND THE RESEARCH METHODOLOGY

It is considered appropriate to simplify the action research process to basic activities that can practically guide the formulation of a generic framework to guide this research at this point. According to Giddens (1984)[341] the fact that this interpretation has been verbalised constitutes an expression of learning in itself. The research activities take place in cycles as a process of continuous improvement and alignment as agreed by authors on continuous improvement. Alignment practice and theory should therefore focus on a comparison between theory and practice with clear cognisance of the prerequisite research methodological characteristics and principles to ensure an acceptable level of integrity and credibility of the research undertaken, the way in which it was undertaken and the findings.

From the discourses of especially Klein and Myers (1999)[342] on interpretive research and that of Baskerville and Myers (2004)[343] on action research it becomes clear that there are certain fundamental issues that have to be contended with during research of

[341] Giddens, A. 1984. *The Constitution of Society: Outline of the Theory of Structuration*, Cambridge, MA: Polity Press.
[342] Klein, H.K, & Myers, M.D. 1999. A set of principles for conducting and evaluating interpretive field studies in information systems. *MIS Quarterly*, 1999, vol.23, no.1, p.67-94.
[343] Baskerville, R & Myers, M.D. 2004. Special Issue on Action Research in Information Systems: Making IS Relevant to Practice – Foreword. *MIS Quarterly* vol. 28 No. 3, p. 329-335/September 2004.

this nature. As such they have established some 'universal principles' and 'premises for pragmatism' that relate to the ability to establish a research paradigm for the research that was undertaken. One of these relates to the ability to ensure that the hermeneutic aspects of the research can be addressed. When applying the characteristics of the hermeneutic principle and therefore the context of the research environment, the first issue in terms of concludability and reflexivity comes to the fore when considering the nature of all those characteristics of the environment that will affect the research. The ability to therefore define the context and specific focus of the research becomes the first obstacle to be overcome as is also the contention Denzin and Lincoln (2000:103)[344] of praxis that is action based when drawing historical realism into dialogical methodologies.

4.6 SYNOPSIS OF THE CASE STUDY UNDERTAKEN IN THE SOUTH AFRICAN DEPARTMENT OF DEFENCE

Given the requirement for understanding the context that influenced the utilisation of the research approach and methodology and the characteristics discussed above the influences that might affect its use need to be presented.

The research was undertaken with a clear declaration of intention by the top management of the DOD that an appropriate ICT management function should be established and institutionalised in the DOD given the respective roles and responsibilities of role players and stakeholders. The primary focus was to move away from decentralised management approaches that led to the disparate and inefficient utilisation of ICT that was aligned to support the specific requirements of the respective Services and Divisions. The Services refer to the SA Army, the SA Navy, the SA Air Force and the SA Military Health Services and others whilst the Divisions refer to organizations such as the Logistics Division, the Finance Division, the Human Resource Management Division and others.

It was expected that in line with theory and practice there would be some common functions that require common ICT solutions that should be managed in a corporately orchestrated manner with full cognisance of unique requirements for ICT solutions and services. The nature of the organization in its complexity should be reflected in

[344] Denzin, N.K. & Lincoln, Y.S. 2000. *Handbook of Qualitative Research*. New York: Sage Publications.

the way in which the ICT function was managed and also in the very nature of the solutions to ensure that scarce resources could be optimally utilised to deliver maximum returns.

A business transformation team was established that had to ensure that through a process of business re-engineering an appropriate function of ICT management was established with commensurate capacity and management arrangements to ensure its institutionalisation. From this transformation team the corporately centralised ICT management organization was established that had its foundation firmly based on both practice and theory.

Problems were experienced with the establishment of the process itself that would not only adhere to the relevant management and specifically planning activities, but also to the structural (organizational) requirements for institutionalisation. As the transformation and the research progressed there was a gradual shift from a position where the initial emphasis was placed on the process itself to a position where the emphasis was placed on the process within the context of the organization and related issues. These organizational issues eventually became the primary focus for successful development and institutionalisation of an appropriate strategic ICT planning process for the SA Department of Defence. This situation required an ever-increasing understanding of the strategic ICT planning process and the organizational issues that surrounded the process.

This relationship between the process and the organization necessitated a clarification and formalisation of roles and responsibilities within the ICT management function that had a direct correlation to the clarification of roles and responsibilities as required for an action research approach and methodology. Given that constant change was the essence of everyday life during the transformation process the requirement for firm baselines of reference became more and more important due to the longitudinal nature of the transformation and the research undertaken. This requirement for structure was further expanded by the high turnover of participants in the project, but was counter-acted by the establishment of a centre of excellence that served as a core competency group for the project. The roles of researcher and practitioners were clearly differentiated within this group. Fortunately due to the change in role of the researcher and the commitment of top management the distinction between researcher and

practitioners was clearly drawn and enforced within top management and managed at corporate level.

The emphasis of the research revolved around the fact that it had the following characteristics:

- It was longitudinal in that it was conducted over a period of approximately eight years.
- There were issues that involved the separation of roles and responsibilities related to the practitioner environment and the scientific research environment.
- The development of the practical and the scientific learning experience followed a structural approach that was a continuous learning improvement.
- Continuity in both the practical and the research environment became a major consideration.
- Structural issues had to be addressed in conjunction with the process issues for both the strategic ICT planning process in the DOD and the process of action research.
- Inconsistent and disjunctive maturity levels were experienced in both the practical and the research environment that was progressively stabilised and improved as the transformation and research progressed.

4.7 INFERENCES AND DEDUCTIONS AS DRAWN FROM THE PRACTICAL APPLICATION OF THE ACTION RESEARCH METHODOLOGY AND ITS CHARACTERISTICS TO THE CASE STUDY

When interpreting the requirements or characteristics for the definition of a framework for action research it became apparent that the following should be addressed in such a framework:

- The ability to define the context, timeline and specific focus of the research in compliance with the hermeneutic principle as presented by Klein and Myers

(1999) *op. cit.* and also applied by Lindgren, Henfridsson and Schultze (2004)[345].

- A clear and distinct definition of the main activities that will take place in accordance with the action research approach and methodology provided by Lee and Baskerville (2003)[346].
- A clear and unambiguous identification of the respective participants in the research to be undertaken.
- A clear and unambiguous definition of the mandates and roles of the respective participant, role players and stakeholders that will be involved in the research.
- Presentation of relevant theory as appropriate to the respective research activities and functions.
- An indication of the contextual interpretation of the findings of the research.
- An objective definition of learning conclusions as relevant to both theory and practice.

Any framework should present this flow of information between theory and practice in such a manner that it enhances the integrity and veracity of the research and its findings. To this end the following can be indicated to ensure that there is a more standardised interpretation of these guidelines that can guide the "how" as opposed to the "what" of action research.

4.8 ESTABLISHMENT OF AN APPROPRIATE FRAMEWORK TO COMBINE AND PRESENT RESEARCH AND RESEARCH FINDINGS

Garfinkel (1963)[347] indicates that "*settings are used chronologically to explicitly state those generic characteristics to ensure a common framework*". This has the implication of process as opposed to mere procedures. The fact that a specific timeline

[345] Lindgren, R., Henfridsson, O. & Schultze, S. 2004. Design Principles for Competence Management Systems: A Synthesis of an Action Research Study. *MIS Quarterly*, September 2004, vol.28, no.3, p.435-472.
[346] Lee, A.S. & Baskerville, R.L. 2003. Generalizing Generalizability in Information Systems Research. *Information Systems Research*, September 2003, vol.14, no.3.
[347] Garfinkel, H. 1963. *'A conception of and experiments with, "trust" as a condition of stable concerted actions'*, in *O. J. Harvey, Motivation and Social Interaction*. New York: Ronald Press.

can be established for the research undertaken that is aligned with the research activities presented by Lindgren, Henfridsson and Schultze (2004) *op. cit*. as well as the main research activities presented by Baskerville and Lee (2003) *op. cit.* contributes towards the credibility of the research undertaken and is presented below as applied throughout this research.

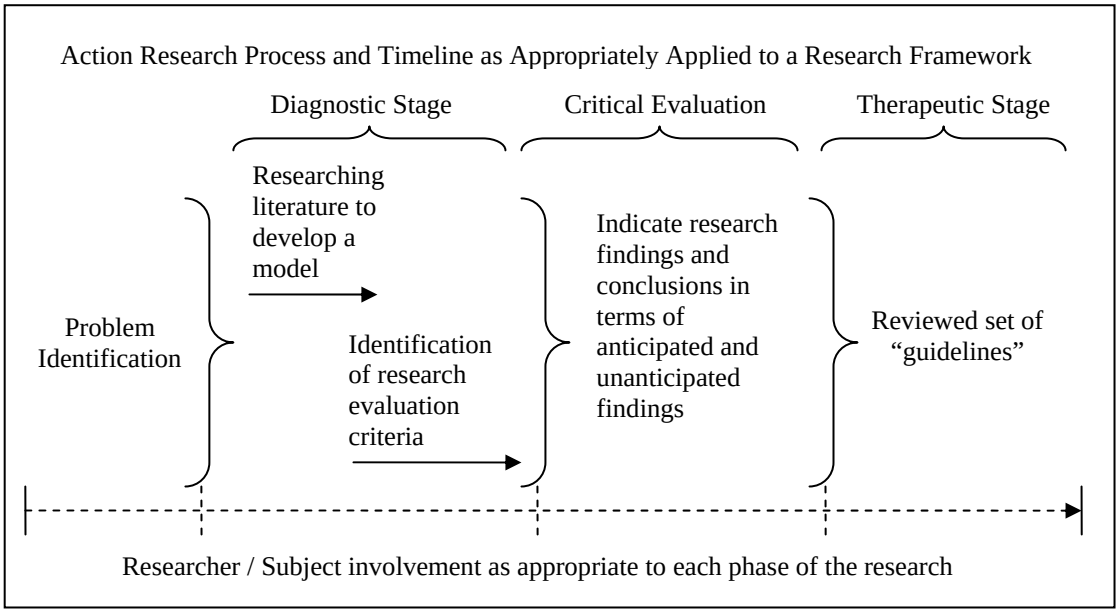

Figure 4.4: Action Research Process as interpreted from Lewin (1857) and Lindgren, Henfridsson and Schultze (2004) and Baskerville and Lee (2003)

As referred to above the very nature of action research and its requirement for collaboration between the researchers (actors) and the subjects or participants require the establishment of specific management arrangements and mechanisms when it occurs in a diversified organization. The use of such structural and management arrangements to support the research process was expected to result in a coordinated effort of checks and balances between the researcher and the practitioners as well as for practical and academic review. The quality and appropriateness of the research results for both scientific theory and for practice thus becomes a function of participation and cognition as confirmed by Giddens (1984)[348].

Given the requirement for critical analysis the ability to juxtapose the actual research process, appropriate theory, research findings and to subsequently draw conclusions from the research as a critical interpretation of theory and research findings, provides the opportunity to define a framework for its presentation. The *Summary of the Action*

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

*Research Proj*ect can therefore be presented as follows with consideration of the model of Lindgren, Henfridsson and Schultze (2004)[349] and the fact that this table will be utilised to present the research data:

[349] Lindgren, R., Henfridsson, O. & Schultze, S. 2004. "Design Principles for Competence Management Systems: A Synthesis of an Action Research Study. *MIS Quarterly*, September 2004, vol.28, no.3, p.435-472.

<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">Research Sites and Competency Management System: Provides contextual information to elucidate the activities and the nature of research and its findings. As such its sets the scene for the determination of the specific characteristics that are considered appropriate to the research problem and its expected results. The definition also sets the parameters for the research to ensure that research focus as a collaboration between the practitioners and the researcher can be sustained.</td></tr>
<tr><td colspan="3">Activity 1: E.g. Initiating the Strategic ICT Planning Process for the DOD. These activities will be strongly influenced by the research timeline as defined for the research as undertaken. The fact that this should not only follow the activities of the research methodology, but should do so in combination of the practical implications further enhances the ability to strike the balance between practice and theory.</td></tr>
<tr><td>The ability to pre-emptively plan and execute any activity provides the opportunity for review of the activity to serve as a basis for corrective actions. These are in accordance with any control function that needs to be performed where continuous improvement is the objective. This should however be done with due consideration of the fact that the changes required should be expressed as learning that can be substantiated in terms of its practical and theoretical implications. The actions relate to the following activities as described by Lindgren, et. al (2003) op. cit:
➢ Diagnosing:
➢ Action Planning:
➢ Action Taking:
➢ Evaluating:
Note: In the case of the SA DOD the research activities were driven by specific objectives related to the function of strategic ICT Planning as an appropriate process for the DOD. To this end the following objectives drove the research:
o The development of a plan to perform the function.
o The establishment of an appropriate ICT. methodology for the DOD
o Appropriate participation by all role players.
o The establishment and sustainment of appropriate skills and staff capacity to perform the ICT function.
o Implementing appropriate tools to support the strategic ICT planning function of the DOD.</td><td>The ability to apply research methodology and ensure that its practical implications can be utilised to enhance practice has the characteristic that it guides practice. This is however a two-way interaction between practice and theory that is dynamically iterative in nature. As such this interaction has to be formalised to ensure that the interaction can be formalised in a structured manner and focused on issues that are mutually agreed to. These should be relevant to practice, scientific theory and research methodology. From the application of Action Research Theory by Lindgren, et al. (2003) op. cit. this can be described as follows
➢ Researcher – Client Agreement:
➢ Cyclical process:
➢ Guiding Theory:
➢ Change through Action:
Note: In the case of the SA DOD these issues were addressed as part of the transformation process of the ICT function, whilst the implications from a research perspective were actively and consciously integrated and aligned with the process. Specific care had however to be taken to ensure that the focus and conditions of research and the maintenance of its objectivity was sustained. This sometimes placed the researcher and the organization in situations of conflict, but this was decreased as the organizational and process maturity of both the researcher and the organization improved.</td><td>The requirement for a continuous evaluation of both the theoretical or scientific implications of the research and the practical implications can be simplified by utilising the respective classifications for “competency” as defined by Lindgren, et al. (2003) op. cit. It provides a clear and distinct framework to indicate the improvement in ‘competency’ as the research progresses for both the scientific interests and the practical interests.
➢ Transparency of Competence-in-Stock:
➢ Real-time Capture of Competence-in-Use:
➢ Interest Integration as Competence-in-Making:
➢ Flexible Reporting as Contribution to Competence-in-Making:</td></tr>
<tr><td colspan="3">Activity 1: Summary of Learning / Contribution: The presentation of the learning / contribution can be focused by the systems model or framework as established for each organization. In the case of the SA DOD it was focused by issues such as Strategy and Governance, Culture, Organization, Competency, Facilities and Equipment, Process, IS / ICT, Finances, Performance. The learning experiences as derived from the research can be presented as that which is relevant to practice and that which is relevant to scientific theory. The interaction between the two environments and the fact that there is a direct correlation between the two environments results in a situation where the theory becomes “theory in practice” and not merely “competence in practice” or “competence in theory”.</td></tr>
</table>

Table 4.1: Framework for Presentation and Summary of Research as adapted from Lindgren (2004) *et al.*

From the above presentation the researcher sequentially indicates the respective activities as undertaken during the research. It also allows the researcher to indicate the contextual issues that relate to the research in terms of the hermeneutic requirements. This becomes extremely important for the reader as it can be expected that the cycle of diagnosing and implementing therapeutic action is largely dependent upon the environment or context. From the research undertaken it can be expected that the corrective actions taken could influence the environment and therefore the context for following activities.

Such a manner of presentation provides a clear and distinct opportunity to explicitly describe the timeline of activities that occurred during the research. The fact that the ability to present the findings of the research in a structured manner provides the reader and/or assessor with the opportunity to be able to directly relate the specific theory and practice as appropriate to the relevant research activity sets the scene for a more direct analysis of the results.

4.8.1 Framework for Findings

To ensure that the research findings can be presented with due consideration of the research data in a manner that will be cognisant of the systemic and therefore contextual functional considerations related to the research undertaken, a framework can be constructed to present such findings. In the case of the DOD the organization already established and accepted a holistic framework to guide the systemic approach towards systems management. These components of the systemic framework focused on ensuring that the dynamic relationships between the respective components of successfully institutionalising the function of strategic ICT planning are managed with the expectation that this will improve the functioning of the organization as a whole. This concept is in line with the interpretation of a systemic approach as defined by Checkland and Scholes (1990:18)[350]. As such the systemic approach includes ICT products that are subject to the influences of all the other aspects that will ensure a systemic approach towards ICT management for the DOD. The framework can be presented as follows:

[350] Checkland, P.B. & Scholes, J. 1990. *Soft Systems Methodology in Action*. Chichester, England: John Wiley & Sons.

Focus Area (Systemic)	**New Findings**
Strategy and governance	Findings for Practice and Scientific Theory
Culture	
Organization	
Competency	
Facilities and equipment	
Process	
IS / ICT	
Finances	
Performance	

Table 4.2: Framework for the Summary of Research Findings as appropriate to Practice and Scientific Theory

4.8.2 Framework for Testing Pragmatism

From the work done by Baskerville and Myers (2004)[351] it is clearly indicated that in its essential form action research relates to problem solving and has the primary activities of a diagnostic stage and a therapeutic stage. As such it can therefore be expected that any framework that is presented should reflect these activities. Given the nature of the process of action research as initially presented by Lewin (1947)[352] and the steps for action research that started off as being analysis, fact finding, conceptualisation, planning, implementation and evaluation and further defined within the construct of a diagnostic phase and a therapeutic stage, any framework should also reflect these activities. This can in combination with the premises for pragmatisms as discussed above, be presented as follows:

Premises	Diagnostic Stage			Therapeutic Stage		
	Analysis	Fact Finding	Conceptualisation	Planning	Implementation of action	Evaluation
Pierce's Tenet						
James's Tenet						
Dewey's Logic						
Mead's Tenet						

Table 4.3: Premises for Pragmatism in Research as interpreted from Baskerville and Myers (2004) and Lewin (1957)

[351] Baskerville, R & Myers, M.D. 2004. Special Issue on Action Research in Information Systems: Making IS Relevant to Practice – Foreword. *MIS Quarterly*, September 2004, vol.28(3), p.329-335.
[352] Lewin, K. 1947. Frontiers in group dynamics II. *Human Relations*, 1947, Issue 2, p.143-153.

The table presented above has the implication that it not only serves as a checklist for pragmatism that covers the action research activities, it also provides a framework that can be utilised to summarise comments. Such comments can in fact be utilised to present the respective learning aspects as experienced during the research project.

4.9 CONCLUDING DISCUSSION

The ability to ensure that the findings of specific action research can have wider application resides in the generalisation of the findings. According to Giddens (1984:xix)[353] generalisation refers to two aspects that relate to situations when "*that which actors know and apply in actions even though the actor might give new discursive form to them"* and where *"those circumstances or aspects of circumstances of which agents are ignorant which acts on them unbeknownst to them*". In addition to this Giddens also indicates (1984:xx) *op. cit.* a dualism that relates to the ability to be objective as opposed to subjectivity of which researchers might make themselves guilty. This is irrespective of the fact that such knowledge might be ontological or epistemological in nature. Giddens further contends that there is a strong causal relationship between ontology and knowledge and epistemology and circumstances and that the issues of relativism become more important in the process of verification and even falsification. It is the opinion of this author that this is also appropriate to the process of presenting an interpretation of Action Research in an example of a framework. Even this single interpretation should not be considered as generalised, but rather as an instance of application as appropriate to the specific circumstances of the research undertaken.

The interpretation referred to above can be enhanced when combined with the opinion of Mårtensson and Lee (2004)[354] when they refer to the concept of Dialogical Action Research as forthcoming from their research at the Omega Corporation. One of the aspects presented by them has the implication that there are seven potentially significant ramifications that should be recognised when 'bringing scientific research and the knowledge of the practitioner into contact'. With due consideration of the "hermeneutic principle" and its implication for recognising context as presented by

[353] Giddens, A. 1984. *The Constitution of Society: Outline of the Theory of Structuration*, Cambridge, MA: Polity Press.
[354] Mårtensson, P. & Lee, A.S. 2004. Dialogical Research at Omega Corporation. *MIS Quarterly (Special Edition),* September 2004, vol.28, no.3, p.507-536.

Klein and Myers (1999)[355], the relationship between the scientific researcher and the practitioner can be presented as follows:

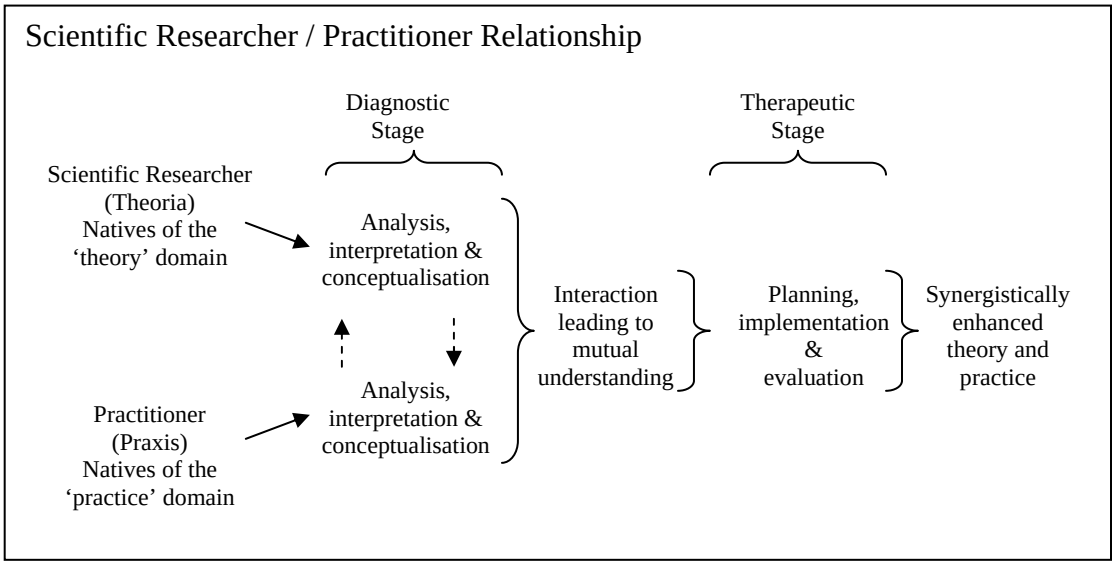

Figure 4.5: Illustration of the researcher / practitioner relationship

Given the fragmented nature of ICT and the variety of circumstances that surround the possible application an action research process in such a diversified environment, generalisation should be based on an understanding of those general principles that will guide the application of such a research process. Cognisance should also be taken of the fact that in the "*codification of rules*" as alluded to by Giddens (1984:21) *op. cit.* in consideration of Wittgenstein (1972)[356] the focus is placed on procedures of "*actions as aspects of praxis*" (practice). To this end with due consideration of the hermeneutic implications and requirements Giddens (1994:22 & 23) clearly states that "*most of the rules implicated in the production and reproduction of social practices are only tacitly grasped by actors: they know how to 'go on'. The discursive formulation of a rule is already an interpretation of it and may alter the form of its application*".

As such the formulation of generalised rules to set up frameworks should be such that it can be applied with specific tailoring to any set of circumstances with the clear and unambiguous understanding that it should be contextually interpreted in its application.

[355] Klein, H.K, & Myers, M.D. 1999. A set of principles for conducting and evaluating interpretive field studies in information systems. *MIS Quarterly*, 1999, vol.23, no.1, p.67-94.
[356] Wittgenstein, L. 1972. *Philosophical Investigations*. Oxford: Blackwell.

4.10 CONCLUSIONS

Given the fact that the development and presentation of the framework for the application of critical action research in this instance, was derived from actual research where complexity was the essence of the research and the research environment, the ability to determine firm reference baselines that could serve to guide the research became imperative. The ability to ensure collaboration between the environments and perspectives of the researcher and the practitioners whilst still being able to ensure that objectivity of both the research methodology and the actual research undertaken was sustained, would have been greatly augmented if such a framework had been established prior to the research being undertaken - as opposed to having been established as a result of the research undertaken.

The opinions expressed is therefore a combination of theory and practice to try and get to the point where there is alignment and balance between “practice-in-theory” and “theory-in- practice” as opposed to “competence-in-practice” and “competence-in-theory”. The essence of this is that there should be a dynamic and iterative yet causal relationship between the ‘what’ and the ‘how’ of theory and the ‘what’ and ‘how’ of practice as being mutually inclusive yet two distinct environments. This is considered appropriate to the triangular relationship between research methodology, scientific theory and practice as will be presented in terms of this framework in the next chapter.

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.

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[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.

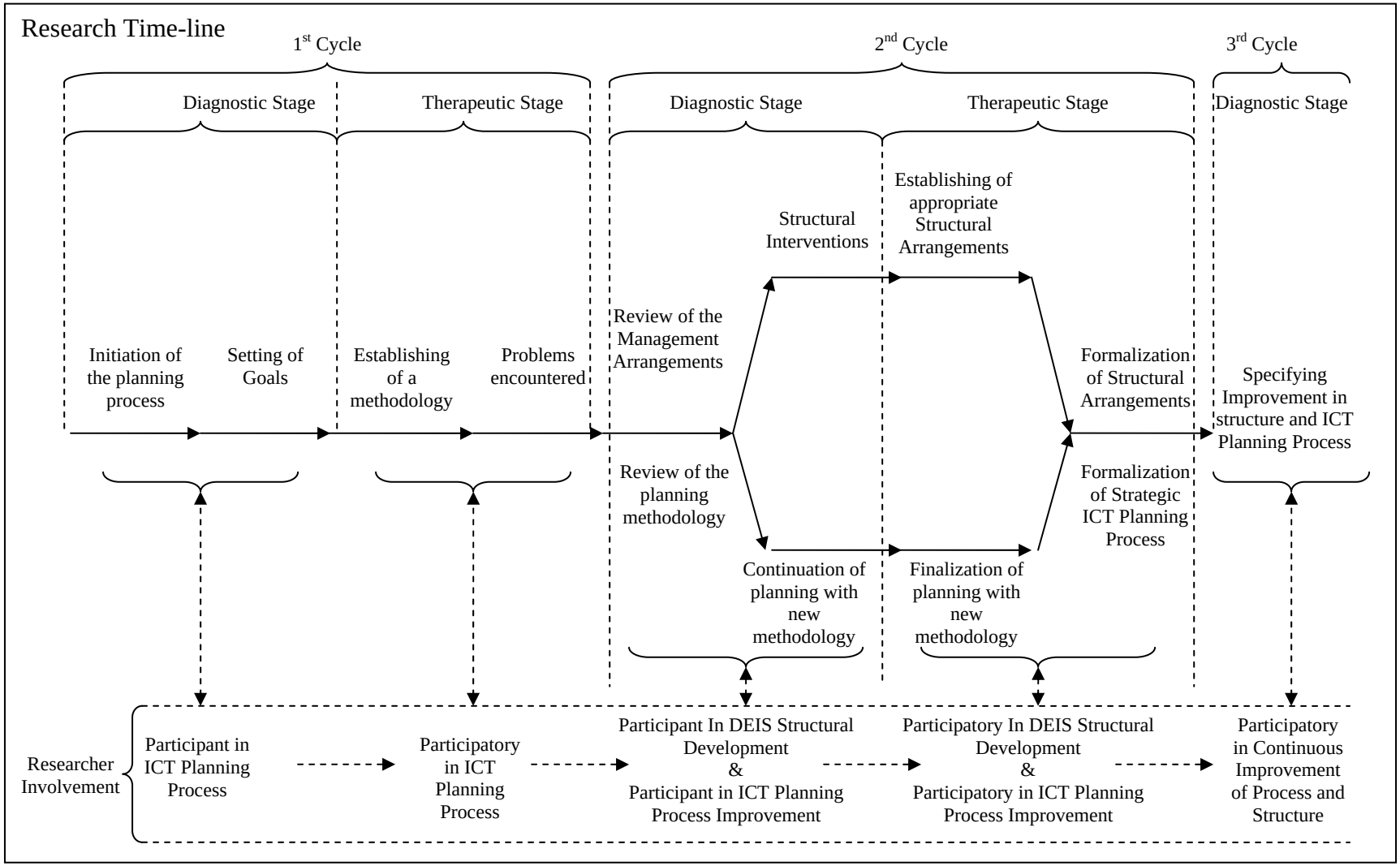

Figure 5.1: Timeline as followed during the research period where the focus was on the actual execution of the planning process, but with due consideration of the research methodology

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.

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[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.

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[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

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[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

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[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.

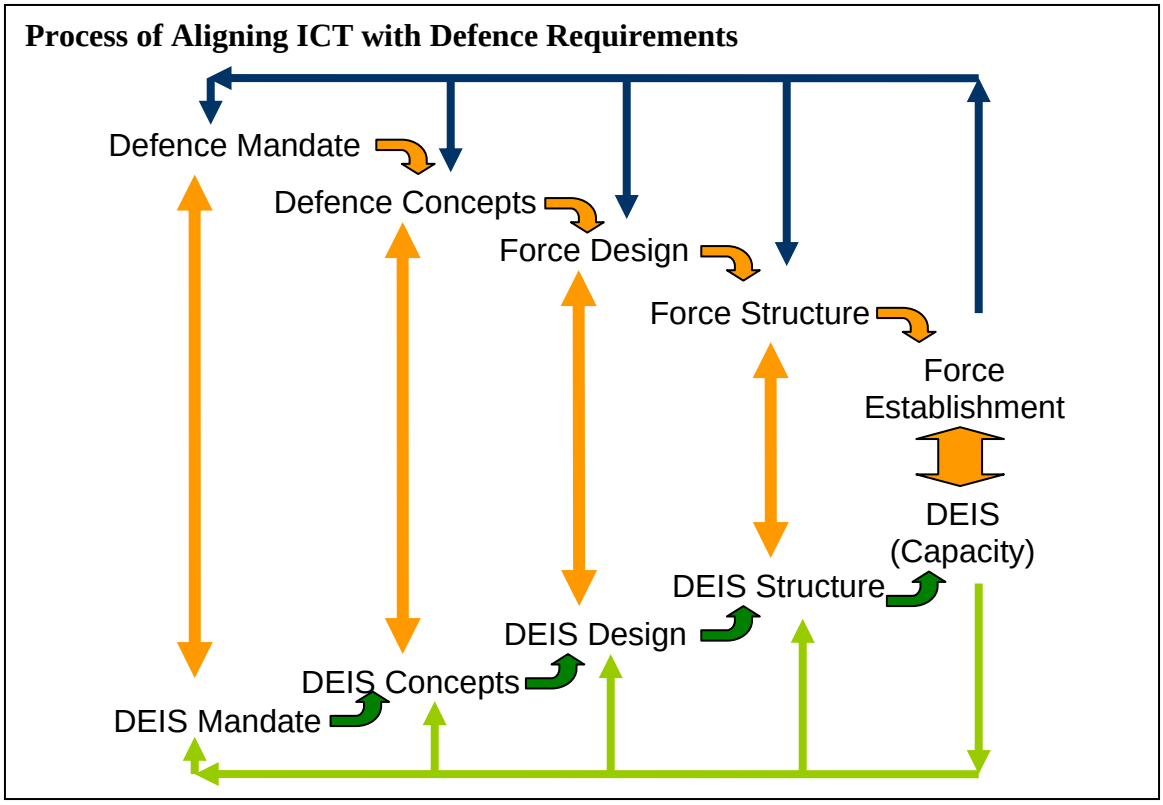

Figure 5.2: Process of aligning strategic ICT Planning for the DEIS with Business Strategy as appropriate to the Defence Function

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.

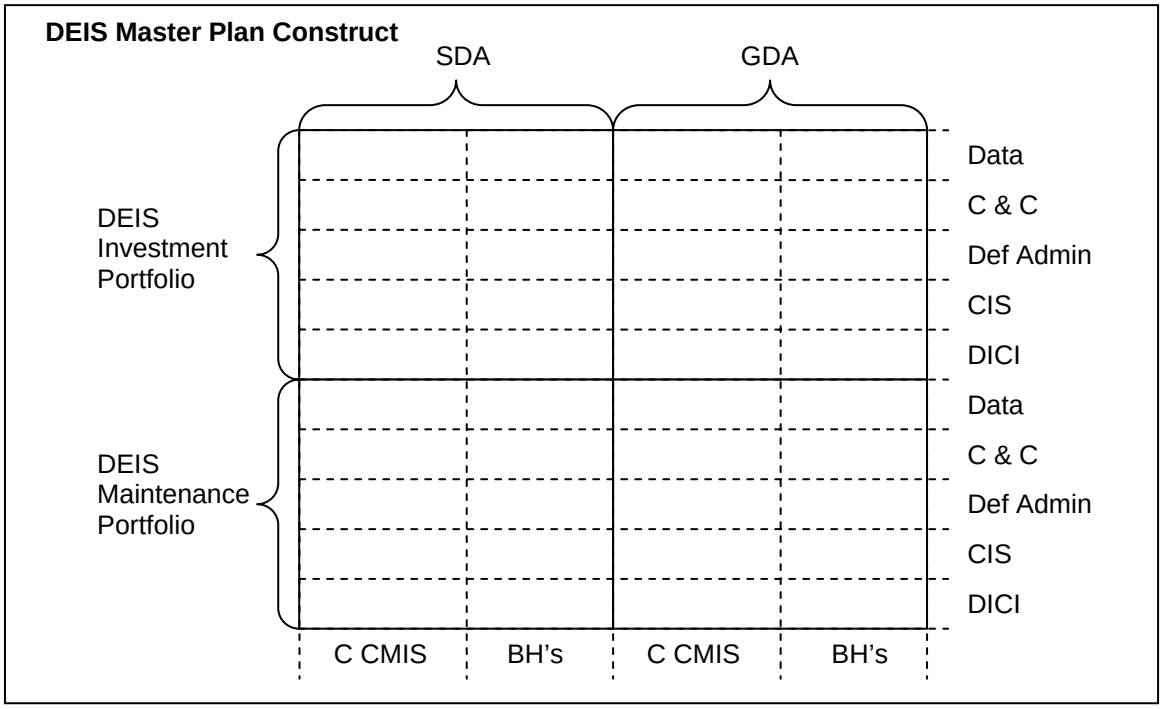

Figure 5.3: DEIS Master Plan Construct to Provide a Corporate Framework for DEIS SD Implementation

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.

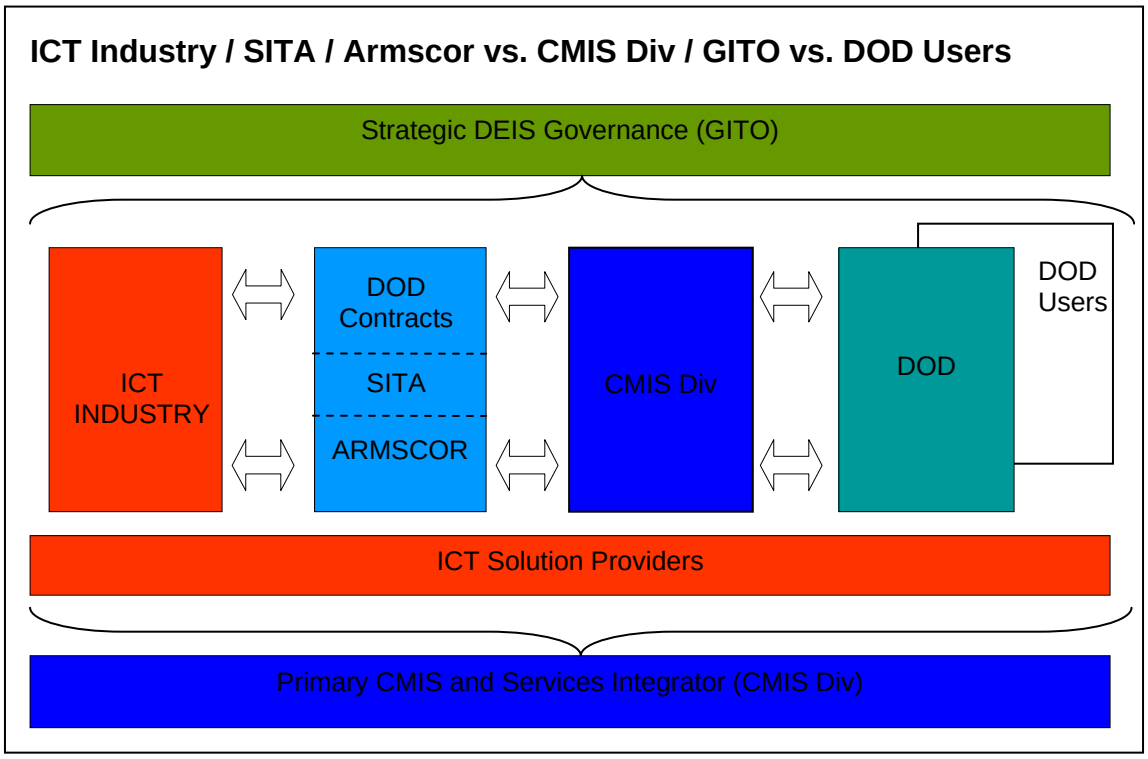

Figure 5.4: Rational Supply Chain for CMIS and Services Management in the DOD

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.

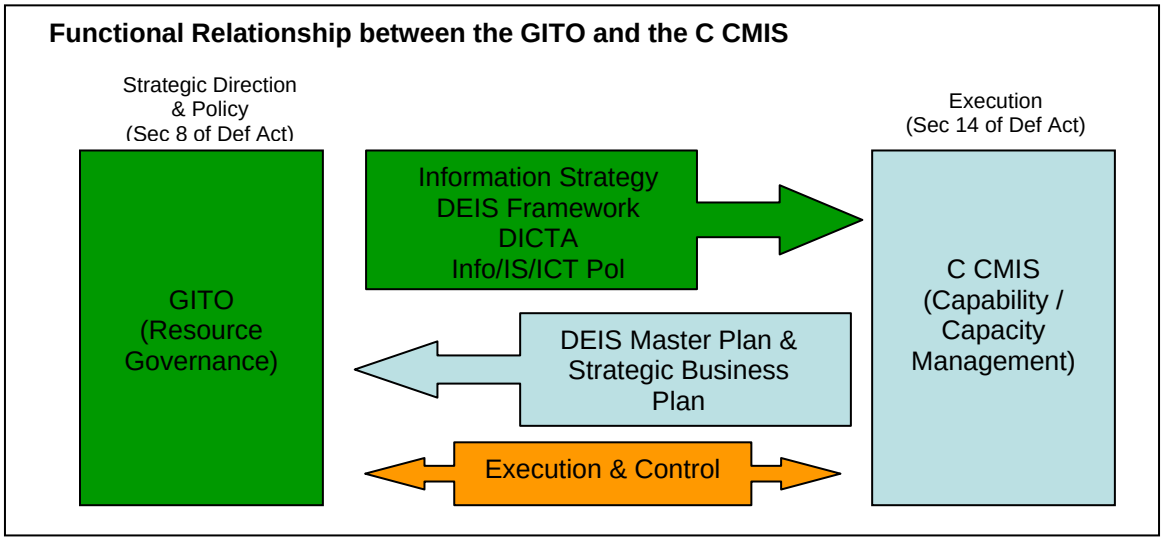

Figure 5.5: Functional Relationship between GITO and the C CMIS as the Primary ICT System Integrator

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.

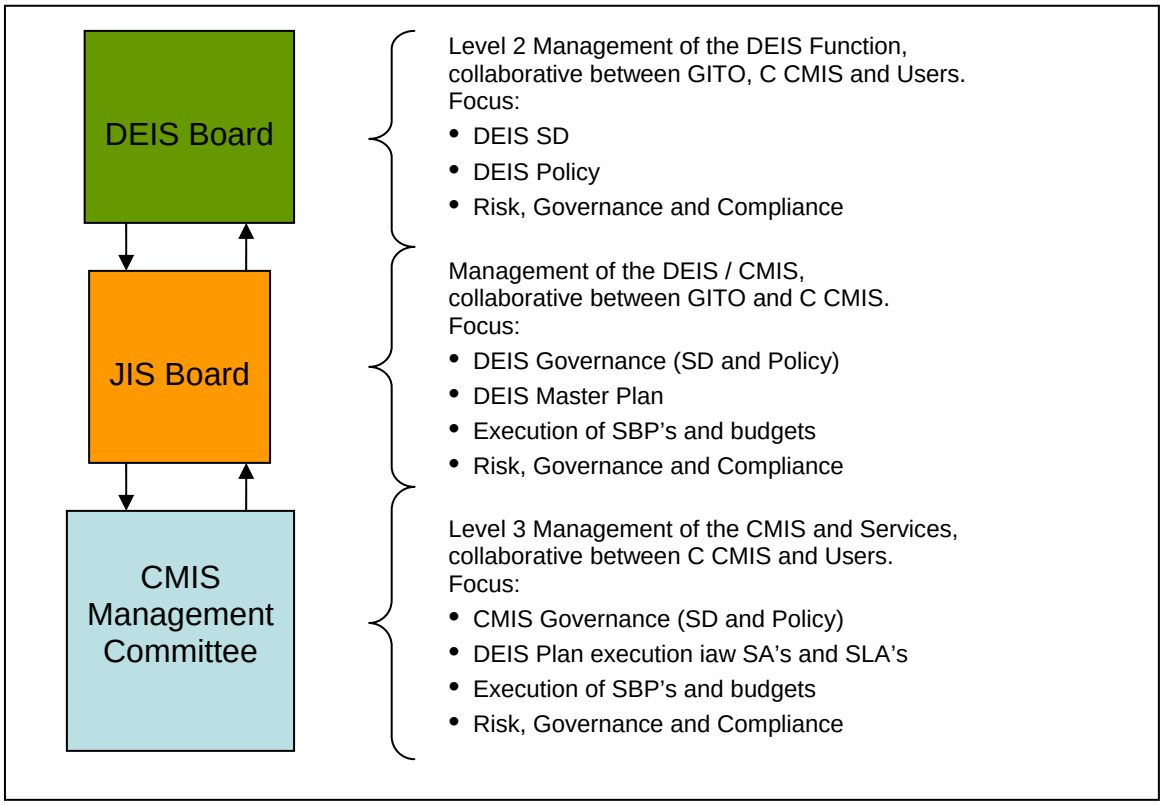

Figure 5.6: DEIS Management Arrangements and Mechanisms

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.

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[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		

SUMMARY OF ACTION RESEARCH PROJECT		
Research Activities	**Practice (Praxis)**	**Theory (Theoria)**
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.		
Activity 5.1: Identification of Required Structural Interventions		
Diagnostic Stage: 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. Therapeutic Stage: This stage was characterised by the increased understanding of the nature and implication of the appropriate regulatory framework and defence-	Researcher – Client Agreement: 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. Cyclical process: Once again the process followed was dynamically iterative with due consideration of the participation of relevant role players	Transparency of Competence-in-Stock: The same skills were in evidence as relevant to the function of structuring with due consideration of the task at hand. Real-time Capture of Competence-in-Use: 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. Interest Integration as Competence-in-Making: 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. Flexible Reporting as Contribution to Competence-in-Making: The standard mechanisms were utilised with full participation from both a functional and a

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>
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<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>
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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:

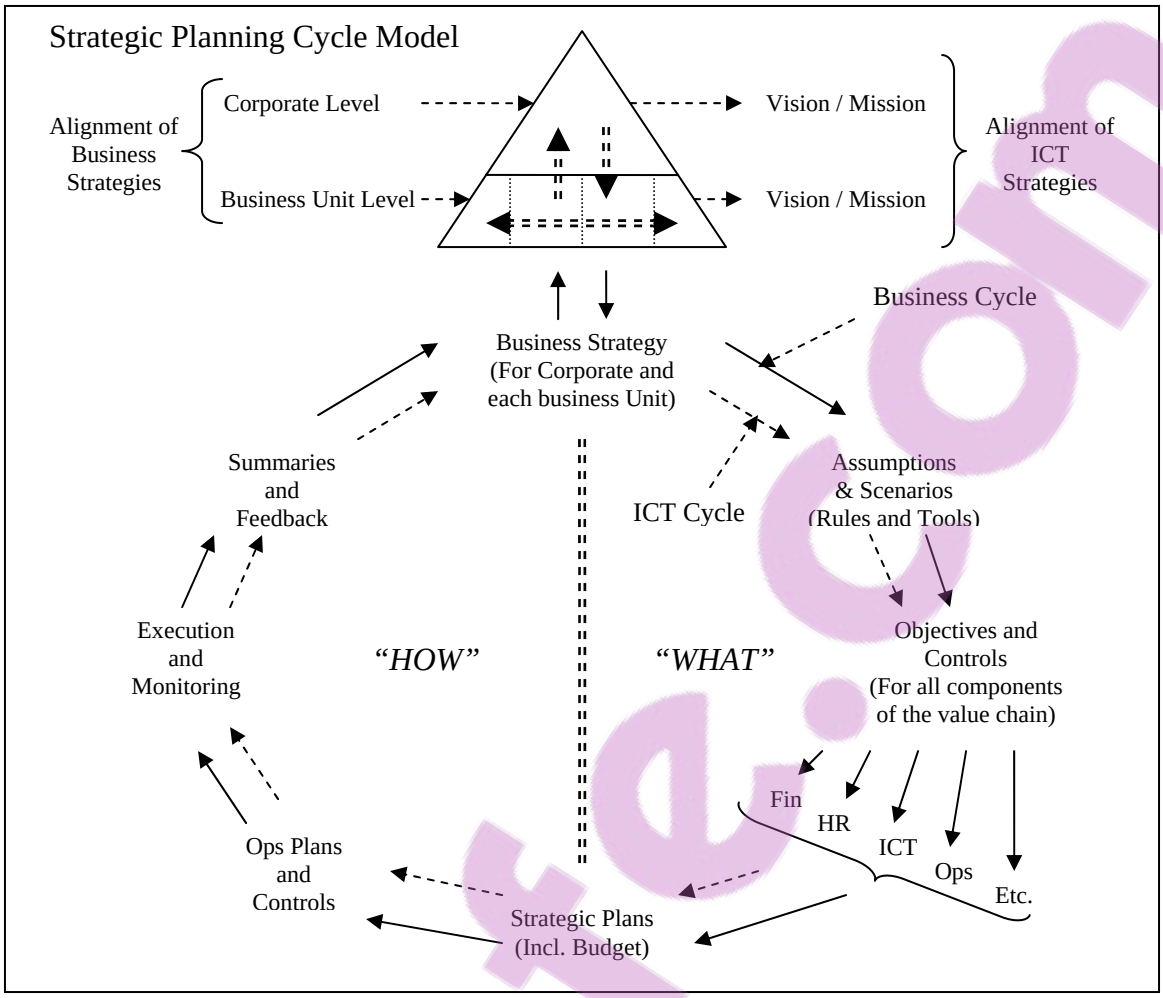

Figure 5.7: Strategic Planning Model as adapted from an interpretation by Smith A. J. (2001)[395] and a general interpretation of Ward and Griffiths (1996)[396]

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:

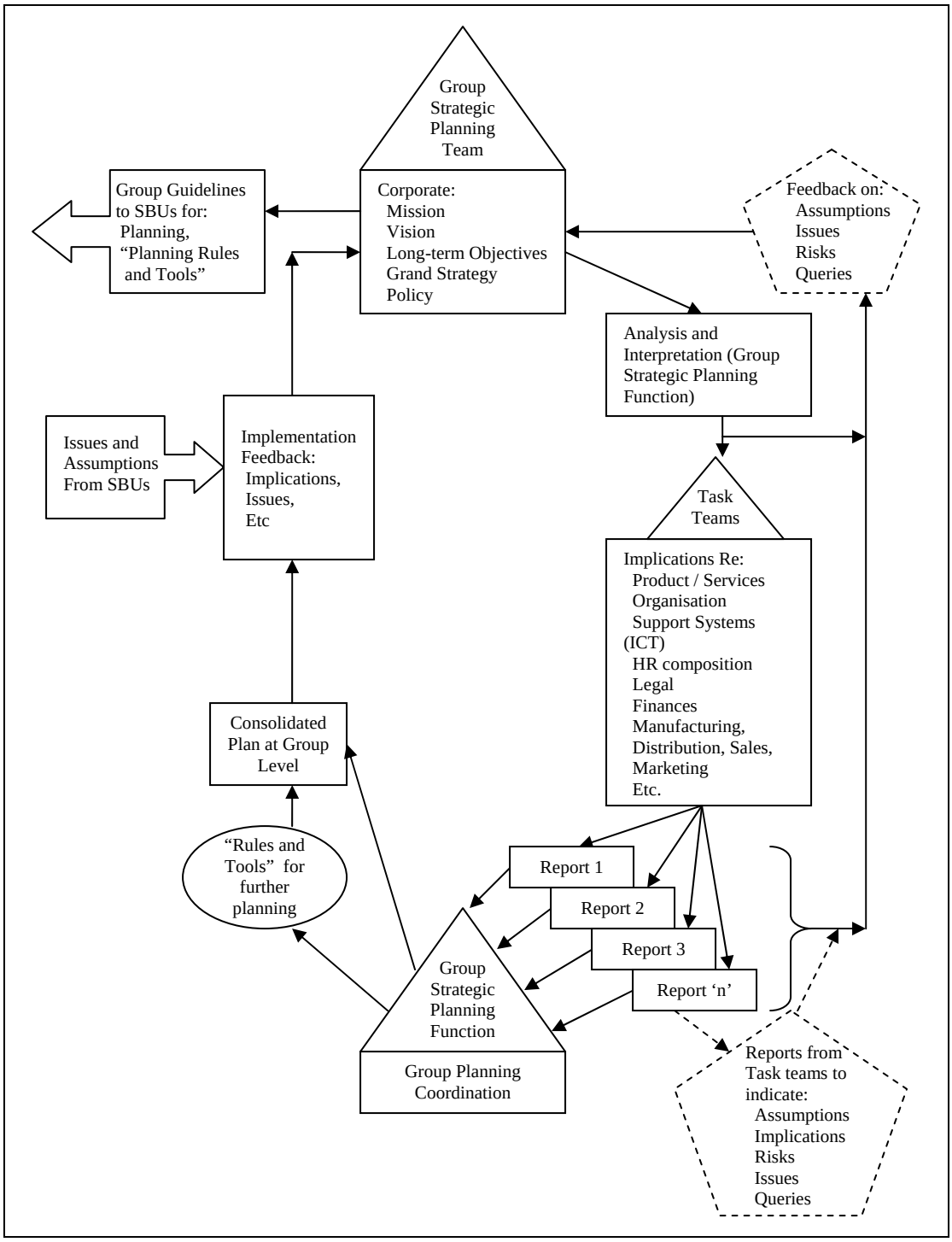

Figure 5.8: Strategic Enterprise Planning (Group level) as Appropriate to Strategic ICT Planning in Diversified Organizations

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:

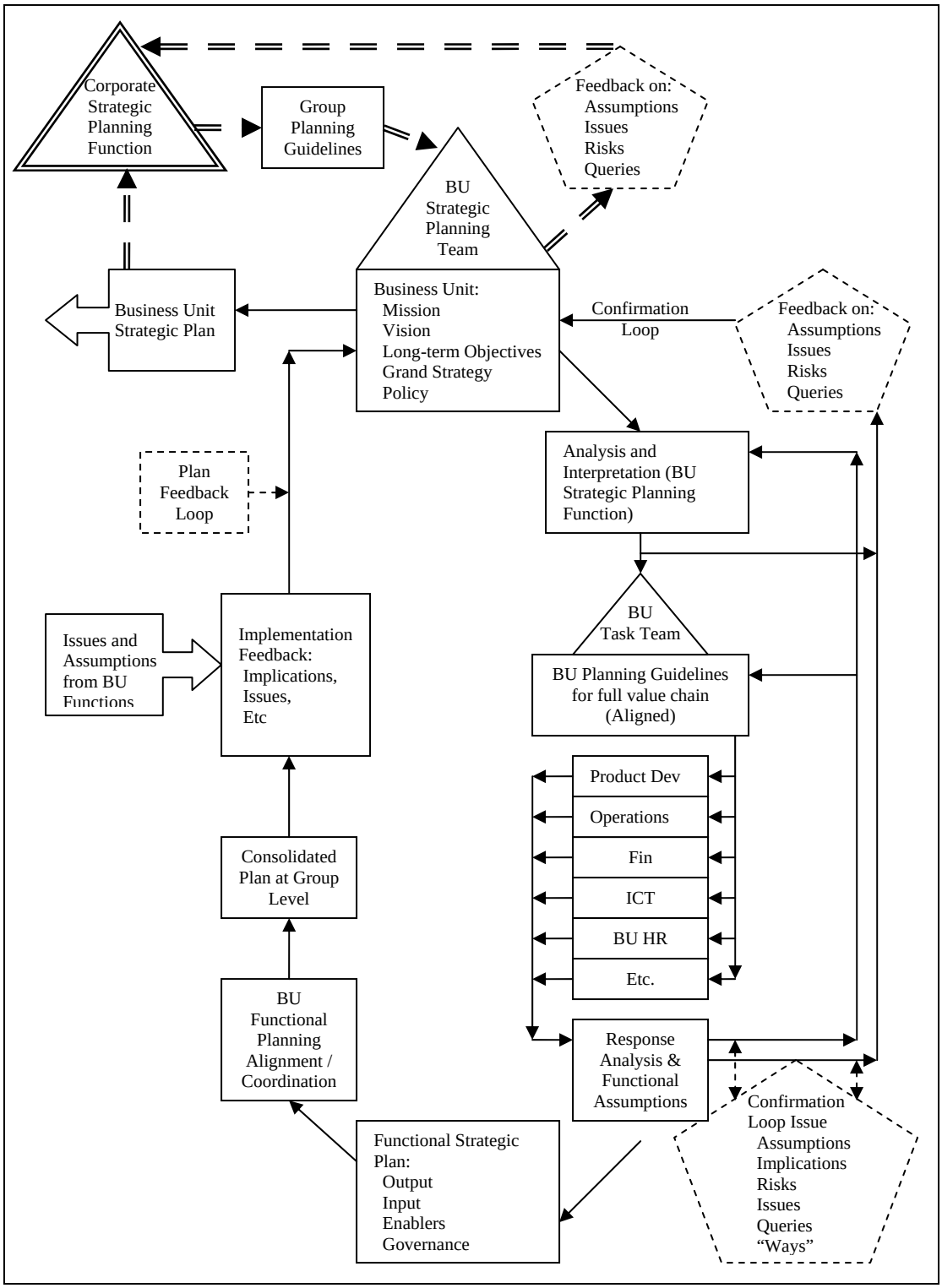

Figure 5.9: Strategic Business Unit Planning as Appropriate to Strategic ICT Planning in Diversified Organizations

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.

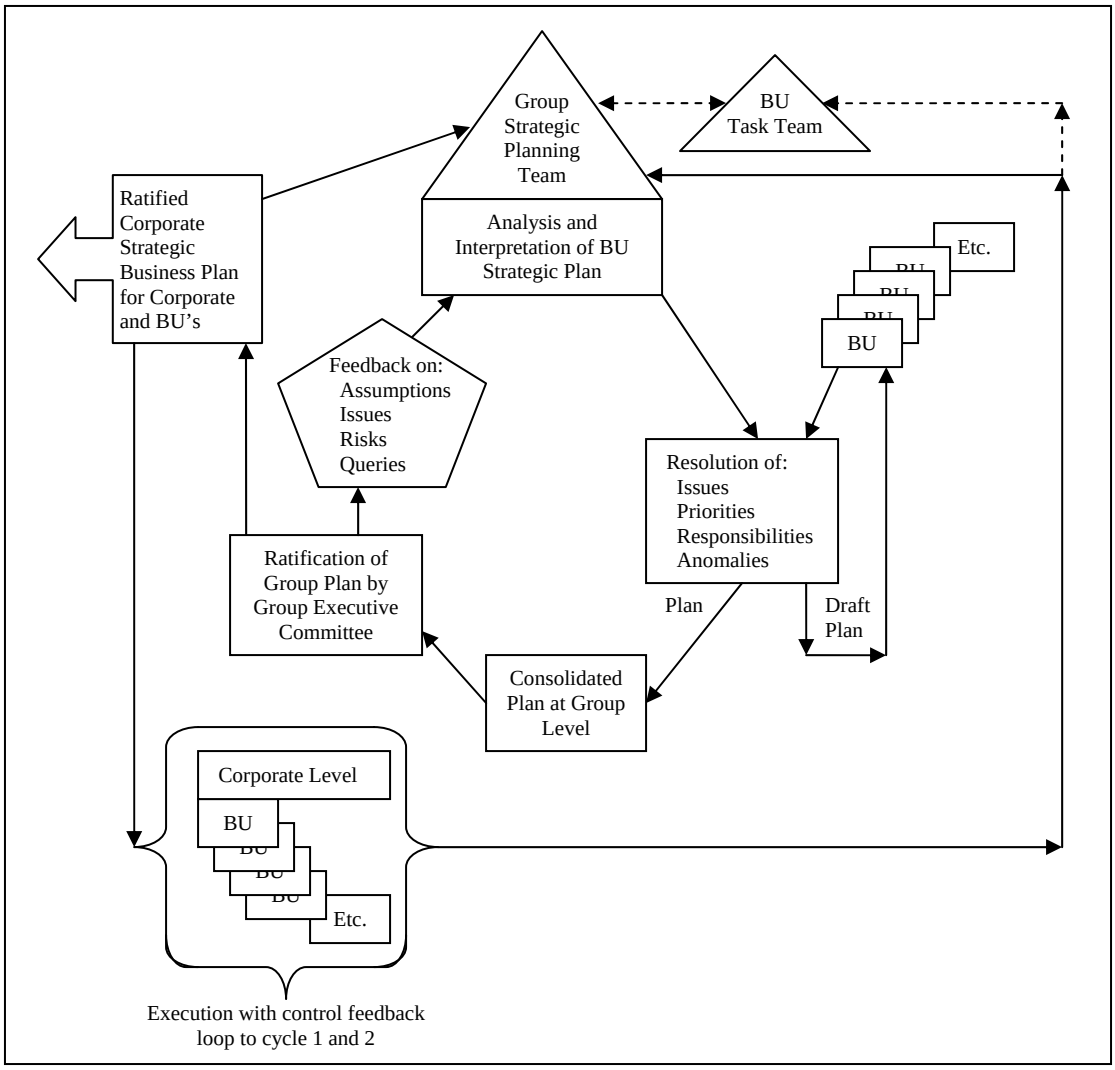

Figure 5.10: Interaction of strategic planning at enterprise level and strategic planning at business unit level as appropriate to strategic ICT planning in diversified organizations

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:

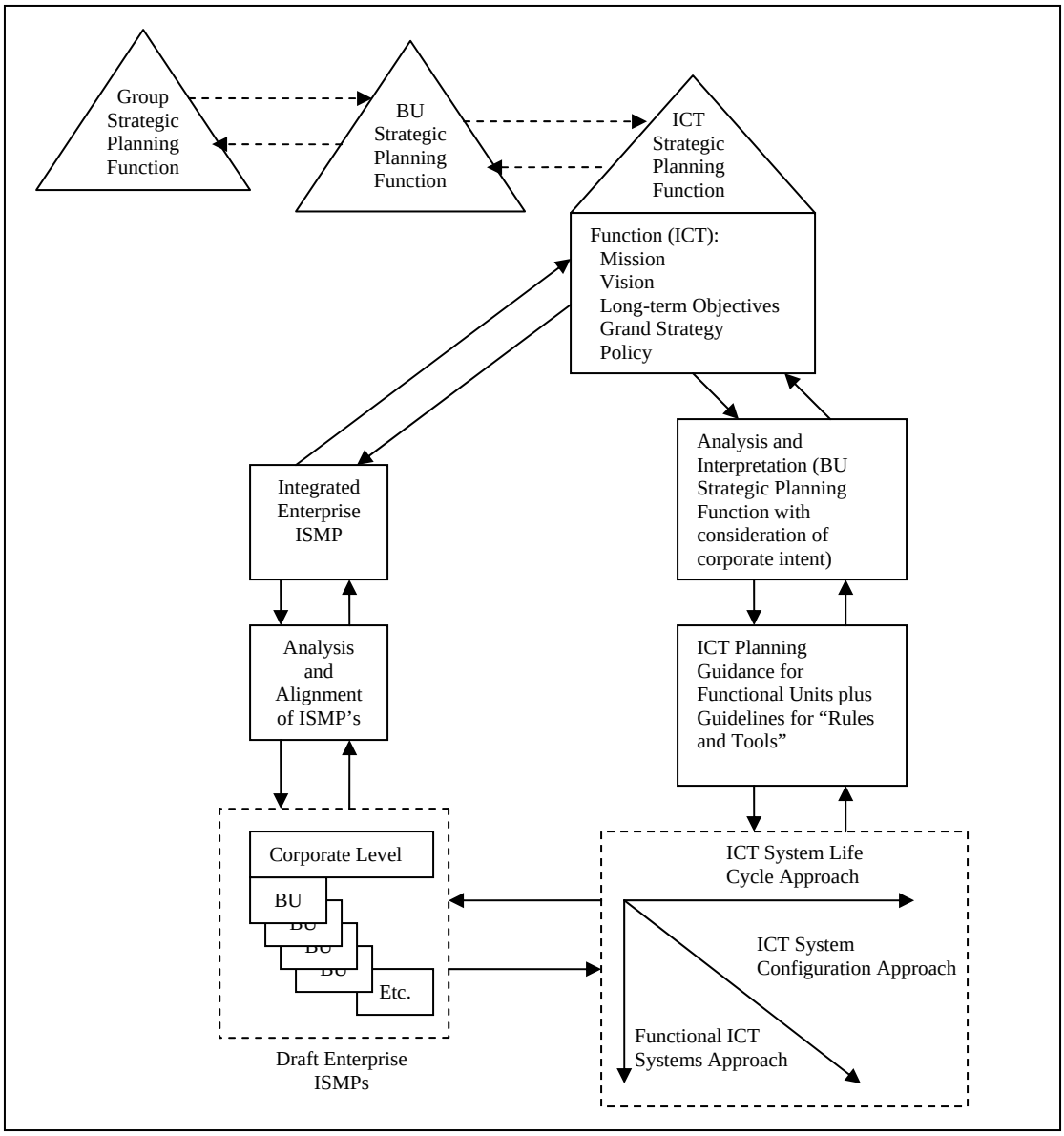

Fig 5.11: Strategic ICT Planning Process for Diversified Organizations as part of strategic business planning in a Diversified Organization

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.

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

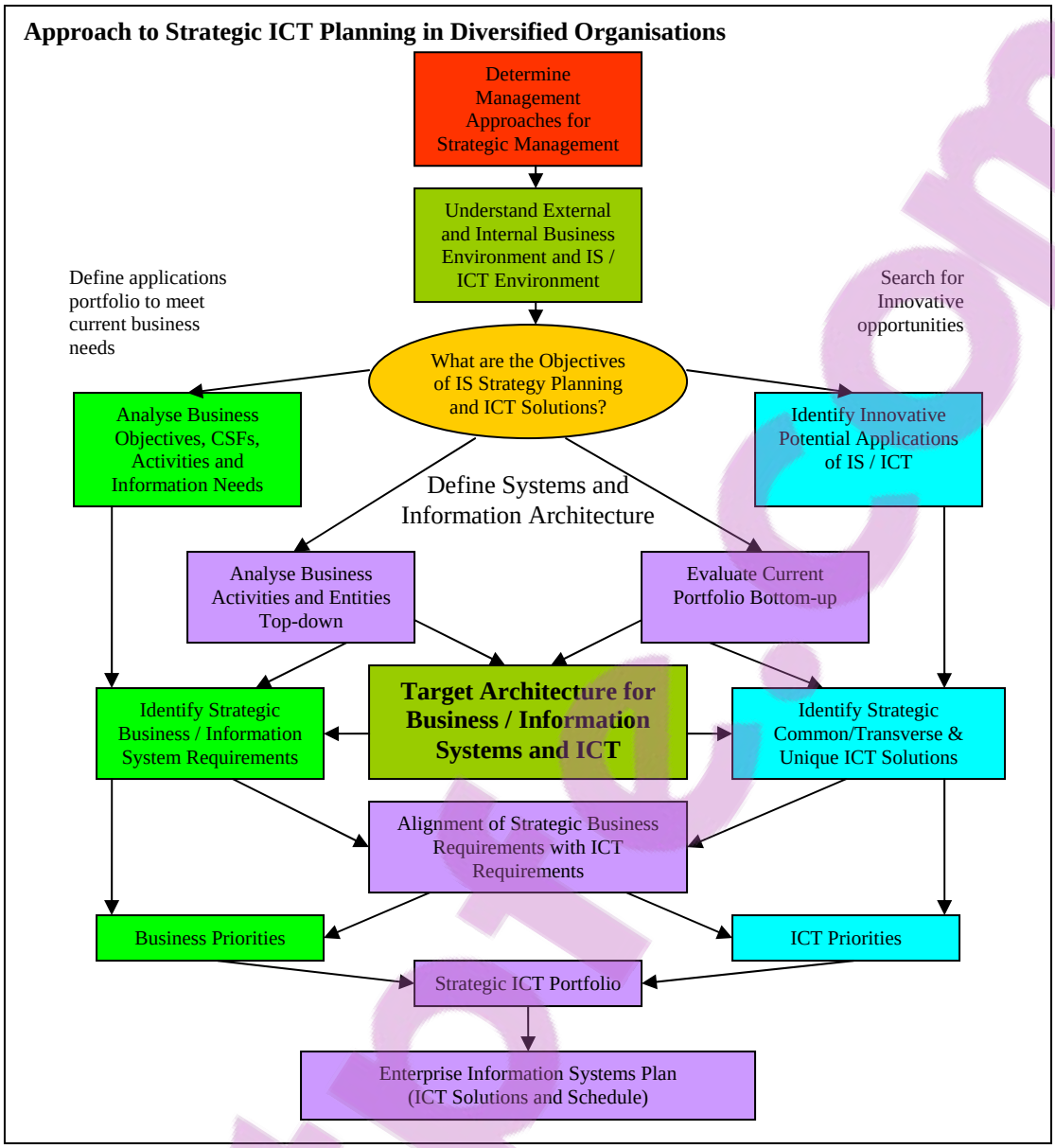

Figure 5.12: Approach to Strategic ICT Planning in Diversified Organizations as Adapted from Ward and Griffiths (1996:137)

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.

6 CHAPTER 6: EVALUATION OF RESEARCH METHODOLOGY, RECOMMENDATIONS AND CONCLUSIONS

6.1 EVALUATION OF RESEARCH METHODOLOGY

As presented by Denzin and Lincoln (2000)[399] the ability to determine a single deviation from existing theory as a result of action-based praxis is a characteristic of action research. The verification of these research findings in relation to these specific circumstances when compared to existing theory as described by Flyvbjerg (2001)[400] when referring to authors such as for example Popper (2000)[401] regarding the activity of falsification, confirms what Denzin and Lincoln (2000) *op. cit.* say when indicating that even a single instance of deviation from existing scientific knowledge can be an indication of generalisability as described by Lincoln and Guba (1985)[402] and Stake (1982)[403]. The emphasis is therefore clearly on the pragmatism of the research and its findings and not on the generalisation or transferability thereof.

Given the nature of the research undertaken and the appropriateness of the relevant foci for this research it can be confirmed that the establishment of an appropriate strategic ICT process for the DOD affects perspectives such as presented by Baskerville and Wood-Harper (1998)[404] regarding the following was applied and realised:

- Social and Organizational Science
- Organizational Learning
- Process Consultation
- System Science

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[399] Denzin, N.K. & Lincoln, Y.S. 2000. *Handbook of Qualitative Research*. New York: Sage Publications.
[400] Flyvbjerg, B. 2001. *Making social science matter: Why social enquiry fails and how it can succeed again.* Translated by S. Sampson. Cambridge, UK: Cambridge University Press.
[401] Popper, K. 2000. *The logic of scientific discovery*. 6th ed. London: Routledge.
[402] Lincoln, Y. & Guba, E. 1985. *Naturalistic inquiry*. Newbury Park, CA: Sage.
[403] Stake, R. 1982. Naturalistic generalisation. *Review Journal of Philosophy and Social Science*, 1982, vol.7, p.1-12.
[404] Baskerville, R & Wood-Harper, A.T 1998. Diversity ion information systems action research methods. *European Journal of Information Systems*, 1998, vol.7, p.90-107.

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About the requirement for this research to be scientific whilst conforming to the requirements for pragmatism, the research can be evaluated against the interpretation presented by Baskerville and Myers (2004)[405] regarding the following.

- Peirce's tenet (1905)[406] that indicates that all human concepts are defined by their consequences.
- James's tenet (1890)[407] that indicates that truth is embodied in practical outcome.
- Dewey's Logic of Controlled Enquiry (1938)[408] where rational thought is interspersed with action.
- Mead's tenet (1913)[409] that human action is contextualised socially and human conception is also social reflection.

To this end the following can be concluded:

Research Premises	**Research Findings**
Pierce's Tenet	All human concepts are defined by their consequences: Throughout this research the approach of cause and effect was evident when considering the fact that the cycle that was followed consisted of an interpretation of existing theory or practice given the nature of the intention. To this end the dynamically iterative process of continuous review and improvement contributed towards the understanding that was created and expanded upon to the point of institutionalisation of the strategic ICT planning process in the DOD.
James's Tenet	Truth is embodied in practical outcome: This premise is confirmed by the fact that the strategic ICT planning approach as developed and utilised / implemented resulted in approved strategic direction for the management of the Defence Enterprise Information Systems. The establishment of an appropriate strategic ICT planning process and its alignment with business was further enhanced by the definition and implementation of appropriate structural arrangements and mechanisms appropriate to the DEIS management function as approved by the DOD plenary strategic workshop conducted in June 2006. The

[405] Baskerville, R & Myers, M.D. 2004. Special Issue on Action Research in Information Systems: Making IS Relevant to Practice – *Foreword: MIS Quarterly*, September 2004, vol.28(3), p.329-335.
[406] Peirce, C.S. c1905. *"The Architectonic Construction of Pragmatism."* Collected Papers of Charles Sanders Pierce, Vol. V, Edited by A.W. Burks. Cambridge, MA: Harvard University Press, p.3-6.
[407] James, W. 1890. *The Principles of Psychology, Vol. 1*, New York: Henry Holt & Co.
[408] Dewey, J. 1938. *Logic: The Theory of Enquiry*. New York: Henry Holt & Co.
[409] Mead, G.H. 1913. The Social Self, *Journal of Philosophy, Psychology and Scientific Methods*, 1913, vol.10, p.374-380.

Research Premises	Research Findings
	fact that all of these aspects are now represented in approved DEIS related policy that is appropriate to the whole DOD further confirms this premise. The strategic direction as managed in terms of the approved management arrangements and mechanisms is actually being used to ensure the delivery, utilisation and support of Command ICT solutions to the DOD.
Dewey's Logic of Controlled Enquiry	Rational thought is interspersed with action: As taken from the research timeline that guides this report it is clear that the process was heavily dependent upon not only conscious thought, but formal and informal collaboration of a number of internal and external role players that interspersed the actions taken. To this end the ability was found to generalise the findings and conclusions of this research and the qualifications of such findings. The fact that the initial scope for strategic ICT planning for the DOD revolved around the ability to provide strategic direction for ICT in the DOD had to be expanded to include the ability to manage such a process through appropriate management arrangements and mechanism further confirm this premise.
Mead's Tenet	Human action is contextualised socially and human conception is also social reflection: This research was heavily dependent upon the ability to facilitate two way interaction between the strategic ICT planners and all role players and stakeholders to the point that a common context was established, a strategic ICT planning process developed over time, the process actually utilised to the point where strategic direction was formulated and approved and is actually being utilised throughout the DOD for ICT solutions management. This was done with full understanding of the varying levels of structural maturity within the DOD and the nature of diversified organizational culture. The ability to establish a vocabulary that allowed the organization to associate itself with the intentions, the process and the results of the strategic ICT planning process bears testimony to the realisation of this premise. There was acceptance through social contextualisation and alignment / association with the strategic ICT planning process was enhanced by the fact that the DOD involved itself to such an extent that corporate focus was provided during the DOD strategic planning workshop to guide the prioritisation and deliveryof ICT solutions. The establishment of this type of involvement was the result of continuous communication to effect conscious and unconscious change that can only be realised through reflection on the part of all parties concerned.

Table 6.1: Review of Research as Appropriate to the Research Approach

Given the confirmation provided above in terms of the underlying premises that are appropriate to this research it is considered appropriate to provide some validation of the research methodology that enabled this research. To this end it was considered appropriate that for purposes of review the following can be confirmed regarding the research given the format presented above.

6.2 TRANSFERABILITY OF RESEARCH FINDINGS

Given the necessity for the hermeneutic or contextual interpretation of the strategic ICT planning process as appropriate to the DOD and the intention to provide insight into its

appropriateness to other environments the application thereof resides in the fact that it should be considered from the perspective of being context dependent. Simply stated it should be applied to environments that are similar in context as it would be virtually impossible to apply to organizations with totally different circumstances or characteristics.

Given the arguments that were presented for the utilisation of a single case study as being appropriate to this research in Chapter 4, some comments need to be made regarding generalisation as discussed by Lee and Baskerville (2003)[410]. The intention is to round off the argument finally to ensure that this research can be utilised as a reference to assist with further research. The research undertaken in this instance has addressed both the "population characteristics" and the "experimental findings" of the research in practice as well as the interpretation thereof in terms of theory as commensurate with the "level-1 inferences" and "level-2 inferences" as presented by Yin (1984[411], 1994[412]). The question that remains to be answered relates to the necessity to "generalise" or rather to being able to "transfer" such findings as indicated by Lincoln and Guba (2000)[413], to similar environments where according to Stake (1982) *op. cit*. the relationship between theory and practice becomes important once again. According to Lee and Baskerville (2003) *op. cit.* the problems encountered revolve around the acceptance – or non-acceptance – of Hume's truism that "*induction or generalisation is never fully justified logically"* when considering that a large portion of 'generalisability' is dependent upon extrapolation'. With the opinion expressed by this researcher in Chapter 4 and the requirement to confirm or disprove generalised theory as appropriate to a single set of circumstances the ability to generalise by whichever means is not an imperative for this research to be considered scientific of a contributing nature. This is further confirmed when considering the opinion of Lee and Baskerville (2003) *op. cit*. that interpretivism acknowledges the existence of specific phenomena that can be likened to the existence of specific context

[410] Lee, A.S. & Baskerville, R.L. 2003. Generalizing Generalizability in Information Systems Research, *Information Systems Research.* September 2003, vol.14, no.3.
[411] Yin, R. 1984. *Case Study Research: Design and Methods*. Beverly Hills, CA: Sage Publications.
[412] Yin, R. 1994. *Case Study Research: Design and Methods*. 2nd ed. Thousand Oaks, CA: Sage Publications.
[413] Lincoln, Y. & Guba, E. 2000. The only generalisation is: There is no generalisation. In *R.Comm (Ed.) Case Study Method*, 2000, London, Sage, p.27-44.

for specific research. This does not exclude the possibility of later generalisations of these research findings as for example a statistical exercise to provide a more positivist perspective.

6.3 ASSESSMENT OF CONTRIBUTION OF RESEARCH

With due consideration of the requirements to institutionalise an appropriate strategic ICT planning process in the DOD that is based on sound theory and practice, the findings and conclusions are presented in Chapter 5. It should, however, be stated that the process as taken from existing theory was enhanced significantly in its institutionalisation in the DOD. This is demonstrated by the fact that the process in itself was not the issue to be contended with, but that there where more structural issues that influenced the process than effort related to defining the process. To this end more emphasis was required on the "how" to do things than on what needed to be done. This was clearly demonstrated in the functional research findings and the fact that these findings have now been incorporated into the policy framework of the DOD.

The frameworks as presented in the findings therefore serve to add to the existing theory as well as the very deliberate finding as demonstrated that alignment is a function of continuous collaboration between all role players and stakeholders within the organization related to the planning function. Roles and responsibilities within the function need to be clarified, formalised and institutionalised as part of institutionalising the strategic ICT planning process in the organization/enterprise with a clear understanding and definition of the characteristics of corporate strategic ICT planning as opposed to strategic ICT planning at business unit level.

6.4 RECOMMENDATIONS FOLLOWING FROM RESEARCH WITH A VIEW TO FURTHER RESEARCH

As indicated above the findings of this research can be utilised to initiate further study or research as interpreted from Hume's truism and presented by for instance Campbell and

Stanley (1963)[414], as well as Rosenberg (1993, p.75)[415] as well as the considerations related to the five misunderstandings of case study research as presented by Flyvbjerg (2000) and the hermeneutic principle of Klein and Myers (1999)[416]. With due consideration of these implications the following specific recommendations on further research can be made:

- The findings of this research resultant from its level-2 inferences regarding existing theory could be generalised as part of an empirical study to determine its generalisability or appropriateness to a single set of circumstances.

- The strategic ICT planning process could be augmented with research on the implications thereof throughout the rest of the life cycle to determine whether the same management arrangements and mechanisms would be appropriate to managing the solutions phase and maintenance phase of the ICT system life cycle.

- A determination of a model that could potentially distinguish between corporate solutions and unique ICT solutions as appropriate to the nature of the corporate value chain with due consideration of the ICT management model within the diversified organization. This would provide some insight into the nature of product/service differentiation required to manage corporate solutions in close collaboration and integration with unique business unit orientated solutions.

6.5 CONCLUSION

In final conclusion of this research it can be stated that the research actually contributes towards an improved understanding of the theory to the point where it could be appropriately applied in practice. As such it serves to guide the practical implications of institutionalising an appropriate strategic ICT planning process for the DOD that is actually being used and will now be expanded to other government departments via the

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[414] Campbell, D. & Stanley, J. 1963. *Experimental and Quasi-Experimental Designs for Research*. Boston, MA: Houghton Mifflin.
[415] Rosenberg, A. 1993. *Hume and the philosophy of science. (Edited by D. Norton). The Cambridge Companion to Hume*. New York: Cambridge University Press.
[416] Klein, H.K, & Myers, M.D. 1999. A set of principles for conducting and evaluating interpretive field studies in information systems. *MIS Quarterly*, 1999, vol.23, no.1, p.67-94.

national coordinating mechanisms for ICT management in the Republic of South Africa. To this end, change has been effected to both the strategic ICT planning process in the DOD as a process that was aligned and integrated with the normal strategic business management function and the ability to manage the appropriate ICT planning function in a structured and coordinated manner. The final result is that the strategic ICT planning process and the way in which it is managed is now an institutionalised component of corporate/strategic management in the DOD.

From an academic perspective this research serves to enhance existing theory to the point where greater clarity is provided based on pragmatism of not only what should be done regarding strategic ICT planning and management as a function of business, but also on how it should be done. As such it serves as research towards enhancing existing theory based on pragmatism with due consideration of the specific characteristics and requirements for such a process, given the specific context.

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