



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

*By*

MATTHEÛS JOHANNES DU TOIT

Submitted in partial fulfilment of the requirements for the degree

Doctor Philosophiae

In the faculty of Engineering, Built Environment and Information Technology  
in the subject

Information Technology

at the

University of Pretoria

PROMOTOR:  
Dr. H.H. Lotriet

July 2007



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

With the current drive of both academia and practice to ensure that there is an appropriate degree of collaboration to ensure mutual benefit, any study undertaken that has the application of theory as one of its objectives, should therefore be able to make a contribution to both areas. From a strategic ICT planning perspective the ability to apply a planning process in a cohesive and coordinated manner throughout diversified or complex organisations has been one of the challenges that faced both academics and practitioners. This becomes especially relevant in view of the drive to ensure alignment between business and ICT so as to ensure that the potential utility of ICT can be leveraged and sustained to contribute towards the competitive advantage of the organisation.

This situation is also relevant to the South African Department of Defence as a particular kind of diversified organisation. With this in mind the initiative was recognised to establish an appropriate strategic ICT planning process for the department and to apply it to the point where a corporate strategic ICT master plan could be institutionalised. A progressive and longitudinal action research process resulted in not only the development of an appropriate process of definition and alignment, but also on the ability to apply and manage the strategic ICT planning function with full collaboration of all role players and stakeholders.

The conclusion from this research was that it is indeed possible to develop and apply an appropriate strategic ICT planning process that recognises the strategic – corporate and business unit level – environment of a diversified organisation, but that it is largely dependant upon the ability to ensure collaboration and participation within a clear and distinct construct of functions and responsibilities. Without appropriate management arrangements and mechanisms, it was found to be very difficult indeed due to issues relating to the semi-autonomous nature of the respective business units in relation to corporate management.

Keywords: IT Strategy, Planning, Alignment, Framework, Action Research



## CONTENTS

<b>CHAPTER 1 - INTRODUCTION TO THIS RESEARCH</b>	<b>1</b>
1.1 BACKGROUND AND CONTEXT	1
1.2 APPROPRIATENESS OF THE DOD TO THIS RESEARCH AS A DIVERSIFIED ORGANISATION	2
1.3 PROBLEM STATEMENT AND MOTIVATION FOR THE STUDY	7
1.4 MOTIVATION FOR THIS STUDY	13
1.5 RESEARCH QUESTIONS AND OBJECTIVES	14
1.6 RESEARCH CONTRIBUTIONS	15
1.7 RESEARCH APPROACH	16
1.8 THESIS FRAMEWORK	17
1.9 CONCLUSION	17
<b>CHAPTER 2 – DESCRIPTION OF THE DOD: IT’S CONTEXT, HISTORY, POSITION WITHIN SA GOVERNMENT, STRUCTURE AND ORGANIZATION</b>	<b>19</b>
2.1 CONSTRUCT TO GUIDE THE MANAGEMENT OF THE DEFENCE ENTERPRISE INFORMATION SYSTEM IN THE DOD	19
2.1.1 Functional approach for strategic information management in the DOD	20
2.1.2 Functions of the Secretary for Defence as relevant to DEIS management	20
2.1.3 Functions of the C SANDF as relevant to DEIS management	21
2.1.4 Defence enterprise information system management context	22
2.1.5 Comments on the strategic DEIS management context	23
2.2 STRATEGIC CMIS MANAGEMENT APPROACH	24
2.2.1 Functions of the Secretary for Defence and the C SANDF	24
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	25
2.2.3 GITO functions in support of the Secretary for Defence	25
2.2.4 C CMIS functions in support of the C SANDF	25
2.2.5 Contextual construct for the GITO and the C CMIS	26
2.2.6 Primary stakeholders	28
2.2.7 Participation in DOD management forums	28
2.2.8 DOD internal DEIS management mechanisms	30



2.2.9	External information systems management mechanisms	31
2.3	THE INFORMATION SYSTEM MANAGEMENT FUNCTION WITHIN DOD	31
2.3.1	Context for IS strategy formation and formulation as part of the ICT management paradigm	31
2.3.2	Historical context for establishing a new strategic ICT management approach in the SA DOD	32
2.3.3	Historical structural arrangements and intention with organisational and functional transformation of the DOD and the ICT management function	33
2.3.4	Expectations for the delivery of DEIS strategic direction	34
2.3.5	Expected future challenges subsequent to the establishment of the DEIS strategic direction	35
	<b>CHAPTER 3 - APPLYING AN APPROPRIATE THEORETICAL FRAMEWORK TO THE CASE STUDY</b>	<b>38</b>
3.1	INTRODUCTION	38
3.2	THE NATURE OF COMPLEX OR DIVERSIFIED ORGANIZATIONS	40
3.2.1	Concept of the diversified organisation	41
3.2.2	Structure of diversified organisations	41
3.3	STRATEGIC MANAGEMENT IN DIVERSIFIED ORGANISATIONS	45
3.3.1	Historical development of traditional considerations for strategic business management in diversified organisations	45
3.3.2	Conceptual framework for strategic management	47
3.3.3	Characteristics of the strategic management process as appropriate to diversified organisations	49
3.3.4	Conclusions on contextual issues relating to strategic management in diversified organisations	50
3.3.5	Strategy formation in diversified organisations	51
3.3.6	Strategic alignment within diversified organisations	52
3.3.7	Characteristics of the strategic management process as appropriate to diversified organisations	53
3.4	STRATEGIC ICT PLANNING AS A FUNCTION OF STRATEGIC ALIGNMENT	54
3.4.1	The relationships between business and ICT solutions	54
3.4.2	Functions of strategy as appropriate to ICT	56
3.4.3	The nature of alignment from a business perspective	57
3.5	STRATEGIC ICT MANAGEMENT IN DIVERSIFIED ORGANISATIONS	58



3.5.1	Approach for ICT management in diversified organisations	58
3.5.2	Considerations for strategic ICT planning in diversified organisations	60
3.5.3	Critical issues to successful strategic ICT planning in diversified organisations	60
3.5.4	Establishing a contextual definition for an expanded strategic ICT planning process for diversified organisations	62
3.5.5	Establishing a strategic IS/ICT planning process for diversified organisations	64
3.5.6	Strategic ICT planning as a continuous learning process	66
3.6	STRATEGIC ICT PLANNING APPROACH, FRAMEWORK AND PROCESS AS APPROPRIATE TO THE DOD	67
3.6.1	The strategic ICT planning process: an overview of the model	67
3.6.2	Outputs of the strategic ICT planning process for diversified organisations	69
3.7	APPLYING THE STRATEGIC ICT PLANNING PROCESS	70
3.7.1	Initiating the planning cycle	70
3.7.2	Selecting, defining and implementing a planning approach	77
3.7.3	Framework for the is planning approach	78
3.7.4	Structure for strategic ICT planning deliverables	79
3.7.5	Formulation of the business is strategy to manage the demand for IS/ICT	80
3.7.6	Formulation of the strategy to supply ICT solutions	81
3.7.7	Expansion of the strategic ICT planning process	81
3.8	FORMULATION OF THE ICS/ICT MANAGEMENT STRATEGY	82
3.8.1	ICS/ICT management strategy	83
3.8.2	Issues related to institutionalisation of the strategic ICT planning process	83
3.9	RELATIONSHIP BETWEEN ORGANISATIONAL LEARNING AND THE REQUIREMENT FOR STRUCTURE	85
3.9.1	The development of appropriate structure for strategic ICT planning from learning experiences	87
3.9.2	Relevance of strategic management framework to strategic ICT planning in diversified organisations	92
3.10	RELATIONSHIP BETWEEN THE STRATEGIC ICT PLANNING PROCESS AND THE NATURE OF THE DIVERSIFIED ORGANISATION	94
3.10.1	Context for the relationship between the nature of the diversified organisation and its strategic ICT planning process	94
3.10.2	Conceptual relationship between the strategic ICT planning process and the strategic management process of a diversified organisation	96



3.10.3	The problematic nature of the simple approaches to strategic ICT planning	100
3.11	THE DISCONNECTION BETWEEN STRATEGIC ICT PLANNING PROCESS AND THE DIVERSIFIED ORGANISATION	102
3.11.1	Nature of strategic management within diversified organisations	104
3.11.2	Leading issues to guide this research as from the nature of complex organisations	109
3.11.3	Considerations relevant to this research	110
3.11.4	Systemic problems and barriers in information systems planning	113
3.12	IMPLICATIONS OF LEADING ISSUES THAT GUIDED THIS RESEARCH	115
3.12.1	Dimensions of strategic decisions	116
3.12.2	Levels of strategy as related to capability	117
3.12.3	Formality in strategic management	118
3.12.4	The strategy makers	119
3.12.5	Benefits of strategic management	119
3.12.6	Relationship between the business system and the ICT system	120
3.12.7	Setting and managing strategic ICT objectives for the diversified organisation	122
3.12.8	Activities that constitute the setting of strategic ICT objectives for the diversified organisation	122
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 ORGANISATION	125
3.13.1	Prerequisites for corporate ICT management structures	126
3.13.2	Characteristics, roles and responsibilities that would influence structural arrangements in the DOD as appropriate ICT planning process	128
3.13.3	Mechanisms or enablers appropriate to the formulation of the ICT vision and mission for diversified organisations	128
3.13.4	Alignment of corporate business strategy and policy with strategic ICT planning and policy	130
3.13.5	Contextual focus for alignment for extended strategic ICT planning model	132
3.13.6	Organisational structures appropriate to strategic ICT planning and management in the diversified organisation	134
3.13.7	Summary of influences	136
3.13.8	Utilisation of influences	139
3.14	CRITICAL ISSUES THAT WILL ENSURE SUCCESSFUL STRATEGIC	139



ICT PLANNING IN A DIVERSIFIED ORGANISATION

3.15	CONCLUSION	139
<b>CHAPTER 4 – RESEARCH METHODOLOGY/DESIGN</b>		<b>140</b>
41	INTRODUCTION	140
4.2	AIM OF THIS CHAPTER	141
4.3	APPROPRIATENESS OF USING A SINGLE CASE STUDY	142
4.4	ACTION RESEARCH AS A RESEARCH METHODOLOGY	146
4.4.1	General comments on action research	146
4.4.2	Contextual aspects of action research	148
4.4.3	Action research as an appropriate research methodology	149
4.4.4	Dialogical action research	151
4.5	ALIGNMENT BETWEEN THE RESEARCH ENVIRONMENT AND THE RESEARCH METHODOLOGY	154
4.6	SYNOPSIS OF THE CASE STUDY UNDERTAKEN IN THE SOUTH AFRICAN DEPARTMENT OF DEFENCE	155
4.7	INFERENCES AND DEDUCTIONS AS DRAWN FROM THE PRACTICAL APPLICATION OF THE ACTION RESEARCH METHODOLOGY AND ITS CHARACTERISTICS TO THE CASE STUDY	157
4.8	ESTABLISHMENT OF AN APPROPRIATE FRAMEWORK TO COMBINE AND PRESENT RESEARCH AND RESEARCH FINDINGS	158
4.8.1	Framework for findings	162
4.8.2	Framework for testing pragmatism	163
4.9	CONCLUDING DISCUSSION	164
4.10	CONCLUSIONS	166
<b>CHAPTER 5 – RESULTS AND FINDINGS OF RESEARCH UNDERTAKEN IN THE DOD</b>		<b>167</b>
5.1	GENERAL INTRODUCTION	167
5.1.1	Research objectives as a background to understanding the DOD in context	167
5.1.2	Approach to be followed with the presentation of the learning experience in the SA DOD	167
5.2	THE HISTORY OF THE DEVELOPMENT OF AN INFORMATION SYSTEM STRATEGY FOR THE DOD, INCLUDING CONTEXT, TIMELINE, AND PERSONS INVOLVED, ETC.	168
5.2.1	Establishment of the contextual timeline for the research	168
5.2.2	Cursory description of the research time-line	170



5.2.3	Specifying the improvement in structural arrangements and the strategic ICT planning process of the SA DOD	184
5.3	CONCLUSIONS FROM THE FUNCTIONAL RESEARCH	187
5.3.1	Functional conclusions on the establishment of and appropriate strategic ICT planning process for the DOD as a diversified organisation	187
5.4	PRESENTATION AND ANALYSIS OF FUNCTIONAL RESEARCH	189
5.4.1	Utilisation of the construct to present action research information	189
5.5	PRESENTING THE DATA FROM THE RESEARCH	191
5.6	PRESENTATION OF A CONCEPTUAL MANAGEMENT FRAMEWORK FOR STRATEGIC ICT PLANNING IN DIVERSIFIED ORGANISATIONS	236
5.6.1	Issues of alignment relevant to the setting of strategic ICT objectives for the diversified organisation	236
5.6.2	Group strategic planning with business focus providing initial planning guidelines for ICT emanating from the enterprise planning process	239
5.6.3	Business unit strategic planning with business focus including ICT planning in conformance with enterprise planning guidelines	241
5.6.4	Dynamically iterative approval and ratification process at group (enterprise) level with involvement of business units (including ICT)	243
5.6.5	Strategic planning process for ICT function in diversified organisations in support of business objectives and requirements	245
5.6.6	Graphic representation of the strategic ICT planning process for diversified organisations	247
5.7	CONCLUSIONS DRAWN REGARDING THE STRATEGIC ICT PLANNING PROCESS IN THE DOD	248
5.8	SUMMARY OF LESSONS LEARNT	252
	<b>CHAPTER 6 – EVALUATION OF RESEARCH METHODOLOGY, RECOMMENDATIONS AND CONCLUSIONS</b>	257
6.1	EVALUATION OF RESEARCH METHODOLOGY	257
6.2	TRANSFERABILITY OF RESEARCH FINDINGS	259
6.3	ASSESSMENT OF CONTRIBUTION OF RESEARCH	261
6.4	RECOMMENDATIONS FOLLOWING FROM RESEARCH ON FURTHER RESEARCH	261
6.5	CONCLUSION	262





## LIST OF FIGURES/ILLUSTRATIONS

Figure 1.1:	Strategic management construct as from the RSA Constitution and Defence Act.	4
Figure 1.2:	SA DOD organisation construct from a functional perspective to indicate complexity as relevant to the existing matrix relationship between process and capability.	5
Figure 2.3:	Defence information system management context.	23
Figure 2.4:	Strategic ICT management construct as from the DOD management construct.	27
Figure 2.5:	Research time-line for practice and theory.	36
Figure 3.1:	Progressive time-line as relevant to strategic ICT planning in the DOD.	38
Figure 3.2:	Contextual definition of the problem environment as interpreted from Thompson and Strickland (2003), Pearce and Robinson (2003) and Luftman (1996).	42
Figure 3.3:	Organisational hierarchy for strategic ICT planning in diversified organisations taken from Thompson and Strickland (2003).	43
Figure 3.4:	Value chains for diversified organisations with differentiated output as adapted from Porter (1985).	44
Figure 3.5:	Five tasks of strategic management as from Thompson and Strickland (2003).	50
Figure 3.6:	Generic contextual model for strategic ICT planning as appropriate to this research.	54
Figure 3.7:	Transition between computer and information management: relationships and emphasis as from Ward and Griffiths (1996:6).	55
Figure 3.8:	The relationship between business, IS and IT strategies as from Ward and Griffiths (1996:31).	56
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 Organisations with Control Feedback Loop.	57
Figure 3.10:	Strategic alignment model as adapted from Chorn (2004) to indicate alignment for synergy.	59
Figure 3.11:	Expanded contextual positioning of the influences of the management approach towards the strategic ICT planning process in diversified organisations.	63
Figure 3.12:	Analytic and creative approach to interpret business as from Ward and Griffiths (1996:137).	68
Figure 3.13:	The inputs, outputs and related process activities and enablers as from Ward and Griffiths (1996:129).	69
Figure 3.14:	Information flows and feedback for IS/IT planning as from Ward and Griffiths (1996:112).	73
Figure 3.15:	Options for ICT strategies for an organisation with distinctive business units as from Ward and Griffiths (1996:119).	75
Figure 3.16:	Framework for IS/ICT strategic planning process as from Ward and	78



	Griffiths (1996:133).	
Figure 3.17:	Strategic context of information as from Marchand, D. A and Horton F. W. Jr. (1986).	97
Figure 3.18:	Relationship between organisational capabilities, resource management systems and management levels in organisations as considered appropriate to this research by the researcher.	117
Figure 3.19:	Relationship of strategising functions as considered appropriate to strategic ICT planning by the researcher.	118
Figure 3.20:	Relationship between the business system and the ICT system management life cycle as interpreted by the researcher.	121
Figure 3.21:	Contextual definition of strategic ICT planning process in diversified organisations.	122
Figure 3.22:	The external environment as appropriate to strategic business and strategic ICT planning as adapted from as from Pearce and Robinson (2003:57).	123
Figure 3.23:	Extended enterprise ICT planning model indicating primary planning cycles as interpreted by the researcher from Luftman (1996).	125
Figure 3.24:	Transition between computer and information management: relationships and emphasis as from Ward and Griffiths (1996:6).	131
Figure 3.25:	The relationship between business, IS and IT Strategies as from Ward and Griffiths (1996:31).	132
Figure 3.26:	Integrated and aligned strategic ICT management model as interpreted by the researcher from existing theory.	133
Figure 3.27:	Management structures to manage the Enhanced Enterprise ICT Strategic Planning Process for Diversified Organisations.	135
Figure 4.1:	Context for research approach and methodology	142
Figure 4.2:	Context for action research process.	149
Figure 4.3:	Contextual construct for action research as an interpretation of theory and practice.	153
Figure 4.4:	Action research process as interpreted from Lewin (1857) and Lindgren, Henfridsson and Schultze (2004) and Baskerville and Lee (2003).	159
Figure 4.5:	Illustration of the researcher / practitioner relationship.	165
Figure 5.1:	Time line 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.	169
Figure 5.2:	Process of aligning strategic ICT planning for the DEIS with business strategy as appropriate to the defence function.	182
Figure 5.3:	DEIS Master Plan construct to provide a corporate framework for DEIS SD implementation.	183
Figure 5.4:	Rational supply chain for CMIS and services management in the DOD.	184
Figure 5.5:	Functional relationship between GITO and the C CMIS as the primary ICT system integrator.	185
Figure 5.6:	DEIS management arrangements and mechanisms.	186



Figure 5.7:	Strategic planning model as adapted from an interpretation by Smith A. J. (2001) and a general interpretation of Ward and Griffiths (1996).	238
Figure 5.8:	Strategic enterprise planning (group level) as appropriate to strategic ICT planning in diversified organisations.	240
Figure 5.9:	Strategic business unit planning as appropriate to strategic ICT planning in diversified organisations.	242
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 organisations.	244
Figure 5.11:	Strategic ICT planning process for diversified organisations as part of strategic business planning in a diversified organisation.	246
Figure 5.12:	Approach to strategic ICT planning in diversified organisations as adapted from Ward and Griffiths (1996:137).	248

#### LIST OF TABLES

Table 4.1:	Framework for presentation and summary of research as adapted from Lindgren (2004) <i>et. al.</i>	161
Table 4.2:	Framework for the summary of research findings as appropriate to practice and scientific theory.	163
Table 4.3:	Premises for pragmatism in research as interpreted from Baskerville and Myers (2004) and Lewin (1957).	163
Table 5.1:	Summary of action research project.	193
Table 5.2:	Summary of contributions to existing theory with due consideration of practice.	249
Table 6.1:	Review of research in as appropriate to the research approach.	259