



A DRDC Management Accountability Framework

Final Report

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Defence R&D Canada – Atlantic

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In conducting the research described in this report, the investigators adhered to the policies and procedures set out in the Tri-Council Policy Statement: Ethical conduct for research involving humans, National Council on Ethics in Human Research, Ottawa, 1998 as issued jointly by the Canadian Institutes of Health Research, the Natural Sciences and Engineering Research Council of Canada and the Social Sciences and Humanities Research Council of Canada.

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Abstract

Defence Research and Development Canada (DRDC), a special operating agency of the Department of National Defence, contracted Dalhousie University to support the development of a management accountability framework (MAF) as part of DRDC's EXPEDITION 09 organizational change project. The DRDC MAF used the Treasury Board MAF as a model, with Expectations, Indicators and Measures tiers. The proposed DRDC MAF reflects the DRDC vernacular and utilizes a survey instrument to assess managerial cadre performance directly, rather than using policies and standard operating procedures as proxies for organizational performance. Pilot studies were used to test the survey instrument approach against the six core elements of the DRDC MAF: Policy and Programs; People; Service; Risk Management; Stewardship; and Accountability. The results of the pilot studies confirm the feasibility of the survey-based approach and provide a first assessment of DRDC's organizational performance against indicators for the elements of the proposed DRDC MAF.

Résumé

Recherche et développement pour la défense Canada (RDDC), organisme de service spécial du ministère de la Défense, a embauché l'université Dalhousie pour l'aider à élaborer un cadre de responsabilisation de gestion (CRG) pour EXPEDITION 09, projet de changement organisationnel. Le CRG de RDDC s'inspire du CRG du Conseil du Trésor comme modèle et de ses paliers Attentes, Indicateurs et Mesures. Le CRG de RDDC proposé reflète les termes communément employés à RDDC et utilise un sondage pour évaluer directement le rendement des gestionnaires. Sont en outre examinées les politiques, les procédures de fonctionnement habituelles et l'information de l'organisme comme mesures du rendement de l'organisme. Des études pilotes ont été effectuées pour tester l'approche par sondage au vu des six éléments clés du CRG de RDDC : Politique et programmes, Employés, Service, Gestion du risque, Gérance et Responsabilisation. Le résultat des études pilotes a confirmé la faisabilité de l'approche par sondage et fourni une première évaluation du rendement organisationnel de RDDC au vu des indicateurs pour les éléments du CRG de RDDC proposé.

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Executive summary

A DRDC Management Accountability Framework: Final Report

Judy A. Baroni; Warren C.E. Nethercote; DRDC Atlantic CR 2009-136; Defence R&D Canada – Atlantic; September 2009.

Introduction or background: Defence Research and Development Canada (DRDC), a special operating agency of the Department of National Defence, contracted Dalhousie University to support the development of a management accountability framework (MAF) as part of DRDC's EXPEDITION 09 organizational development project. The proposed DRDC MAF developed under the contract uses the structure of the Treasury Board (TB) MAF to demonstrate the relationship between the two frameworks. Like the TB MAF, the DRDC MAF has *Expectations*, *Indicators*, and *Measures* tiers, where:

- Expectations demonstrate leadership standards;
- Indicators convey practical meaning of the Expectations; and
- Measures are expressions of performance.

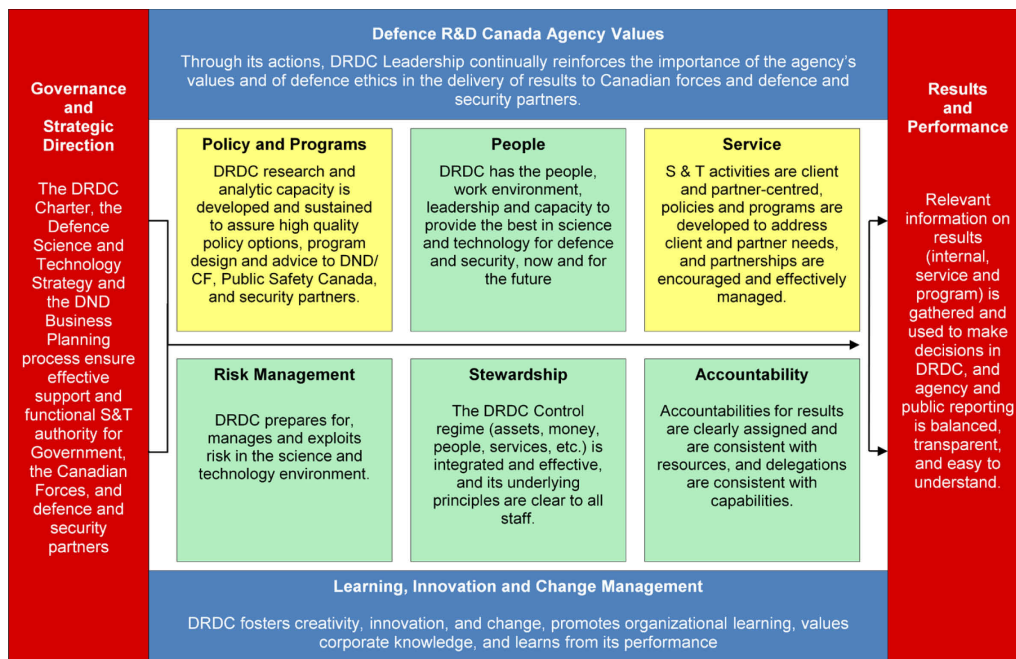
The proposed DRDC MAF *differs* from the TB MAF in that the focal point for the DRDC MAF is the DRDC management cadre, rather than the Deputy Minister, for the Treasury Board MAF.

The *vision* of the proposed DRDC MAF follows:

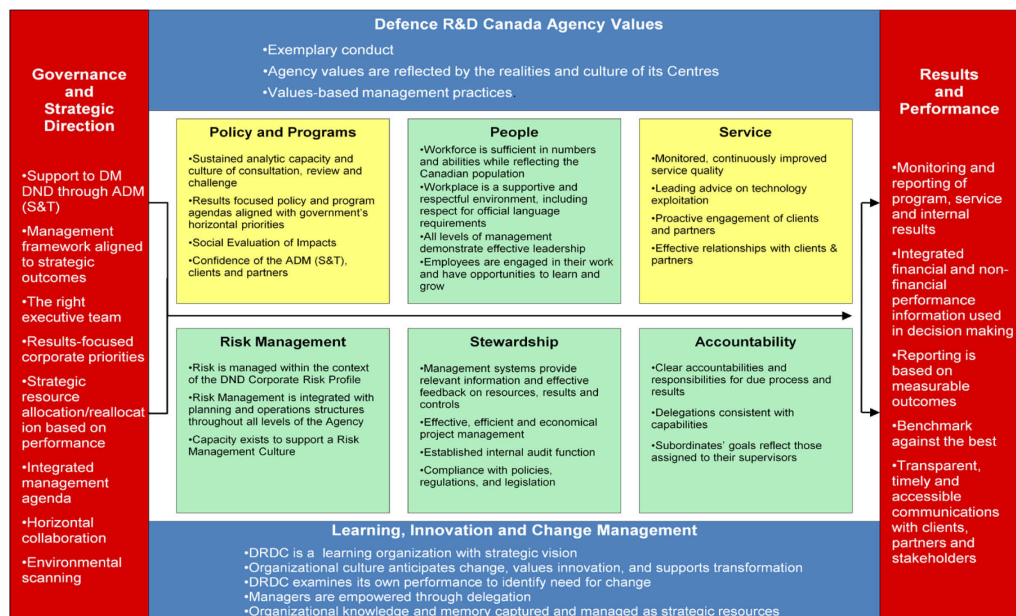
The DRDC MAF is a governance tool that facilitates dialogue between managers and executive leadership, helping to clarify managers' understanding of their roles and responsibilities and providing a framework for assessment and improvement of business processes.

Results: The Expectations Tier of the proposed DRDC MAF was first derived from the Treasury Board MAF through consultation with the DRDC Deputy Director General and Corporate Services Management communities. The Expectations tier was subject to further minor modifications during subsequent development, and reflects the vernacular and circumstances of DRDC. For example, the 'Citizen-centred Service' element of the Treasury Board MAF became 'Service' in the DRDC MAF because neither DND nor DRDC focus on direct services to citizens.

The four *pillar* elements that form the perimeter of the DRDC MAF set the environment of DRDC and the attitudes and behaviours that best represent the organization. The six *core* elements in the centre of the MAF apply across the organization, but are especially relevant to middle managers. The core elements set the standards for the performance of management. The pillar elements also set standards for the performance of management, but more at the strategic than the operational level.

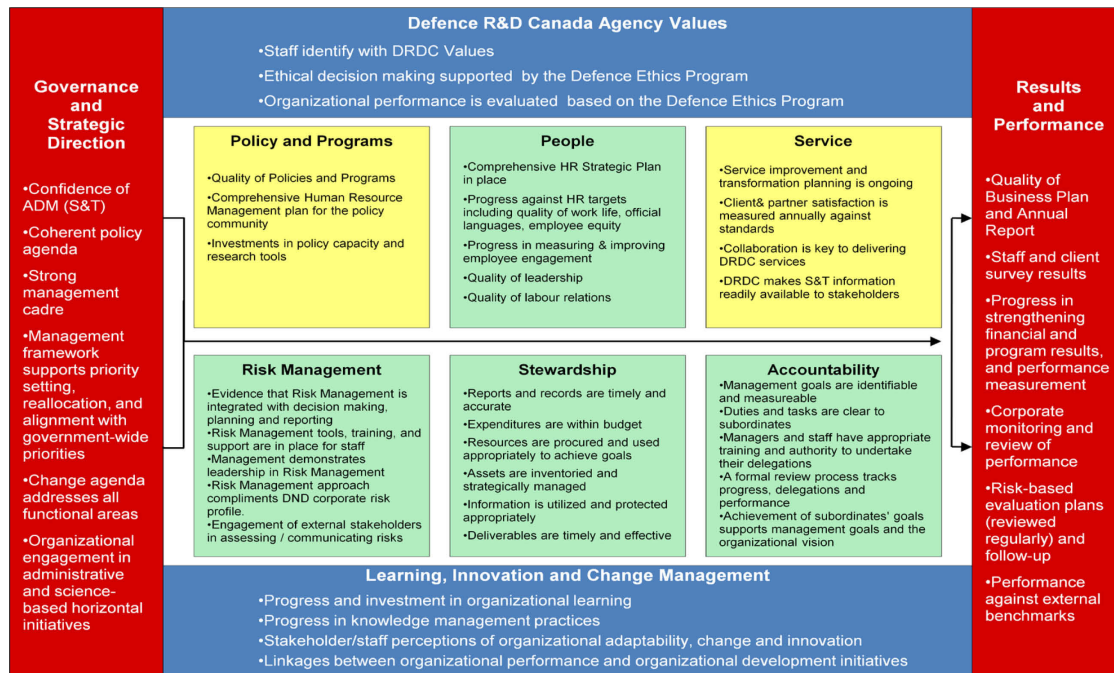


DRDC MAF, Expectations Tier



DRDC MAF, Indicators Tier

The Indicators and Measures tiers of the proposed DRDC MAF were developed based on academic research of best practices and theoretical frameworks. This methodology strengthens the validity of the individual indicators and measures. Assessment criteria from Rounds I – VI of the TB MAF were also utilized in development of Indicators and Measures, and efforts were made to align the Indicators and Measures statements with those of the Treasury Board where appropriate.



DRDC MAF, Measures Tier

A large variety of corporate data sources are available to support the proposed DRDC MAF, and integration with the DRDC business cycle avoids duplicative effort. Additionally, the proposed DRDC MAF will collect unique data directly from DRDC managers by means of an on-line survey instrument. During the course of the contract, three pilot surveys were conducted to test the feasibility of the survey approach and to establish baseline assessments of DRDC's management cadre against the core Indicators.

The results of pilot studies were generally positive, but identified areas of weakness. For example, DRDC's performance with respect to risk management falls short of Treasury Board expectations, in some measure because DND has been slow to adopt a Corporate Risk Profile as required by the Treasury Board. On the positive side, questions on accountability highlight the importance of Level 2 managers (Directors General) as management role models, and demonstrate the positive effect of measureable performance standards on organizational performance.

Significance: The pilot studies demonstrated the feasibility of management surveys as a means of assessing DRDC's performance against the proposed DRDC MAF, and particularly the performance of the management cadre. In this respect, the proposed DRDC MAF improves upon

the TB MAF by assessing what managers actually do, rather than relying upon the policies or frameworks that establish what managers *should* do, or corporate records that assess organizational performance as a whole.

Recommendations: Based on the results of the pilot studies with the proposed DRDC MAF it is recommended that:

- Defence R&D Canada should adopt the Management Accountability Framework proposed in this report;
- Defence R&D Canada should take account of the findings of the EXPEDITION 09 operational pilots for the proposed DRDC MAF, to provide a baseline for the first operational cycle; and,
- DRDC should use future managers' surveys of the DRDC MAF as a means of determining the degree of organizational adoption of the outputs of the EXPEDITION XX series of organizational development projects

Sommaire

Un cadre de responsabilisation de gestion pour RDDC : Rapport final

Judy A. Baroni; Warren C.E. Nethercote; DRDC Atlantic CR 2009-136; R & D pour la défense Canada – Atlantique; septembre 2009.

Introduction : Recherche et développement pour la défense Canada (RDDC), organisme de service spécial du ministère de la Défense, a embauché l'université Dalhousie pour l'aider à élaborer un cadre de responsabilisation de gestion (CRG) pour EXPEDITION 09, projet de changement organisationnel. Le CRG de RDDC proposé, élaboré au titre du contrat, utilise la structure du CRG du CT pour montrer le rapport entre les deux cadres. Comme le CRG du CT, le CRG de RDDC comporte des paliers Attentes, Indicateurs et Mesures, où :

- Les attentes montrent les normes de leadership;
- Les indicateurs donnent un sens pratique aux attentes;
- Les mesures expriment le rendement.

Comment le CRG de RDDC diffère-t-il du CRG du CT? Sa cible principale est les gestionnaires de RDDC, pas le sous-ministre.

Voici la « vision » du CRG de RDDC proposé :

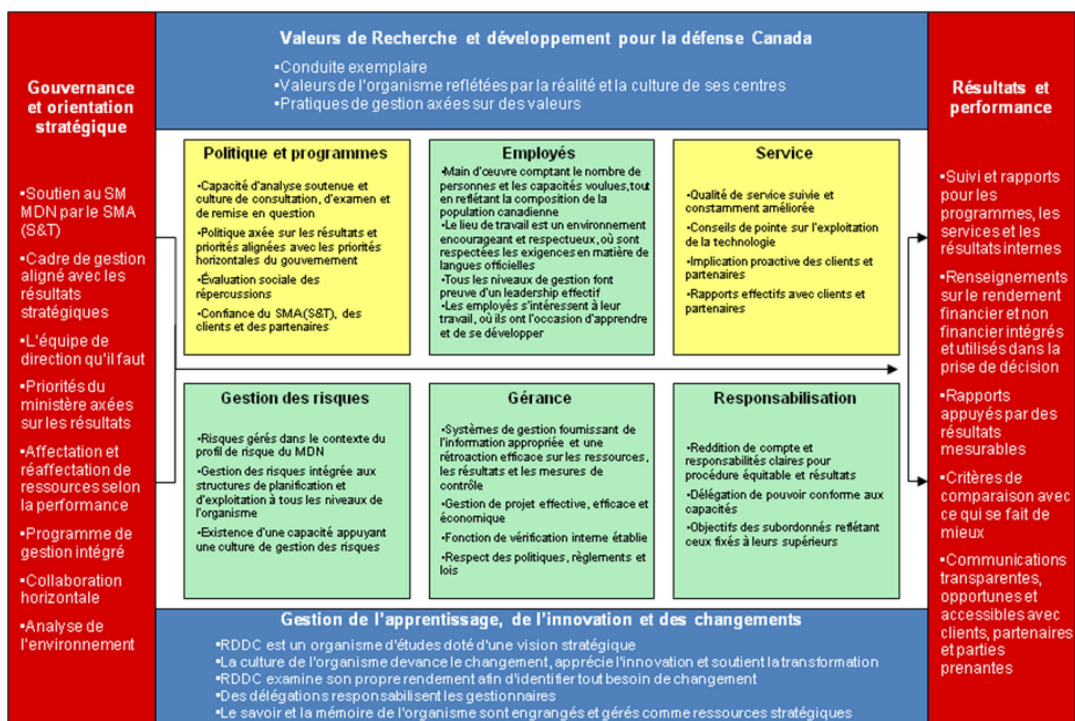
Le cadre de responsabilisation de gestion (CRG) de RDDC est un outil de gouvernance qui facilite le dialogue entre les gestionnaires et la direction. Il permet de clarifier le rôle et les responsabilités des gestionnaires et fournit un cadre pour l'évaluation et l'amélioration des processus opérationnels.

Résultats : Le palier Attentes du CRG de RDDC proposé s'inspire du CRG du CT, après consultation avec les directeurs généraux adjoints et les gestionnaires des Services d'entreprise. En outre, le palier Attentes a été légèrement modifié durant des développements ultérieurs. Il reflète les termes communément utilisés et les circonstances de RDDC. Ainsi le « service centré sur le citoyen » du Conseil du Trésor est-il devenu simple « service » dans le CRG de RDDC, vu que ni le MDN ni RDDC ne visent des services directs aux citoyens.

Les quatre éléments « piliers » constituant le périmètre du CRG de RDDC établissent l'environnement de RDDC, ainsi que les attitudes et comportements qui représentent le mieux l'organisme. Les six éléments « clés » au centre du CRG s'appliquent partout dans l'organisme, mais plus particulièrement encore aux cadres intermédiaires. Ces éléments clés fixent la norme pour le rendement de la gestion. Les éléments piliers établissent aussi des normes pour le rendement de la gestion, mais au niveau stratégique plutôt qu'opérationnel.

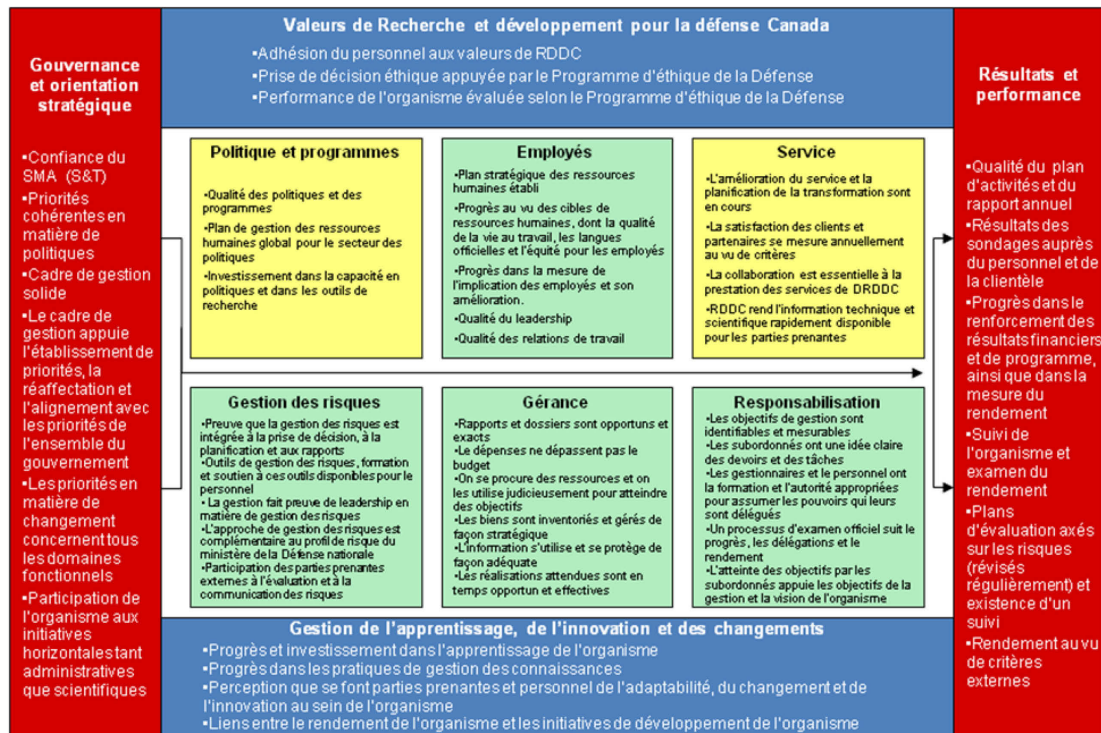


CRG de RDDC - Palier Attentes



CRG de RDDC – Palier Indicateurs

Les paliers Indicateurs et Mesures du CRG de RDDC proposé ont été élaborés à partir de plusieurs éléments : la recherche universitaire sur les pratiques exemplaires et les cadres théoriques. (méthodologie qui renforce la validité des indicateurs et mesures individuels); et les critères d'évaluation des rondes I à VI du CRG du CT (des efforts étant faits, chaque fois qu'approprié, pour aligner les énoncés d'indicateurs et de mesures avec ceux du Conseil du Trésor).



CRG de RDDC – Palier Mesures

Il existe toute une gamme de sources de données d'entreprise disponibles pour appuyer le CRG de RDDC proposé; son intégration avec le cycle d'exploitation de RDDC évite des doubles emplois. Qui plus est, le CRG de RDDC proposé recueillera des données uniques, grâce à un instrument de sondage en ligne auprès des gestionnaires de RDDC. Pendant la durée du contrat, trois sondages pilotes ont été effectués pour tester la faisabilité de l'approche par sondage et pour établir une base de référence pour les évaluations des gestionnaires de RDDC, au vu des indicateurs clés.

Les résultats des études pilotes ont généralement été positifs, quelques points faibles ayant toutefois été identifiés. Par exemple, le rendement de RDDC en matière de gestion des risques ne satisfait pas les attentes du Conseil du Trésor, en partie parce que le MDN a été lent à adopter le profil de risque de l'organisation requis par le Conseil du Trésor. Côté positif, les questions de reddition de compte soulignent l'importance des gestionnaires de deuxième niveau (directeur général) comme modèles de comportement pour la gestion et montrent les effets positifs de normes de rendement mesurables sur le rendement de l'organisme

Importance : Les études pilotes ont montré la faisabilité de sondages auprès de la gestion comme moyen d'évaluation du rendement de RDDC au vu du CRG de RDDC proposé, notamment pour le rendement des gestionnaires. Sur ce plan, le CRG de RDDC proposé améliore le CRG du CT, en évaluant ce que font effectivement les gestionnaires, plutôt que d'évaluer soit les politiques ou cadres établissant ce qu'ils sont censés faire, soit les dossiers de l'organisme et le rendement de l'organisme dans son ensemble.

Recommandations : Au vu des résultats des études pilotes sur le CRG de RDDC proposé, voici nos recommandations :

- Recherche et développement pour la défense Canada devrait adopter le cadre de responsabilisation de la gestion proposé dans le présent rapport;
- Recherche et développement pour la défense Canada devrait tenir compte des constatations des projets pilotes opérationnels d'EXPEDITION 09 pour le CRG de RDDC proposé, afin d'avoir une base de référence pour le premier cycle opérationnel;
- RDDC devrait utiliser les futurs sondages auprès des gestionnaires du CRG de RDDC pour déterminer jusqu'à quel point l'organisme adopte les extraits de la série de projets de développement organisationnel EXPEDITION XX.

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Drs. Peter Aucoin and Kevin Quigley of the Dalhousie University School of Public Administration provided subject matter expertise in the development of the DRDC MAF and critical review of the analyses of the pilot studies. Dr. Evert Lindquist of the University of Victoria graciously provided an advance copy of his critique of the Treasury Board MAF for the authors' use.

Drs. Ross Graham and Malcolm Vant provided executive oversight on behalf of DRDC's Executive Committee, in their role as co-Leaders of EXPEDITION 09 WBE 1.4.

Ms. Christine Davidson of the Dalhousie University School of Public Administration proofread the final report.

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1 Introduction

Defence Research and Development Canada (DRDC)¹, a special operating agency of the Department of National Defence, contracted Dalhousie University to support the development of a management accountability framework (MAF) as part of DRDC's EXPEDITION 09 project. This is the final report of the contract and provides the recommended approach to a DRDC MAF. Further details of the MAF development are available in related documents.²

1.1 EXPEDITION 09

EXPEDITION 09 is DRDC's core organizational change initiative, following an earlier change initiative, EXPEDITION 07. The EXPEDITION series established the principle of an 'umbrella,' agency-wide organizational development program, under the control of the DRDC Executive Committee, demonstrating organizational support. Figure 1 illustrates the project structure of EXPEDITION 09 schematically. This contract report supports Task 3 of WBE 1.4: Management Leadership Capabilities.

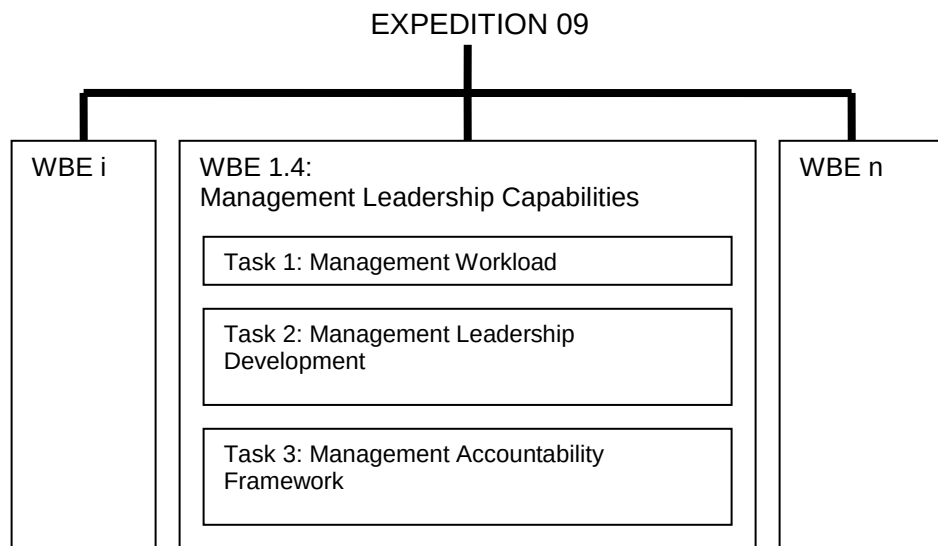


Figure 1: Expedition 09 Project Structure

¹ A list of acronyms and initialisms is included on page 71 of this report.

² See Nethercote, W.C.E., "A DRDC Management Accountability Framework – First Thoughts," Dalhousie University School of Public Administration, Discussion paper, 28 February 2008; Nethercote, W.C.E., "A DRDC Management Accountability Framework: A Straw-man, April 2008," Dalhousie University School of Public Administration, Discussion Paper, April 21, 2008; O'Brien, Craig and Nethercote, W.C.E. "A DRDC Management Accountability Framework, Cycle 1 Final Report," Dalhousie University School of Public Administration, DRDC Atlantic Contract Report, CR 2008-188, October 2008; Baroni, Judy A. and Nethercote, W.C.E., "A DRDC Management Accountability Framework: Results of Cycle 2," Dalhousie University School of Public Administration, DRDC Atlantic Contract Report, CR2009-135, November 2009.

1.2 Scope of this Report

This report provides an overview of the proposed DRDC MAF, concentrating on its features and its application, rather than its development. The report includes reference to the Treasury Board MAF, to provide context for the DRDC MAF.

Details of the development of the MAF are provided in reports by Nethercote, O’Blenis and Nethercote, and Baroni and Nethercote.³

1.3 Structure of this Report

Section 2 provides background to the development of the DRDC MAF, beginning with a description of the Treasury Board (TB) MAF, followed by discussion of issues with it and then, by the principles of a DRDC MAF. Section 3 includes reference to the literature, but more complete discussion is available in companion reports.⁴

Section 3 opens with a vision of a steady-state DRDC MAF and then describes the structure of the DRDC MAF in two parts, the *pillar* and *core* elements; see Figure 2. The vision provides a strategic overview of the characteristics of a DRDC MAF of interest to DRDC’s executive cadre: the purpose of the MAF; the business processes of the MAF; the participants in MAF processes; and the resources required by the MAF processes. The pillar elements of the DRDC MAF set the environment of DRDC and the attitudes and behaviours that best represent the organization. The core elements apply across the organization, but are especially relevant to middle managers. The core elements set the standards for the performance of management. The pillar elements also set standards for the performance of management, but more at the strategic than the operational level.

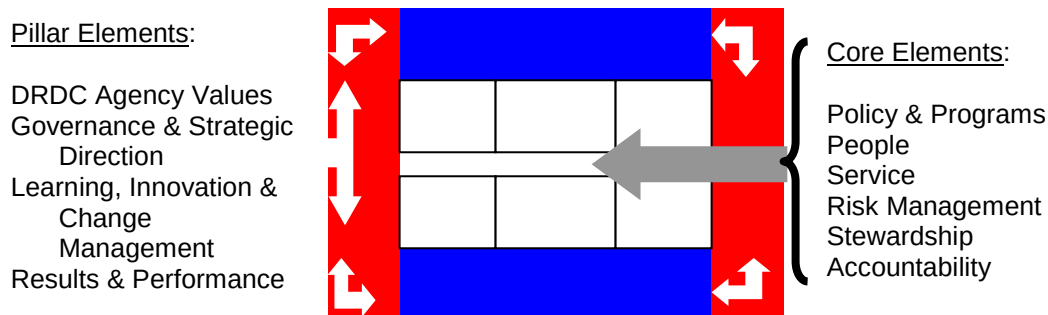


Figure 2: Pillar and Core Elements of the DRDC MAF, in the TB Style

Section 4 discusses the application of the DRDC MAF, beginning with the results of the pilot studies undertaken during EXPEDITION 09. These pilot studies, although limited in scope,

³ See O’Blenis, Craig and Nethercote, W.C.E. “A DRDC Management Accountability Framework, Cycle 1 Final Report,” Dalhousie University School of Public Administration, DRDC Atlantic Contract Report, CR 2008-188, October 2008, and Baroni, Judy A. and Nethercote, W.C.E., “A DRDC Management Accountability Framework: Results of Cycle 2,” Dalhousie University School of Public Administration, DRDC Atlantic Contract Report, CR2009-135, November 2009.

⁴ Ibid

provide indication of both strengths and weaknesses in management practices in DRDC. Section 4 closes with proposed approaches for operational application of a DRDC MAF involving both the use of surveys of managers and the exploitation of corporately-held information.

The main body of the report closes with Section 5 which provides recommendations and conclusions.

A discussion of risk management practices in DRDC in the context of organizational culture theory is included as an Annex⁵ to the report, as a first step in addressing the conundrum of public sector S&T organizations. How can the public sector penchant for risk reduction, if not even risk avoidance, be reconciled with a science and technology (S&T) organization's need for risk exploitation? The Annex concludes with recommended bases for a training plan that would enhance risk management in DRDC.

A bibliography lists sources cited in the main body of this report; sources for Annex A are listed separately.

⁵ Kevin Quigley, "Using Cultural Theory to Examine Risk Management Practices: A Commentary for Defence Research and Development Canada," see p. 51 of this report.

2 Background⁶

Since 1997, the Treasury Board and its Secretariat have been the designated management board for the Government of Canada, with a variety of roles including “leading and providing expertise in the development of an agenda to improve management practices.”⁷ This management improvement agenda expressed in *Results for Canadians* is arguably the genesis of the TB Management Accountability Framework.

One element of *Results for Canadians* was the Modern Comptrollership Initiative (MCI), which called for “more effective decision-making, greater accountability, a mature approach to risk management, results-based control systems, and shared values and ethics.”⁸ Strong and clear accountability was a central element of the MCI, to ensure that the four management commitments of the Government of Canada would be met: Citizen Focus; Values; Results; and Responsible Spending.

The Management Accountability Framework was the successor initiative to the MCI, subsuming modern comptrollership along with other key elements of modern management to provide management expectations for deputy heads and public service managers.⁹

2.1 The TB MAF: Rationale and History

In 2003, the Treasury Board introduced a draft MAF with 10 core elements of public service management for bilateral discussions between deputy ministers and the Secretary of the Treasury Board.¹⁰ The MAF uses an integrative approach, combining 10 elements to show what the Treasury Board, and the public indirectly, expects of managers. These 10 elements are meant to succinctly capture what Jim Judd, Secretary of the Treasury Board Secretariat at the time, called “the questions that keep Deputy Ministers up at night”.¹¹

- Governance and Strategic Directions
- Policy and Programs
- Risk Management
- Results and Performance
- Citizen-focused Service
- Public Service Values
- People
- Stewardship
- Learning, Innovation and Change Management
- Accountability

⁶ Editor’s note: unless otherwise noted, the internet links in this report were current as of 30 June 2010.

⁷ Treasury Board of Canada Secretariat. *Results for Canadians: A Management Framework for the Government of Canada*, March 30, 2000, p. 18.

⁸ Depuis, Jean, *Modern Comptrollership and the Management Accountability Framework*, Parliamentary Information and Research Service, Library of Parliament PRB 06-23E, Ottawa, April 3, 2006, p. 3.

⁹ Depuis, p. 9.

¹⁰ Treasury Board of Canada Secretariat, “MAF Assessments – Round I,” (Treasury Board of Canada Secretariat, 2007), http://www.tbs-sct.gc.ca/maf-crg/assessments-evaluations/assessments-evaluations_e.asp#r1.

¹¹ Ivan Blake, *Management Accountability Framework*, (Treasury Board of Canada, Secretariat: 2005), http://www.tbs-sct.gc.ca/maf-crg/documents/video-video/video-video_e.asp.

In 2004, the Treasury Board, with 35 federal departments and agencies, developed management priorities based on the ten elements.¹² From this, the Treasury Board identified 41 indicators and in 2005, it assessed 53 departments and agencies against the indicators. At this time, the Treasury Board did not intend to review management quality; instead, it was looking for performance compared to the specific indicators.¹³ The latest round of assessments, conducted in 2006, expanded to 55 departments and agencies.¹⁴ The Treasury Board revised the 2004 indicators based on departmental and agency input,¹⁵ and to focus on management aspects it could assess easily through normal oversight activities. Information sources included estimates, management resources and results structures (e.g., program activity architectures, Memoranda to Cabinet, and Treasury Board submissions), and existing consultations.¹⁶

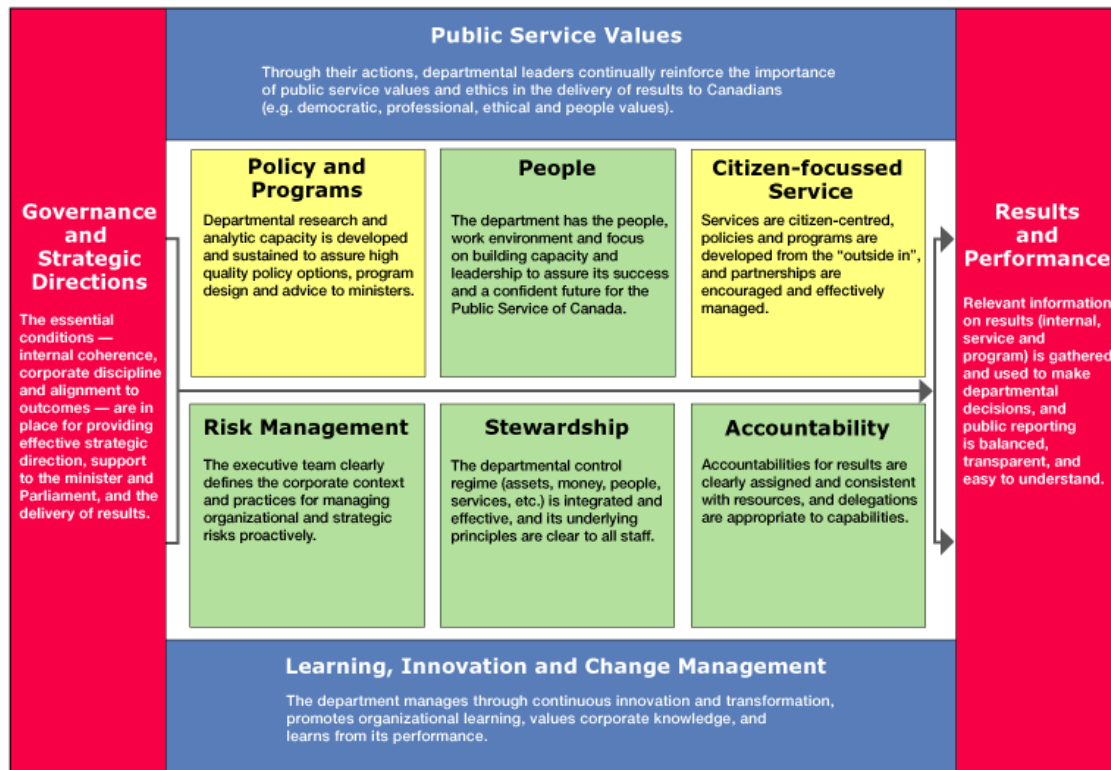


Figure 3: TB MAF, Expectations Tier

¹² Treasury Board of Canada Secretariat, "MAF Assessments – Round II," (Treasury Board of Canada Secretariat, 2007), http://www.tbs-sct.gc.ca/maf-crg/assessments-evaluations/assessments-evaluations_e.asp#r2.

¹³ Treasury Board of Canada Secretariat, "Round III (2005)," (Treasury Board of Canada Secretariat, 2007), http://www.tbs-sct.gc.ca/maf-crg/assessments-evaluations/2005/index_e.asp.

¹⁴ Treasury Board of Canada Secretariat, "List of Departments and Agencies assessed during MAF Round IV," (Treasury Board of Canada Secretariat, 2007), http://www.tbs-sct.gc.ca/maf-crg/assessments-evaluations/2006/departments-ministres_e.asp.

¹⁵ Treasury Board of Canada Secretariat, "MAF Assessments – Round IV," (Treasury Board of Canada Secretariat, 2007), http://www.tbs-sct.gc.ca/maf-crg/assessments-evaluations/assessments-evaluations_e.asp#r4.

¹⁶ Treasury Board of Canada Secretariat, "MAF Elements and Indicators - 2006," (Treasury Board of Canada Secretariat, 2007), http://www.tbs-sct.gc.ca/maf-crg/indicators-indicateurs/2006/elements-elements_e.asp.

The TB MAF has three tiers which detail the commitments senior managers make as departmental leaders. The top tier, Expectations, defines leadership standards and recognizes that successful management relies on the connection between each element. The second tier, Indicators, supports Expectations, providing practical descriptions easily adapted to an agency's unique context. The bottom tier, Measurements, is an expression of each element's performance standards. While the expectations are constant, a MAF recognizes departments and agencies are unique by allowing flexibility in definition of Indicators and Measures.¹⁷

As Figure 3 shows, governance and strategic directions, public service values, learning, innovation and change management, and results and performance frame the MAF. These elements guide good management, enclosing the elements required to make good decisions.¹⁸ In essence, the elements focus on the capacity and capability within a department. The MAF does not address a department's relationship with its Minister, nor does it discuss horizontal collaboration.¹⁹ These limitations result from the scope of the MAF, which provides for a dialogue between the Treasury Board and senior managers on the expectations of departmental leadership

Expectations Tier

The elements of the Expectations tier in Figure 3 describe the Treasury Board's expectations of senior managers in the Government of Canada. This framework overcomes silo thinking by emphasizing the relationship between each of the elements. For example, although Stewardship can be narrowly considered a financial activity, managing human resources has significant impact on financial performance. In addition to the People element, Policy and Program directives connect intimately to Stewardship decisions. A manager may find that project failure is due to limited resources, but without sound financial management, it is a challenge to overcome the problem. A manager succeeds at delivering high-quality public service by meeting the expectations of each element. To meet expectations, managers need performance indicators and clear measures, detailed in the remaining MAF tiers.

Indicators Tier

The indicators describe the breadth of the elements. The Treasury Board intends that Deputy Ministers engage their executive councils in discussions of the items listed in the indicators to determine how well their department reflects the MAF's expectations.

Measures Tier

Measures are used to determine how a department functions; unlike Expectations and Indicators, Measures may change in response to departmental needs. Sources of information change, particularly when reporting methods change. The Measures tier of the Treasury Board MAF lists potential sources, while acknowledging a department may have other, accurate information

¹⁷ Recently, Rounds V and VI of the TB MAF referred to the Indicators and measures as 'Areas of Management' and 'Lines of Evidence,' respectively. The present report will continue to use Indicators and Measures since the TBS website continues to use these terms in its descriptive documentation of the MAF. Regardless, 'Areas of Management' and 'Lines of Evidence' are arguably more descriptive.

¹⁸ Ivan Blake, *Management Accountability Framework*, (Treasury Board of Canada, Secretariat: 2005), http://www.tbs-sct.gc.ca/maf-crg/documents/video-video/video-video_e.asp.

¹⁹ Ibid.

sources that describe departmental performance. The Treasury Board and Privy Council Office use information found through the Measures to engage Deputy Ministers on their department's performance. Depending on performance, certain measures may be more important for discussion than others. For example, a department may perform well at risk management but could benefit from improvement in its accountability guidelines. In this case, the Treasury Board, the Privy Council Office, and the Deputy Minister would focus on accountability at the expense of risk management.

2.2 Issues with the TB MAF

While the MAF offers a useful overview of the Treasury Board's expectations for senior management, it cannot capture the details of decision making environments and pressures which are unique to each institution, nor does it offer a methodology for assessing the quality of programming. In this sense the TB MAF is neither a replacement for assessing DM performance through the Committee of Senior officials (COSO), nor an alternative to program evaluations, although it does offer valuable perspectives from which to view each of these areas.²⁰

As a guide to good management practices, the elements focus on organizational capacity and capability within a department²¹; however, the MAF does not address a department's relationship with its Minister and it does not discuss horizontal collaboration.²² These limitations result from the scope of the MAF, which provides for a dialogue between the Treasury Board Secretariat and Deputy Ministers on the expectations of departmental leadership.

The MAF was originally intended as a 'code of excellence' type document,²³ demonstrating sound management practices which would rely heavily on the commitment of senior managers (DM and ADM) to be effective; however, as the framework has evolved and its use adopted by all departments, it has become "an instrument for management oversight,"²⁴ relying more heavily on the reporting capabilities of subordinates. Theoretically, the benefit of this alternative approach is that by having better defined and mandatory reporting measures, there is increased and better comparability between departments; however, as noted above, each department has unique environments and mandates which make direct comparison difficult.

One drawback in the shift from 'code of excellence' to an oversight tool is that by redefining MAF as a reporting structure, it is effectively alienated from being used as a strategic tool, and places more burden on an already reporting-heavy system:

“...the cost of moving too far in this direction is that many deputy ministers will create sufficient capability to credibly feed reporting requirements, but

²⁰ Lee McCormack, Using Evaluation in the Canadian Expenditure Management System, OECD Presentation, Washington, DC, June 11-12, 2007. Available from: <http://www.oecd.org/dataoecd/21/9/39793340.pdf>.

²¹ Ivan Blake, *Management Accountability Framework*, (Treasury Board of Canada, Secretariat: 2005), http://www.tbs-sct.gc.ca/maf-crg/documents/video-video/video-video_e.asp.

²² Ibid.

²³ Evert Lindquist, "How Ottawa Assesses Departmental/ Agency Performance: Treasury Board's Management Accountability Framework" in *How Ottawa Spends, 2009 – 2010: Economic Upheaval and Political Dysfunction*, Allan M. Maslove, ed. Forthcoming, October 2009.

²⁴ TBS, *MAF Implementation*, Available from: <http://www.tbs-sct.gc.ca/maf-crg/implementation-implementation/implementation-implementation-eng.asp>.

effectively ‘quarantine’ it [the MAF] from strategic dialogue and decision-making in departments focused on dealing with pressing challenges.²⁵”

Another issue with the MAF is that it can portray a higher level of departmental accountability than truly exists. This weakness stems from the TBS dependence on each department to self-report by providing information on MAF measures, a lack of external reviews, as well as a lack of TBS capacity to provide support to departments after the assessment to close gaps in MAF performance areas.²⁶ Departments which become better at responding to the TB MAF reporting structure can be given improved MAF assessments without actually improving.

The validity of MAF measures and the assessment scoring system are also problematic issues. There is no information available to explain the TBS’ methodology in selecting indicators and measures for each Element. The departmental assessment against each measure is largely dependent on qualitative judgments, and is more concerned with the existence and implementation of policies and frameworks than with the impact of those policies and frameworks. The implicit assumption is that the mere existence of policies and procedures within a department will lead to improved results.²⁷

Two weaknesses in the scoring system are that each indicator is given equal weight in the assessment of an element and each element is weighted equally for all departments.²⁸ Weak performance against a particular indicator may not justify a weakened assessment in the element overall, and furthermore, departmental mandates may dictate that a particular element be weighted more heavily²⁹ (the service element for Service Canada, for example). Note that there is here is no overall score for the MAF, only individual elemental assessments; the reader is left to draw his/her own conclusions as to the overall departmental performance against the MAF.

While the TB MAF was not intended to evaluate DM leadership *per se*, judgment is implied, particularly because successful performance of the department in each area relies heavily on senior management performance. Not only is it awkward for subordinates to be, in effect, evaluating the DM’s leadership performance when conducting a MAF assessment, the MAF measures do not take into account the conflicting priorities, strategic choices and unique pressures faced by each DM.³⁰

Finally, the costs associated with MAF are thought to be quite high in relation to its benefits; one conservative estimate places the cost to TBS at \$42 million annually.³¹ This figure includes increased overhead costs, people costs and opportunity costs.

In conclusion, the TB MAF is a good checklist against which departments can assess their performance, and the indicators and measures are adequate starting points for generic assessments; however, each department or agency must be sensitive to their particular

²⁵ Evert Lindquist, Forthcoming, October 2009.

²⁶ Ibid.

²⁷ Melvin J. Dubnick and Jonathan B. Justice, *Accounting for Accountability*, Discussion Paper, 2004 Annual Meeting of the American Political Science Association, 3.

²⁸ Evert Lindquist, Forthcoming, October 2009.

²⁹ Ibid.

³⁰ Ibid.

³¹ Ibid.

circumstances when self-assessing against the MAF. It is preferable for each organization to institute their own MAF, based on and aligned with the TB MAF, as a mechanism for assessing performance in order to report effectively to superior bodies and to improve their own management performance.

Table 1 outlines the five main problem areas with the TB MAF and potential strategies to mitigate these problems with the DRDC MAF.

Table 1: MAF Problem Areas and Possible Mitigation Strategies

TB MAF Problem Area	Mitigation Strategy for a DRDC MAF
Loss of Strategic Tool	-Discuss MAF as it relates to organizational priorities at RDEC ³² retreats -select relevant information sources and tools -executive summary of MAF assessments focuses on key strategic themes and recommendations
Reporting Burden	-Integrate MAF reporting with PAA ³³ and other Corporate functions
Appearance of Accountability	-Select relevant measures and information sources -Document methodology so that the same approach is utilized each year -Set goals for the next assessment at the end of the previous assessment -Use managers' survey to incorporate information on actual working conditions
Measures and Assessment	- Utilize solid academic theory as basis for selection of measures and development of survey questions -Select relevant information sources and tools
Assessing leadership	-Do not utilize MAF assessments as a performance measurement tool -Ensure recommendations are aimed at organizational level, not individuals
Costs	-Utilize data mining techniques to get relevant information from pre-existing sources -Refine other reporting systems to capture MAF related measures when other data is collected -Select relevant measures and information sources to cut down on unnecessary reporting

2.3 Principles of a DRDC MAF

A DRDC MAF must satisfy the following conditions in order to be adopted willingly by the organization:

- Support ADM(S&T)'s contributions to the TB MAF process;
- Support dialogue that clarifies roles and responsibilities throughout the chain-of-command;
- Support assessment and improvement of business processes;

³² RDEC: Research and Development Executive Committee.

³³ PAA: Program Activity Architecture

- Exploit existing corporate information sources where possible; and,
- Minimize workload where direct data collection from managers is required.

A DRDC MAF should also reflect, and thereby promote DRDC's Mission, Vision and Values, as well as the Defence S&T Strategy.

Mission³⁴

DRDC's mission is to ensure that the Canadian Forces are technologically prepared and operationally relevant by:

- Providing expert science and technology advice to the Canadian Forces and the Department of National Defence;
- Conducting research, development and analysis to contribute to new and improved defence capabilities;
- Anticipating and advising on future science and technology trends, threats and opportunities;
- Engaging industrial, academic and international partners in the generation and commercialization of technology; and,
- Providing science and technology for external customers to enhance defence science and technology capacity.

Vision³⁵

DRDC's vision is to be known worldwide as the best in science and technology for defence and security.

Values³⁶

DRDC's values guide how we accomplish our mission and maintain excellence in science:

Commitment: We demonstrate dedication and pride in working towards our vision.

Client Focus: We bring excellence to clients, both internal and external, by focusing efforts on discovering and meeting their needs.

Creativity and Innovation: We generate innovative solutions, approaches, products and services that improve the status quo.

Leadership: We actively and enthusiastically seek to exert influence and originate action to achieve our goals.

Professionalism and Integrity: We focus our effort on achieving quality results and we behave in an honest, ethical manner, dealing with others respectfully and fairly.

Trust and Respect: We are open, honest and responsible in our relationships and we recognize and value the contributions of others.

³⁴ Direct quote from DRDC Annual Report for the year ending 31 March 2008: Shaping Defence and Security Capabilities Through Science and Technology, p. 3.

³⁵ Ibid.

³⁶ Ibid.

Teamwork: We demonstrate effective interpersonal skills, and work cooperatively and productively within and across DRDC to achieve common goals.

The Defence S&T Strategy includes four interdependent action areas, each associated with specific deliverables³⁷. The core elements of the DRDC MAF should examine management performance related to these S&T deliverables, as shown in Table 2, overleaf.

The Defence S&T Strategy also describes six attributes the Organization must cultivate in order to be successful in achieving maximum Impact in the identified Action Areas.³⁸ All six are dependent on the existence of a solid *Governance Structure*.

- *Linkage* - through the Enterprise, Departmental and Canadian Forces organizations are effectively positioned and synchronized to contribute to the direction, delivery and exploitation of S&T outputs.
- *Innovation* - the Enterprise, with its external partners, produces innovative, cost-effective solutions or novel alternatives to the highest priority defence and security needs that are appropriate to the Canadian context.
- *Leverage* - the Enterprise attracts top-tier national and international S&T partners so as to leverage their resources, knowledge, experience and technology.
- *Agility* - the Enterprise is appropriately agile so as to identify and respond effectively to new threats and opportunities that derive from the global advancement of S&T or from the rapidly evolving defence and security environment.
- *Balance* - the S&T outputs produced by the Enterprise are suitably balanced from multiple perspectives. These outputs address the prioritized needs from the perspectives of core departmental processes, Canadian Forces and environment-specific capability requirements. They address the needs across multiple time horizons, from responding to the challenges of today's operations to shaping the Canadian Forces of the future. Finally, they sustain core internal S&T capabilities across as broad a spectrum as resources allow while ensuring the critical mass necessary in each area to produce world calibre results.
- *Excellence* - the Enterprise consistently produces results of the highest possible quality and credibility built on niche world-calibre internal S&T capabilities and strong, effective external partnerships.

The Indicators and Measures of a DRDC MAF should assess the strength of these six attributes, either directly or indirectly.

³⁷ Defence S&T Strategy, 2006. pp. 20-22.

³⁸ Ibid. pp. 19-20.

Table 2: S&T Strategy Areas and Deliverables

Action Area	S&T Deliverables	Key MAF Core Elements
<i>Establish an integrated governance mechanism</i>	Defence S&T Enterprise Charter	Accountability; Risk Management
	Defence S&T communications plan	Service
	Process model for the S&T Enterprise Annual Business Cycle	Accountability
	Aligned Research, Technology and Analysis Program management	Accountability
<i>Develop a "full-service" defence S&T capability</i>	S&T capability assessment of the S&T Enterprise	Policy and Programs
	Human resources plan for the S&T Enterprise	People
	Infrastructure plan for the S&T Enterprise	Stewardship
<i>Build strategic partnerships</i>	Process model for managing partnerships	Service
	Partnering arrangements among S&T Enterprise members	People; Service
	International partnering framework and supporting agreements	Policy and Programs; People
	Partnering framework for industrial, academic and other government departments	Policy and Programs
<i>Establish Enablers</i>	Information management/information technology capability to support the S&T Enterprise	Risk Management; Stewardship
	Harmonized procurement practices across research, development and acquisition	Stewardship
	Intellectual property management principles	Stewardship
	Departmental approach to technology insertion	Risk Management; Stewardship

3 Structure of the DRDC MAF

This section begins with a vision of a steady-state DRDC MAF, to provide a strategic overview of the characteristics of a DRDC MAF of interest to DRDC's executive cadre: the purpose of the MAF; the business processes of the MAF; the participants in MAF processes; and the resources required by the MAF processes. An overview of the Expectations Tier of the DRDC MAF is then presented, followed by discussion of the pillar and core elements of the DRDC MAF. This discussion of elements includes a description of elements for the Indicators and Measures Tiers and of proposed instruments to allow data collection for the measures.

The proposed DRDC MAF uses the structure of the TB MAF to demonstrate the relationship between the two frameworks. Like the TB MAF, the proposed DRDC MAF has *Expectations*, *Indicators*, and *Measures* tiers, where:

- Expectations demonstrate leadership standards,
- Indicators convey practical meaning of the Expectations, and
- Measures are expressions of performance.

Each tier of the proposed DRDC MAF has ten elements that describe key characteristics of management performance, in which four pillar elements surround six core elements. This layout helps describe the relationship of the elements. As shown in Figure 4, overleaf, the MAF begins on the left hand side, with *Governance and Strategic Direction* and ends on the right side with *Results and Performance*. The directional arrows which take the observer from the left to the right of the MAF cross through the six core elements, which are flanked by the two remaining pillar elements. This layout suggests that the six core elements, bounded by *Defence R&D Canada Agency Values and Learning*, *Innovation* and *Change Management* principles, are the means by which *Governance and Strategic Direction* are translated into *Results and Performance*.

3.1 Vision of a Steady-state DRDC MAF

The DRDC Management Accountability Framework (MAF) is a governance tool that facilitates dialogue between managers and executive leadership, helping to clarify managers' understanding of their roles and responsibilities and providing a framework for assessment and improvement of business processes.

The Process: The DRDC MAF process will complement the DRDC business cycle. The DRDC MAF contains 10 elements but ordinarily, RDEC will begin a MAF cycle by determining which elements are of greatest current interest, because of Agency or Departmental priorities. The resultant MAF cycle will focus on those elements, but may also address others on an overview basis.

The MAF process will collect information both from corporate data sources and from a survey of DRDC managers. Corporate staff will analyze and report on corporate data and survey results at both the Agency and Centre level, in the context of the elements of the DRDC MAF. Results of the analysis will be used to identify both areas of organizational strengths to commend and weaknesses to address, including identifying areas for business process improvement. Results would also support the commitments of the ADM (S&T) to the DM DND and TB MAF.

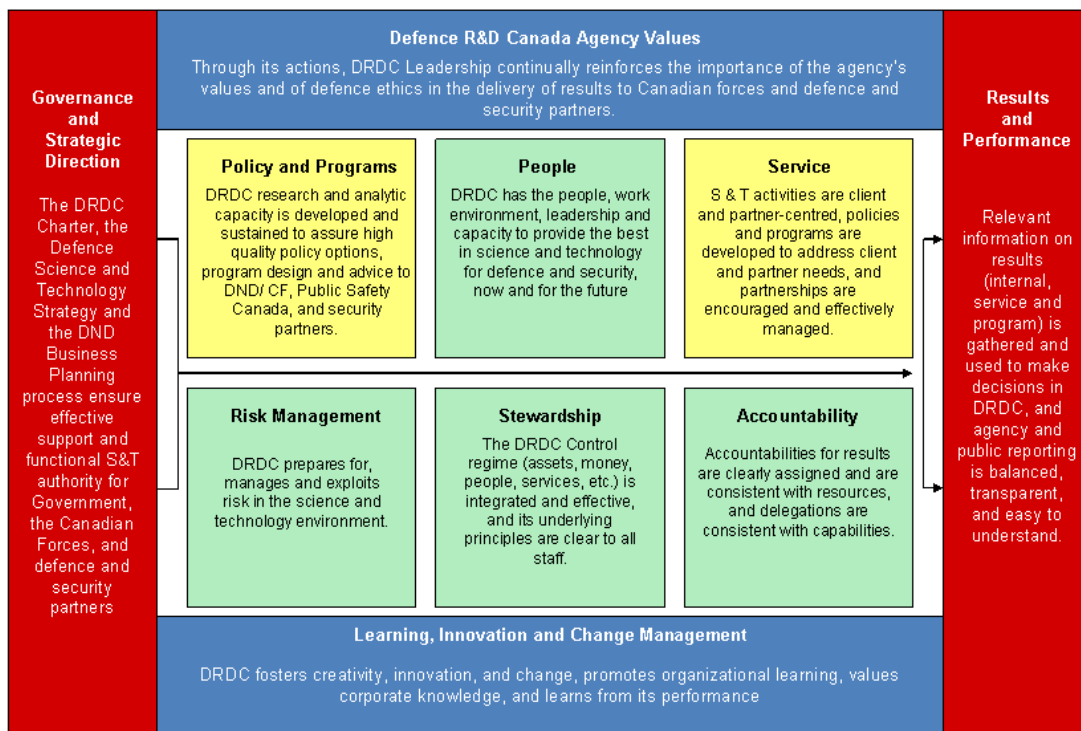


Figure 4: Expectations Tier of DRDC MAF

The Participants: RDEC will establish the priorities of any given MAF cycle.

DSTEA³⁹ will be the OPI for the DRDC MAF. DGSTO and DGRDCS will be responsible for provision of corporate data, and DGMPRA will be responsible for the development and execution of managers' surveys to DSTEA requirements. Managers' surveys for the DRDC MAF would be addressed to DRDC Level 2 and Level 3 Managers, and those Level 4 functional authorities who are members of Centre management committees. DSTEA would analyze and report the results of the DRDC MAF cycle to RDEC.

The Resources: DSTEA will plan any given DRDC MAF cycle, analyze supplied corporate data and the results of the managers' survey, and report the results to RDEC (17 person-weeks⁴⁰). DSTEA may also use the results to support TB MAF requirements (2 person-weeks).

DGRDCS and DGSTO will provide corporate data to DSTEA requirements (5 person-weeks).

³⁹ The organizational designators in Section 3 are familiar to the client, and so are not generally written in full, but are defined in full in the List of acronyms/initialisms, page 71 of this report.

⁴⁰ These resource estimates are drawn from Section 4.2 of this report.

DGMPRA will develop and implement a managers' survey to DSTEA requirements and deliver survey tabulations to DSTEA (8 ½ person-weeks).

DRDC Level 2 and Level 3 managers, and those Level 4 functional authorities who are members of Centre Management Committees will be required to complete the managers' survey (4 person-weeks, based on 1 hour per manager).

3.2 The DRDC MAF, Expectations Tier

There are four pillar elements of the DRDC MAF (*Defence R&D Canada Agency Values; Governance and Strategic Direction; Results and Performance; and Learning, Innovation and Change Management*) and six core elements (*Policy and Programs; People; Service; Risk Management; Stewardship; and Accountability*). The two classes of elements have different characteristics and roles. The core elements apply to everyone in the organization, but are especially relevant to line managers, whose activities determine the success of DRDC relative to MAF measures. In effect, the core elements set the standards for the performance of management. The pillar elements set the strategic environment for management.

The two classes of elements were also developed differently. The pillar elements were developed largely based upon reference to the TB MAF together with TBS, DND or DRDC documents. This ensured that the pillar elements reflected strategic intentions. Development of the core elements included significant investigation of the peer-reviewed literature, to ensure that the measures employed would reflect state-of-the-art thought on public administration and management.

3.3 The Pillar Elements

There are four pillar elements. *Defence R&D Canada Agency Values* set the very character of DRDC, defining the type of environment and the behaviour and attitudes of employees that best represent the organization. *Governance and Strategic Direction* describes the strategic policy basis for DRDC management activities, ensuring that management activities respond to policy-based needs. *Results and Performance* identifies the need for evidence-based decision-making and evaluation of program performance. Finally, *Learning, Innovation and Change Management* describes the environment in which managers manage. If the core elements control *how* managers manage, then the pillar elements set the environment in which they manage. The provision of that environment is the purview of DRDC's executive leadership, rather than of managers. Thus, whereas the core elements of the DRDC MAF focus on Level 3 and 4 managers, the pillar elements should focus on Level 1 and 2 managers, whose behaviour and attitudes set the standard for Level 3 and 4 managers. Of course, Level 3 and 4 managers cannot ignore the pillar elements, but the pillar elements represent enablers or constraints, rather than measures of performance.

The development of the pillar elements relied heavily upon the results of application of TB MAF to the Department of National Defence, together with corporate documents. This approach reflected the strategic nature of the pillar elements and the need to establish clear linkages with the superior TB MAF.

3.3.1 Defence R&D Canada Agency Values

Through its actions, DRDC Leadership continually reinforces the importance of the agency's values and of defence ethics in the delivery of results to the Canadian Forces and defence and security partners.⁴¹

Defence R&D Canada's values, together with defence ethics standards, position DRDC to respond to changing world and organizational circumstances where management by prescriptive rule-sets will often be found wanting. They represent DND and DRDC's implementation of the Values and Ethics Code for the Public Service⁴².

Indicators and Measures for this element are shown in Table 3.

Table 3: Indicators, Measures and Instruments for Defence R&D Canada Agency Values

Indicators	Measures and Instruments
Exemplary conduct Agency values are reflected in the realities and cultures of its Centres Values-based management practices	Staff identify with DRDC Values • Values and ethics exercises • Focus groups or surveys of staff • Focus groups or surveys of partners and clients Ethical decision making supported by the Defence Ethics Program • Defence Ethics training statistics from PeopleSoft® • DRDC Ethics Coordinator activity statistics Organizational performance is evaluated based on Defence Ethics Program • Review of Ethics Coordinator activities • Focus groups or surveys of staff

For the most part, measures can be assessed using existing instruments. Commitment to the Defence Ethics program can be readily inferred by examining PeopleSoft®-based training records; for example: have all new staff received defence ethics training within an acceptable time of being taken on strength (TOS)? Similarly, examining the activities of the DRDC Ethics Coordinator⁴³ would offer insight into the ethical health of DRDC. The 2008 Public Service Employee Survey includes ethics-related questions and with over 500 respondents for DRDC⁴⁴ should offer a reasonable representation of DRDC's ethical health. A *potentially* stronger

⁴¹ In Sections 3.3 and 3.4, the discussion of each element of the proposed DRDC MAF will open with the statement of Expectations, italicized.

⁴² Treasury Board of Canada Secretariat, "Values and Ethics Code for the Public Service," Public Works and Government Services Canada, Ottawa: 2003.

⁴³ Currently the Director, R&D Business Affairs.

⁴⁴ Treasury Board of Canada Secretariat, "Organizational Report for Department of National Defence Assistant Deputy Minister Science and Technology Group," 2008 Public Service Employee Survey Results, <http://www.tbs-sct.gc.ca/pses-saff/2008/results-resultats/res-eng.aspx?cd=&o1=03&o2=019&o3=000&o4=000&o5=000#tphp> accessed 28 May 2009.

instrument is the Defence Ethics Survey, delivered every three years,⁴⁵ although past versions have only be addressed to DND employees and CF Members with addresses on the DWAN/DIN.

On an ongoing basis, ethics-related instruments might be expanded to include workshops or focus groups, although these two are perhaps more diagnostic or even corrective measures than assessment tools.

3.3.2 Governance and Strategic Direction

The DRDC Charter, the Defence Science and Technology Strategy, and the DND business planning process ensure effective support and functional S&T authority for Government, the Canadian Forces, and defence and security partners.

This statement identifies key elements – the ‘essential conditions’ – that serve to ensure effective support and position ADM(S&T) as the Department’s functional authority for defence S&T. The DRDC Charter establishes the *raison d’être* of the organization, its relationship to DND, the CF and stakeholders, and governance, organization and accountability.⁴⁶ The Defence S&T Strategy provides the framework for delivery of S&T in the defence and security environment, both by DRDC and by its partners.⁴⁷ Finally, DRDC’s integration in the DND business planning process ensures that DRDC’s activities will support the Strategic Outcomes of DND’s Program Activity Architecture.

Indicators and Measures for this element are shown in Table 4.

⁴⁵ Most recently in 2007; see Fraser, Kyle, “The 2007 Defence Ethics Survey: Summary of the Overall CF and DND Findings for Decision Makers,” Defence R&D Canada, DRDC CORA TN 2008-016, August 2008.

⁴⁶ Defence Research and Development Canada, “Framework Document,” Approved by Treasury Board Ministers, 27 July 2000.

⁴⁷ Department of National Defence, “Defence S&T Strategy: Science and Technology for a Secure Canada,” Ottawa, December 2006.

Table 4: Indicators, Measures and Instruments for Governance and Strategic Direction

Indicators	Measures and Instruments
Support to DM/DND through ADM(S&T)	Confidence of ADM(S&T)
Management Framework aligned to strategic outcomes	Coherent policy agenda • DRDC Business Plan to show links to PAA • DRDC PGAs to show coherence with sub- and sub-sub-activities in PAA
The right executive team	
Results-focused corporate priorities	Strong management cadre • Analysis of DRDC PMAs⁴⁸ • DRDC MAF survey for management cadre performance against core elements
Strategic resource allocation/reallocation based on performance	
Integrated management agenda	Management framework supports priority setting, reallocation, and alignment with government-wide priorities • Business-line planning allows alignment of PGA⁴⁹ resources to strategic agenda • Comparison of successive Business Plans for evidence of priority-setting and reallocation • Partner Group Agreements (PGA) form the basis for results-focused S&T • Do PGAs reflect Business Plan priorities?
Horizontal collaboration	
Environmental scanning	Organizational engagement in administrative and science-based horizontal initiatives • Evidence of activities (S&T ADMs, CRTI⁵⁰, etc.) Organizational engagement in administrative and science-based horizontal initiatives • DRDC's Technology Watch program provides warning of disruptive technologies

3.3.3 Results and Performance

Relevant information on results (internal, service and program) is gathered and used to make decisions in DRDC, and departmental and public reporting is balanced and transparent, and easy to understand.

This statement establishes the need for rational, evidence-based decision making and for timely, neutral and transparent reporting of program results.

Indicators and Measures for this Element are shown in Table 5.

⁴⁸ PMA: Personal Management Agreement.

⁴⁹ PGA: Partner Group Agreement.

⁵⁰ CRTI: CBRN (Chemical Biological Radiological Nuclear) Research and Technology Initiative.

Table 5: Indicators, Measures and Instruments for Results and Performance

Indicators	Measures and Instruments
Monitoring and reporting of program, service and internal results Integrated financial and non-financial performance information used in DRDC decision making DRDC reporting based on measurable outcomes Benchmark against the best Transparent, timely and accessible communications	Quality of DRDC Business Plan and Annual Report - Assessment of the degree to which these documents support superior (RPP, DPR⁵¹) or external (transparency) requirements Staff and Client survey results - Public Service Employee Survey, Defence Ethics Survey (if DRENet-enabled), MAF surveys Progress in strengthening financial and program results, and performance measurement - Ongoing tracking of available measures from sources such as CPME⁵²; e.g.: ongoing performance against project milestones; expenditures against plans; etc. DRDC monitoring and review of performance - This reflects the activities of DSTE A and so would warrant program evaluation of DSTE A activities Risk-based evaluation plans (reviewed regularly) and follow-up - Evidence of RDEC decisions on past, current and future requests to CRS⁵³ for program evaluations Performance against external benchmarks - Peer reviews of scientific programs - Potentially, evaluations or audits of corporate services activities

3.3.4 Learning, Innovation and Change Management

DRDC fosters creativity, innovation and change, promotes organizational learning, values corporate knowledge, and learns from its performance (to better support the defence and security community).

This statement establishes the environment necessary for an adaptive, forward-looking organization.

Indicators and Measures for this Element are shown in Table 6, overleaf.

⁵¹ RPP: Report on Plans and Priorities; DPR: Departmental Performance Reports.

⁵² CPME: Collaborative Program Management Environment.

⁵³ CRS: Chief Review Services.

Table 6: Indicators, Measures and Instruments for Learning, Innovation and Change Management

Indicators	Measures and Instruments
A learning organization with strategic vision A culture that anticipates change, values innovation, and supports transformation An organization that examines its own performance to identify need for change An organization that empowers managers through delegation An organization that manages knowledge	Progress and investment in organizational learning • PeopleSoft® provides information on training and development activities • FMAS⁵⁴ provides information on training and development direct investment • Corporate initiatives (such as EXPEDITION 09 1.4) provide a record of organizational intent and commitment • A DRDC MAF survey would address employees' perceptions of the effectiveness of organizational learning initiatives and practices Progress in knowledge management • CPME will provide information on investment and progress on research in knowledge management • Assessment of operational application of knowledge management will require a variety of instruments, including: - o Review of CANDID⁵⁵ over time - o Review of PGAs - o DRDC MAF survey questions Stakeholder/staff perceptions of organizational adaptability, change and innovation • Client/partner surveys • Staff surveys, either directly as DRDC MAF surveys or potentially, the Public Service employee Survey if appropriate questions are asked Linkages between organizational performance and organizational development initiatives • Analysis of DRDC Business Plans, PGAs and EXPEDITION XX work plans to establish strength of linkages.

3.4 The Core Elements

There are six core elements. The *Policy and Programs* element addresses the policy bases for DRDC programs. The *People* element addresses human resources management, and reflects the critical importance of human capital in a knowledge-based organization like DRDC. The *Service* element is considerably reduced in scope from the TB *Citizen-centred Service* element since DRDC, and DND for that matter, is not generally engaged in direct services to citizens. The *Risk Management* element offers an interesting challenge, where the bureaucracy at large largely tries to reduce risk whereas S&T organizations often try to exploit risk. The *Stewardship* element addresses a fundamental aspect of public service, often exemplified as 'protecting the public

⁵⁴ FMAS: DND's SAP®-based Financial Management System.

⁵⁵ CANDID: Canadian Defence Information Database.

purse.’ Finally, the *Accountability* element addresses the crucial features of hierarchical relationships in any modern organization.

3.4.1 Policy and Programs

DRDC research and analytic capacity is developed and sustained to assure high quality policy options, program design and advice to DND/CF, Public Safety Canada, and security partners.

The *Policy and Programs* element raises the oft-recurring question of the relationship between science and policy in government, and the potential differences between ‘science in policy’ and ‘policy in science.’

The central problem of Science in Policy comes out of Principal-Agent theory⁵⁶. This theory, borrowed from economics, is predicated on the relationship between two actors –the principal and the agent. The principal does not have the appropriate resources (such as scientific knowledge) to achieve its goals, and so must use the resources it does have (such as money) to contract an agent who possesses the required resources to achieve the goals on its behalf.⁵⁷ The principals in this situation are DND/CF and Public Safety Canada (PS), while the agents are the scientists of DRDC.

The problem that arises out of Principal-Agent theory is that of information asymmetry; the principal has no way of knowing if the agent is providing quality outputs because the principal, by definition, lacks the necessary resources to judge the quality. The only recourse for the principal is to either trust the agent or monitor the agent in an effort to ensure it is in compliance with the contract.⁵⁸ In the context of government and scientists, the need for Governmental accountability to Parliament for spending and program quality requires that agents be monitored.

Exacerbating the issue of information asymmetry is the tension between the technocratic and democratic views of policymaking, particularly in sciences.⁵⁹ Technocrats believe that science and technology is neutral and the best policy options will be generated if experts are allowed to formulate policy based on their exclusive knowledge. Democrats believe that science and technology have social and political biases, so for policy to be successful, it must incorporate public and non-scientific values.⁶⁰ An effective agent-monitoring framework would need to balance rational, evidence-based decision making with democratic, public participation.⁶¹

The central problem of Policy in Science is one of lack of consistency in program evaluation, or more specifically, a lack of a policy framework which would allow one to answer basic questions

⁵⁶ David H. Guston, “Principal-agent theory and the structure of science policy, revisited: ‘science in policy’ and the US *Report on Carcinogens*.” *Science and Public Policy*, October 2003 30:5, p. 347.

⁵⁷ Dietmar Braun and David H. Guston, “Principal-agent theory and research policy: an introduction” *Science and Public Policy*, October 2003 30:5, p. 303.

⁵⁸ Ibid, p. 305.

⁵⁹ Sheila Jassanoff “Rationalizing Politics” in *The Fifth Branch: Science Advisors as Policymakers*. (Cambridge: Harvard University Press, 1994) p. 15.

⁶⁰ Philip L. Bereano, “Reflections of a Participant-Observer: The Technocratic/Democratic Contradiction in the Practice of Technology Assessment” *Technological Forecasting and Social Change*. 54:1997, pp. 163-175.

⁶¹ E. Melanie DuPuis and Brian J. Gareau, “Neoliberal Knowledge: the Decline of Technocracy and the Weakening of the Montreal Protocol” *Social Science Quarterly*, 89:5, December 2008, p. 1214.

such as ‘does funding and delivering on this project further the goals for government?’ and ‘did this project meet its goals?’ The lack of a framework also creates an inability to compare project outcomes from different scientific fields.⁶² Development and application of a policy framework that addresses these issues would also function as a monitoring mechanism for assessing accountability in the contributions of science to policy making. An appropriate monitoring mechanism can provide a double-barrelled solution by addressing the issues of both Science in Policy and Policy in Science.

S&T activity outcomes have often been evaluated at the Program level, according to overly broad strategic goals.⁶³ This approach makes it difficult to determine the success of any one individual project within a Program, or if that project has made good use of public funding.

One promising approach to measuring and evaluating S&T programs is to borrow from investment management concepts. Science and technology outcomes are assessed from a ‘bottom-up’ perspective. Each project is evaluated for its outcomes or ‘defined investment goal’ and how those outcomes support the Program or ‘portfolio’ goals. Accountability in this context includes having a ‘balanced portfolio’ of both high risk and low risk S&T projects.⁶⁴ In the vacuum left by the current absence of an accountability approach to S&T⁶⁵, utilizing this goal-driven, bottom-up approach to accountability seems prudent.

Jackson describes portfolio management:

The central challenge in portfolio design is the selection of investments so their component goals will combine appropriately to achieve the desired portfolio goal. Without clearly articulated goals, it is impossible to assess rationally how individual R&D investments fit as components of program or portfolio goals.⁶⁶

Notice that while the portfolio concept is borrowed from the financial sector, there is no attempt to attach monetary value to outcomes. Instead, the outcomes are valued according to whether or not they have achieved their goals. By articulating the desired outcome in ‘units’, we can select the metric which is appropriate for the outcome; the specific unit metric will depend on the goal. By measuring success according to achievement of goals, we can compare success rates of projects which cannot be directly compared (for example: comparing workforce development to knowledge expansion).

A project really only fails when it does not meet its goal; so success can only be assessed if the goal is articulated. Generally, if R&D seeks to introduce new knowledge, then any project which

⁶² Irwin Feller, “Mapping the frontiers of evaluation of public-sector R&D programs.” *Science and Public Policy*, December 2007, 34:10.

⁶³ Brian A. Jackson, “Federal R&D: Shaping the National Investment Portfolio” in *Shaping Science and Technology Policy: The Next Generation of Research*, David H Guston and Daniel Sarewitz, eds. (Madison: University of Wisconsin Press, 2006), pp. 33-54.

⁶⁴ Ibid.

⁶⁵ Eleanor Fast, *Mobilizing Science and Technology: The New Federal Strategy*, Library of Parliament, Science and Technology Division, December 2007. p. 2, and Industry Canada, *Mobilizing Science and Technology to Canada’s Advantage*, 2007, p. 88.

⁶⁶ Brian A. Jackson, “Federal R&D: Shaping the National Investment Portfolio” in *Shaping Science and Technology Policy: The Next Generation of Research*, David H Guston and Daniel Sarewitz, eds. (Madison: University of Wisconsin Press, 2006), p. 38.

contributes to scientific knowledge can be considered a success, even if it is not necessarily ‘applied science.’

Jackson gives five generalized goals, each with different desired outcomes:

- Expansion of the body of knowledge
- Monetary returns via economic growth
- Mission directed needs for R&D results
- Workforce development and education
- Maintenance of national scientific and technical infrastructure and capacity

These generalized goals can be aligned with the Advantage Goals of the Canadian S&T Strategy⁶⁷ as in Table 7:

Table 7: Jackson’s Goals Aligned to the Industry Canada S&T Strategy

S&T Strategy	Portfolio Management
Entrepreneurial Advantage	• Monetary returns via economic growth • Mission directed needs for R&D results
Knowledge Advantage	• Expansion of the body of knowledge
People Advantage	• Workforce development and education • Maintenance of national scientific and technical infrastructure and capacity

The ‘roll up’ nature of the portfolio paradigm also fits well with the roll up nature of an Agency level MAF.

Policy capacity can be defined as “the ability to marshal the necessary resources to make intelligent collective choices about and set strategic directions for the allocation of scarce resources to public ends”⁶⁸ or more simply, the ability to consistently create and implement policy which meets its intended objectives.

Policy capacity is dependent on having a critical mass of human capital trained in policy development, implementation and evaluation, as well as a policy framework or process in which these analysts do their job, and a culture which supports good policy making. Since policy capacity is dependent on these mutable factors, it will naturally vary over time and place.⁶⁹

⁶⁷ Industry Canada, *Mobilizing Science and Technology to Canada’s Advantage*, 2007.

⁶⁸ Martin Painter and Jon Pierre. “Unpacking Policy Capacity: Issues and Themes” in *Challenges to State Policy Capacity*. Martin Painter and Jon Pierre, eds. (New York: Palgrave Macmillan, 2005), p. 2.

⁶⁹ Martin Painter and Jon Pierre, p. 3.

The Indicators tier for Policy and Programs reflects the three key indicators needed for policy capacity: people, a framework, and supportive culture. The indicators closely resemble those of the TB MAF, but are tailored for clarity and to reflect the DRDC environment and level of management utilizing the MAF.

Indicators and Measures for this element are shown in Table 8. Note that the measure related to human resources management for the policy community will also be addressed through the people element. This type of ‘cross-linking’ is quite common throughout the DRDC and the TB MAFs.

Table 8: Indicators, Measures and Instruments for Policy and Programs

Indicators	Measures and Instruments
Sustained analytic capacity and culture of consultation, review and challenge Results focused policy and program agendas aligned with government's horizontal priorities <i>Social Evaluation of Impacts</i> Confidence of the ADM(S&T), clients and partners	Quality of Policies and Programs • Audits • Peer reviews • Access to Information (ATI) program performance • Environmental assessment program performance Comprehensive Human Resource Management plan for the policy community • Audit of succession planning • Audit of recruitment and retention demographics • Effectiveness of student employment programs • MAF survey of managers Investments in policy capacity and research tools. • Evidence of Research Collaboration through CPME or manager surveys • Audit of professional development programs • Scientific equipment maintenance and replacement records

3.4.2 People

DRDC has the people, work environment, leadership and capacity to provide the best in science and technology for defence and security, now and for the future.

The People element of the MAF is in a sense ubiquitous. The human resources management regime is largely consistent across the core public service and so differences between the DRDC and TBS elements should be more a reflection of the DRDC vernacular than substantive.

In December 2005, the Government of Canada fully implemented the *Public Service Modernization Act* (PSMA). The Act was created to improve and reform the Public Service in order to meet the demands of the 21st Century. Factors such as new technology and globalization had lead to increased service demands and heightened expectations from citizens; a shift was occurring in labour relations, leading to the need for a more collaborative labour relations model;

and the appointments process had become cumbersome and ineffectual, necessitating the creation of a new, streamlined hiring system which could function more effectively while protecting the core principle of merit-based hiring.⁷⁰ The *Public Service Employment Act* (PSEA)⁷¹ provides managers with the flexibility, authorities and accountability necessary to support the PSMA.

The *Staffing Management Accountability Framework*⁷² (SMAF) translates the PSEA into a more accessible working model. It meshes with the MAF to provide clearer direction on the People Element. The SMAF is comprised of eleven elements:

- Delegation of Staffing
- HR Planning and Integration with Business Planning
- Organizational HR Support Systems
- Organizational Accountability for Results
- Flexibility and Efficiency
- Merit
- Non-partisanship
- Representativeness
- Access
- Fairness
- Transparency

Other, non-legislative documents relevant to Human Resource Management in the Public Service are the Treasury Board's *Values and Ethics Code for the Public Service*⁷³ and *Guidance for Deputy Ministers*⁷⁴, as well as the *Privy Council Office Annual Report*⁷⁵.

Succession planning is a crucial element of HR management and is vital to sustaining capacity in policy and programs.⁷⁶

Indicators and Measures for the People element of the DRDC MAF are based upon the TB MAF, together with the elements of the SMAF, the results of the 2006 DND MAF assessment, and the requirements for Round I of the TB MAF. Indicators and Measures are shown in Table 9, overleaf. Instruments for assessment of measures include the Public Service Employee Survey, for which raw data are available for custom analysis, not just the published reports.

⁷⁰ Senator Sharon Carstairs, speech, Move Second Reading of *Public Service Modernization Act*, June 5, 2003.

⁷¹ PSMA Resource Centre. Key Messages: *Public Service Employment Act*. http://www.psagency-agencefp.gc.ca/arc/hrmm-mgrh/psma-lmfp/centre/products-produits/messages_e.asp#PSEA.

⁷² <http://www.psc-cfp.gc.ca/plcy-pltq/frame-cadre/acco-resp/smaf-crgd-eng.htm>.

⁷³ Values and Ethics Code for the Public Service.

⁷⁴ Guidance for Deputy Ministers <http://www.pco-bcp.gc.ca/index.asp?lang=eng&page=information&sub=publications&doc=gdm-gsm/doc-eng.htm>.

⁷⁵ Privy Council Office Annual Report <http://www.pco-bcp.gc.ca/index.asp?lang=eng&page=clerk-greffier&sub=reports-rapports&doc=reports-rapports-eng.htm>.

⁷⁶ Treasury Board of Canada Secretariat. "Succession Planning and Management Guide." <http://www.tbs-sct.gc.ca/gui/sure-eng.asp>.

Table 9: Indicators, Measures and Instruments for People

Indicators	Measures and Instruments
Workforce is sufficient in numbers and abilities while reflecting the Canadian population	Comprehensive HR Strategic plan in place • DRDC Human Resources Plan⁷⁷ • PeopleSoft®
Workplace is a supportive and respectful environment, including respect for official language requirements	Progress against HR targets including quality of work life, official languages, employment equity • PeopleSoft® • PS Employee Survey • Employee Assistance Program (EAP) reports • Progress against demographic targets, employment equity staffing activities, language of work complaint or discrimination statistics
All levels of management demonstrate effective leadership	Progress in measuring & improving employee engagement • Recognition & reward program statistics • Development program participation levels • Personal Learning Plan statistics, especially goal achievement
Employees are engaged in their work and have opportunities to learn and grow	Quality of leadership • Performance Management Program statistics • Public Service Employee Survey
	Quality of labour relations • PS Employment Survey • LMCC and LMRC activities • Alternative Dispute Resolution statistics • Classification and other grievance statistics

3.4.3 Service

S&T activities are client and partner-centred, policies and programs are developed to address client and partner needs, and partnerships are encouraged and effectively managed.

The TBS document *Quality and Affordable Service for Canadians: Establishing Service Standards in the Federal Government*⁷⁸ was implemented in 1994. The TBS service standards stress quality and affordable services at the citizen-public servant interface, reflecting the fact that most government departments offer services directly to Canadians. DRDC is an exception to this, since its direct services are delivered to DND, other government departments and private enterprises.

⁷⁷ For example, Defence R&D Canada, "Human Resources Plan, FY 2008-2009," undated.

⁷⁸ "Quality and Affordable Service for Canadians: Establishing Service Standards in the Federal Government – An Overview," http://www.tbs-sct.gc.ca/pubs_pol/oepubs/TB_D3/OQUA-eng.asp.

Most service-oriented literature and research focuses on private sector organizations delivering direct customer service; however, the conclusions and best practices taken from these studies are relevant to the public sector, and are readily transferable to the DRDC service model in which customers are replaced by client or partner organizations.

The goal of service delivery is to satisfy the recipients of the service. Client satisfaction is dependent not only on service quality but also on the client's perceived value of that service⁷⁹; this view is echoed in the very title of the TBS service standards document *Quality and Affordable Service for Canadians*. There is evidence that high satisfaction levels lead to increased client retention and increased regard for the corporate image.⁸⁰

Service *quality* is a construct encapsulating a number of dimensions. Most construct models, as demonstrated in Ghobadian et al.,⁸¹ can be aligned to group the various dimensions into five broad categories, best identified by Zeithaml et al., as Tangibles, Reliability, Responsiveness, Assurance, and Empathy.⁸² The consumer or client judges the quality of the service provided based on his or her *perception* of these dimensions, which may not necessarily be the reality of the dimension in the organization; this is an important distinction. For example, while the organization may in fact have cutting edge information security, the client may not perceive this. These dimensions are designed to apply to a direct client-provider transaction; however, they can equally be applied to DRDC's delivery of services and outputs to government departments and private enterprises.

Various authors observe that evaluation of service quality is difficult since the quality cannot be measured directly (as, for example, a failure rate or some other technical measure) but must be based on user experience or expectation.⁸³ It can be difficult for an organization to assess or anticipate a client's perceived value of a service because each individual client will perceive value relative to his/her own criteria.⁸⁴ Generally, clients' perceived value of a service will be based on a "trade-off between the quality or benefits [i.e. utility] they perceive in product relative to the sacrifice they perceived by paying the price."⁸⁵ The cost or 'price' of a service can include money, time, opportunity costs and other resources. Because the organization is limited in its ability to impact service costs, the most effective method for influencing perceived value is by maintaining high service quality.

The importance of perception is reinforced in an earlier study by Brown and Swartz, which explored professional service quality in primary health care by examining client-professional relationships between doctors and patients.⁸⁶ Brown and Swartz studied the gaps between client expectations and experience, and between client expectations and professional perceptions of

⁷⁹ Hsin-Hui Hu, Jay Kandampully, and Thanika Devi Juwaheer, "Relationships and impacts of service quality, perceived value, customer satisfaction and image: an empirical study", *The Service Industries Journal*, 29:2 Feb 2009, p. 121.

⁸⁰ Hsin-Hui Hu, Jay Kandampully, and Thanika Devi Juwaheer, p. 122.

⁸¹ Abby Ghobadian, Simon Speller and Matthew Jones, "Service Quality: Concepts and Models." *International Journal of Quality & Reliability Management*. 11:9, 1994, pp. 53-54.

⁸² Valerie A Zeithaml, A. Parasuraman, and Leonard L. Berry, "Delivering Quality Service," (New York: Free Press, 1990), p. 26.

⁸³ For example, Ghobadian, Speller and Jones (1994), or Stephen W. Brown and Theresa A. Swartz, "A Gap Analysis of Professional Service Quality," *The Journal of Marketing*, Vol. 53, No. 2 (Apr., 1989), pp. 92-98.

⁸⁴ Hsin-Hui Hu, Jay Kandampully, and Thanika Devi Juwaheer, p.114.

⁸⁵ Ibid.

⁸⁶ Stephen W. Brown and Theresa A. Swartz, pp. 92-98.

those expectations. They observe the need either to align service provider behaviours and expectations with those of clients, or to alter client expectations and experiences, often by education on the subject of professional capabilities and services.

Measuring service quality in an S&T environment is more complex than the standards illustrated by the Treasury Board Secretariat. Setting service standards, for example, may be straight forward in a traditional, client centered transaction, such as Western Economic Diversification Canada (WEDC), where “[r]esponse to initial application in four days”⁸⁷ is presumably a reasonable and measurable service standard, given a 90 percent compliance rate; however, the same is not the case for professional services (like the S&T services of DRDC) where customer, client or partner expectations are not so easily quantifiable.

Indicators and Measures for the Service element are given in Table 10. The DRDC link to the TB Measures and Indicators can be seen, after accounting for the DRDC vernacular and reduction in scope for the DRDC element, through deletion of ‘citizen focus.’

Table 10: Indicators, Measures and Instruments for Service

Indicators	Measures and Instruments
Monitored, continuously-improved service quality	Service improvement and transformation planning is ongoing • EXPEDITION XX ‘dashboard’ and progress reports • DRDC Annual Report • MAF surveys to measure cultural adoption
Leading advice on technology exploitation	Client & partner satisfaction is measured annually against standards • Client surveys • Overview Group records • MAF surveys (DRDC manager perceptions)
Proactive engagement of clients and partners	Collaboration is key to delivering DRDC services • DRDC Annual Report(Annex on S&T Collaboration) • Availability of DRDC-wide SOPs • Partner and client-focused surveys • MAF surveys (Collaboration)
Effective relationships with clients and partners	DRDC makes S&T information readily available to stakeholders • DRDKIM⁸⁸ records (CANDID statistics) • Partner and client-focused surveys

⁸⁷ Treasury Board Secretariat, “Quality and Affordable Service for Canadians: Establishing Service standards in the Federal Government – An Overview,” at http://www.tbs-sct.gc.ca/pubs_pol/oepubs/TB_D3/OQUA-eng.asp.

⁸⁸ DRDKIM: Director R&D Knowledge and Information Management

3.4.4 Risk Management

DRDC prepares for, manages and exploits risk in the science and technology environment.

Public sector science and technology organizations like DRDC deal with a central conundrum: exploiting risk is essential to innovation, whereas reducing risk is fundamental to bureaucracies. The DRDC Expectations statement for Risk Management speaks to this conundrum by calling upon DRDC to address both facets of it.

Indicators and Measures for the Risk Management element are largely based upon those of the TB MAF, and so are apparently silent on the subject of exploiting risk. This need not be so. DRDC's mission establishes the agency itself as a risk reduction measure in the international defence and security context; therefore, DRDC could incorporate *risk as opportunity* concepts into its own Corporate Risk Profile (CRP), as long as the DRDC document were not in absolute conflict with DND's CRP, as yet unpublished. Thus, alignment of the DRDC MAF to the TB MAF would be preserved, with risk as opportunity being addressed at the DRDC policy level. Defence R&D Canada might also address risk as opportunity concepts through customized training as suggested by Quigley in the Annex to this report.

It should be noted that Risk Management is not an element in which DND performed particularly well in the TB MAF, receiving an "Opportunity for Improvement" rating in Round V, in which the TBS report said:

"DND has made strong progress in the implementation of integrated risk management. The department has identified its major risks to the successful delivery of the Defence programme and intends to integrate risk in the upcoming planning cycle. While risk mitigation strategies have been identified, DND has yet to assign monitoring and implementation of these strategies to senior management. TBS is encouraged by the Department's efforts to date and believes it could be an exemplary federal organization in this area of management once its risk management system is complete and fully functioning."⁸⁹

This weakness in Departmental process adds further complexity to risk management in DRDC, and to the tension between risk as opportunity and risk as failure.

Indicators and Measures for Risk Management are shown in Table 11, overleaf.

⁸⁹ DND Assessment, Round V, Available at: <http://www.tbs-sct.gc.ca/maf-crg/assessments-evaluations/2007/dnd/dnd-eng.asp>.

Table 11: Indicators, Measures and Instruments for Risk Management

Indicators	Measures and Instruments
Risk is managed within the context of the DND Corporate Risk Profile	Risk Management is integrated with decision making, planning and reporting Evidence of risk management processes in project documentation and CPME
Risk Management is integrated with planning and operations structures throughout all levels of the Agency	Risk Management tools, training, and support are available for staff - PeopleSoft training statistics - Risk management SOPs, etc.
Capacity exists to support a Risk Management Culture	Management demonstrates leadership in Risk Management - Management surveys Risk Management approach compliments DND corporate risk profile - DRDC Business Plan and Annual Report alignment with Corporate Risk profile (DND and DRDC) - Use of best practices repository Engagement of external stakeholders in assessing/communicating risks. - Review of TDP documentation and associated Senior Review board minutes

3.4.5 Stewardship

The DRDC control regime (assets, money, people, services, etc.) is integrated and effective, and its underlying principles are clear to all staff.

The term ‘stewardship’ is defined as “the careful and responsible management of something entrusted to one's care.”⁹⁰ In the public sector, government departments act as stewards of the resources of Canadians; national resources include money (specifically tax revenue), information, environmental/ natural resources, national reputation, people, and physical assets.

The Stewardship element of the Treasury Board MAF seeks to place controls on how government employees manage resources. Similar to the problem discussed in the Policy and Programs element, the central issue in Stewardship is based on Agency Theory. This theory, borrowed from economics, is predicated on the relationship between two actors: the principal and the agent. The principle is the party which ‘owns’ the resource, while the agent is the party responsible for managing the resource. The principals in this situation are Canadian taxpayers, through Parliament and Government, while the agents are the government departments and employees. There is no agency problem when the interests of the principal and agent coincide and each party seeks to maximize the utility of the resource; however, an agency problem exists when the

⁹⁰ Merriam-Webster Online Dictionary. <http://www.merriam-webster.com/dictionary/stewardship>.

interests of the principal and the agent diverge.⁹¹ Because the agent has control of the resources, s/he can utilize the resources to his/her benefit, resulting in agency costs; the principal can reduce these costs by imposing internal controls on the agent, such as audit requirements, reporting structures, and evaluations.⁹²

Controls placed on agents need to be sufficient to curb agency costs without being overly costly or cumbersome. An overly rigid control regime not only utilizes excessive resources in comparison to the potential for abuse of resources, it can serve to disengage employees and build resentment towards the organization, leading to diminished motivation, and loss of trust.⁹³

An alternative theory may offer valuable information to help enhance trust in the organization. Ironically named Stewardship Theory, it seeks to explain why it is that an agent will sometimes act in the interests of the principal even when to do so appears counter to the agent's own benefit.⁹⁴

Stewardship Theory, also rooted in economic theory, describes the relationship between the principal - Canadian taxpayers through Parliament and Government - and the stewards - departments and public servants. Just as in Agency theory, each party seeks to maximize the utility of resources to his/her own benefit. The steward has control of the principal's resources, and will utilize the resources to maximize his/her own utility, which may result in agency costs if the steward's interests are not aligned with those of the principal. Stewardship Theory postulates that the steward places higher value on cooperative behaviours because this will provide greater utility than self-serving behaviours.⁹⁵ The principal can encourage cooperative behaviours by granting the steward a degree of trust; this will lead to intrinsic motivation to achieve the organization's goals, based on the steward's desire for higher order needs such as self-determination, achievement, and personal growth.⁹⁶

Indicators and Measures for Stewardship are shown in Table 12, overleaf. The indicators are broadly based upon those of the TB MAF, but revised to reflect the DRDC vernacular, as are the Measures.

⁹¹ James H. Davis, F. David Schoorman, and Lex Donaldson, "Toward a Stewardship Theory of Management", *Academy of Management Review*, 22:1, 1997, p. 22; Dietmar Braun and David H. Guston, "Principal-agent theory and research policy: an introduction" *Science and Public Policy*, October 2003 30:5.

⁹² James H. Davis, F. David Schoorman, and Lex Donaldson, p. 22.

⁹³ Jens Grundeir, "Chapter 3: Examining the Relationship between Trust and Control in Organizational Design" in *Organization Design: the Evolving State of the Art*, R.M. Burton, B. Eriksen, D.D. Håkonsson, C.C. Snow, eds. Springer Information and Organization Design Series, 6, 2006, 52; James H. Davis, F. David Schoorman, and Lex Donaldson, "Toward a Stewardship Theory of Management", p. 25.

⁹⁴ James H. Davis, F. David Schoorman, and Lex Donaldson, p. 24.

⁹⁵ Ibid.

⁹⁶ Jens Grundeir, p. 52; James H. Davis, F. David Schoorman, and Lex Donaldson, p. 37.

Table 12: Indicators, Measures and Instruments for Stewardship

Indicators	Measures and Instruments
Management systems provide relevant information and effective feedback on resources, results and controls	Reports and records are timely and accurate • Financial forecast performance • Managers' survey
Effective, efficient and economical project management	Expenditures are within budget • FMAS and forecast performance
Established internal audit function	Resources are procured and used appropriately to achieve goals • Procurement file performance • Managers' survey
Compliance with policies, regulations, and legislation	Assets are inventoried and strategically managed • Frequency of asset sighting • Write-offs or transfers Information is utilized and protected appropriately • Security infraction statistics (if releasable) • Protection of personnel files • Protection of classified files/assets Deliverables are timely and effective • Program audits • CPME

3.4.6 Accountability

Accountabilities for results are clearly assigned and are consistent with resources, and delegations are consistent with capabilities.

Aucoin and Heintzman identify three purposes of accountability in a bureaucratic system: control, assurance and continuous learning.⁹⁷ Accountability is a mechanism for exercising control over the decision making of subordinates in a system of devolved authority. Managing for and reporting outcomes and results helps ensure accountability, as these increase transparency and disclosure without resorting to excessive micro-management.⁹⁸

In the parlance of agency theory⁹⁹, accountability also functions to “provide assurance to principals that their agents are fulfilling their responsibilities as intended.”¹⁰⁰ To provide assurance, accountability regimes must specify “goals and objectives, service entitlements and

⁹⁷ Peter Aucoin and Ralph Heintzman, “The dialectics of accountability for performance in public management reform”, *International Review of Administrative Sciences*, 66, 2000, 48, p. 45.

⁹⁸ Peter Aucoin and Ralph Heintzman, p. 49.

⁹⁹ Discussed previously in *Policy and Programs Element*, page 21 of this report.

¹⁰⁰ Peter Aucoin and Ralph Heintzman, p. 49.

standards, best management practices and performance targets”¹⁰¹ and include systematic auditing, inspection and review. A key principal of an effective accountability structure is that while “individuals, both when acting alone or in collaboration, must be held accountable for their individual performance,”¹⁰² there is also an acknowledgement of “the constraints that affect the realization of outputs and outcomes and over which public servants have little or no control.”¹⁰³ This is particularly important when determining responsibility for events and outcomes.

To lessen the vulnerability of each person in the superior-subordinate relationship, it is essential to have objective measures of performance, so that the subordinate is aware of the standard to which his/her performance will be held accountable, and the manager has evidence of the subordinate having met (or not) his/her responsibilities for performance.¹⁰⁴

Demonstration of performance against expectations implies a regime of reporting and review: the subordinate reports to the superior and the superior reviews performance. But it is not enough to just review the performance of subordinates. To have a true accountability regime, the superior must utilize the information gathered from the review to benefit the organization, otherwise, no real purpose is served by the accountability structure. According to Aucoin and Heintzman, “those responsible for managing the managers... [must] ensure that accountability for individual management performance counts”.¹⁰⁵

In addition to focusing on control and assurance, the goal of an accountability regime is also to support continuous improvement in policy, the organization or its management.¹⁰⁶ Results of individual performance assessments (both positive and negative) should be utilized as learning opportunities.¹⁰⁷

Elliot Jaques describes the accountability regime as a *three level managerial linkage* where “the manager is accountable to the manager-once-removed for his own work and for the work of his subordinate, and he manages his subordinate within the terms of reference set by the manager-once-removed.”¹⁰⁸ The manager-once-removed is, in turn, accountable to the Governing Body for his own work and for the work of his subordinate, the manager.¹⁰⁹ The manager may delegate responsibilities to subordinates (in fact, ordinarily *must do so*) but cannot escape accountability to his own manager (the manager-once-removed) for those delegated responsibilities and authorities. The manager must have requisite delegated authority from the manager-once-removed to exploit the resources assigned, whether human or financial. It has been argued that “accountability should be viewed as that which is exchanged for the devolution of authority. It can be a positive

¹⁰¹ Ibid.

¹⁰² Peter Aucoin and Ralph Heintzman, p. 50.

¹⁰³ Peter Aucoin and Ralph Heintzman, p. 54.

¹⁰⁴ Elliot Jaques, “Chapter Four: Managerial Accountability, Authority, and Dependence” in *A General Theory of Bureaucracy*. (New York: Halsted Press. 1976), p. 79.

¹⁰⁵ Peter Aucoin and Ralph Heintzman, p. 51.

¹⁰⁶ Peter Aucoin and Ralph Heintzman, p. 52.

¹⁰⁷ Peter Aucoin and Mark D. Jarvis, *Modernizing Government Accountability: A Framework for Reform* (Ottawa: Canada School of Public Service, 2005), p. 9.

¹⁰⁸ Elliot Jaques, p 65.

¹⁰⁹ Ibid.

opportunity to demonstrate performance results against the expectations of those who have faith and trust in an individual, an element of the organization, or the organization itself.”¹¹⁰

Frameworks and systems describe the environments in which accountability works, or is required, but do not define accountability *per se*. Within the bureaucratic system, the definition of accountability provided by Aucoin, Smith, and Dinsdale eloquently incorporates the aspects of accountability that are necessary for good governance:

Accountability [is] to justify, explain or defend one’s actions (or those of one’s subordinates) based on powers and responsibilities bestowed by a superior authority. The account may encompass a statement of any necessary corrective action to be taken. The superior authority has the obligation to hold to account all those on whom it has bestowed powers and responsibilities.¹¹¹

Responsibility is a key feature of this definition of accountability and it is important to note again that responsibility is not synonymous with accountability. Rather, consider that *responsibilities* are delegated to subordinates along with the *authority* necessary to reasonably perform these delegations; in exchange the subordinate must *account* to his/her superior for his/ her performance of these responsibilities. The Somalia Inquiry attempted, without much success, to clarify the difference as follows:

One who is authorized to act or exercise authority is ‘responsible.’ Responsible officials are held to account. An individual who exercises powers while acting in the discharge of official functions is responsible for the proper powers or duties assigned.¹¹²

This murky explanation offered in *Dishonoured Legacy* is unfortunate given the importance of the inquiry to the organizational development of the Department of National Defence and the Canadian Forces.

A more useful expression is found in *Organization and Accountability*, where the Department of National Defence solidly links the triad of responsibility, authority and accountability, while introducing the concept that delegated authorities and responsibilities bring with them the implicit *obligation* to act:

Having a [delegated] *responsibility* involves having the [delegated] *authority* and the obligation to act, including the authority to direct or authorize others to act. It also means being *accountable* for how those responsibilities have been carried out in light of agreed or set expectations, particular duties, or obligations. In a public sector organization ... each individual is obliged to *account* fully and promptly to those who, in the hierarchy, conferred the responsibilities, for the

¹¹⁰ “Strengthening Accountability and Comptrollership in National Defence,” Department of National Defence, 16 June 2004, C8/22.

¹¹¹ Peter Aucoin, Jennifer Smith, and Geoff Dinsdale, *Responsible Government: Clarifying essentials, dispelling myths and exploring change*, (Ottawa: Canadian Centre for Management Development, 2004), p. 88.

¹¹² Canada, Report of the Commission of Inquiry into the Deployment of Canadian Forces to Somalia, *Dishonoured Legacy: The Lessons of the Somalia Affair*, (Ottawa: Public Works and Government services Canada, 1997), p. 393.

way they have been carried out and for how the relevant authorities have been used.¹¹³

The present authors have added “[delegated]” to the quotation to stress that responsibility and authority are typically bestowed by a superior, who will hold the actions of the delegate to account, as per Aucoin, Smith and Dinsdale.

The accountability element of the proposed DRDC MAF will use Jaques’ accountability regime, along with Aucoin and Heinzman’s tri-partite explanation of accountability’s purposes, as its foundation. The DRDC MAF will focus upon the superior-subordinate relationship, to support both reporting and review and continuous process improvement. Indicators and measures for Accountability are shown in Table 13.

Table 13: Indicators, Measures and Instruments for Accountability

Indicators	Measures and Instruments
Clear accountabilities and responsibilities for due process and results	Management goals are identifiable and measureable • Performance management program (PMP) for Level 2 Managers • Management/annual objectives for Levels 3 and 4 (assessment of local practice) • Managers’ survey • Subordinate’s Personal Learning Plans (PLP)
Delegations consistent with capabilities	Duties and tasks are clear to subordinates • Current statements of duties • Measureable objectives • Timely performance assessment, linked to objectives
Subordinates’ goals reflect those assigned to their supervisors	Managers and staff have appropriate training and authority to undertake their delegations • Records of managers’ certifications • Records of mandatory management training A formal review process tracks progress, delegations and performance • Performance appraisal statistics Achievement of subordinates’ goals supports management goals and the organizational vision • Managers’ survey

¹¹³ DND. *Organization and Accountability: Guidance for Members of the Canadian Forces and Employees of National Defence*. Second Edition, Sept 1999, Ch IV, 2 URL: <http://www.forces.gc.ca/admpol/Organization-e.html>.

3.5 Evidence and Instruments

Table 14 summarizes evidence or instruments that can be used to support the proposed DRDC MAF. Not all instruments are necessary, since many hold the same information. This redundancy is fortunate since some instruments may be more convenient than others for supporting particular elements of the DRDC MAF. The large number of data sources also serves to reduce the need for managers' surveys to the absolute minimum required, thus reducing risk of *survey fatigue*.

Table 14: Summary of Evidence and Instruments for the Proposed DRDC MAF

Evidence or Instrument	Defence R&D Canada Agency Values	Governance and Strategic Direction	Results and Performance	Learning, Innovation and change	Policy and programs	People	Service	Risk Management	Stewardship	Accountability
Alternative Dispute Resolution Statistics						X				
ATI Program Performance					X					
Audit and Program Evaluation Reports			X		X				X	X
CANDID				X			X			
Classification and other grievance statistics						X				
Client /Partner Satisfaction Surveys					X		X			
CPME			X	X	X			X	X	
Development Program Participation						X				
Defence Ethics Survey ¹¹⁴	X		X							
DRDC Annual Report			X				X	X		
DRDC Business Plan		X	X	X						
DRDC Human Resources Plan						X				
DRDC Inventory Records for Equipment					X					
DRDC Managers' Survey		X		X	X		X	X	X	X
DRDC PAA		X								
DRDC Partner Group Agreements		X		X						
DRDC Risk Profile, Policies and SOPs								X		
EAP Activity Reports						X				
Environmental Assessment Performance					X					
EXPEDITION XX 'Dashboard'				X			X			
FMAS				X					X	
Inventory of Scientific Equipment					X				X	
LMRC and LMCC Records						X				
Peer Reviews of S&T Programs			X		X					
PeopleSoft®	X			X		X		X		X
PMA Statistics						X				X
Public Service Employee Survey			X	X		X				
Recognition and Reward Program						X				

¹¹⁴ The Defence Ethics Survey would be of considerable value, subject only to its availability via DRENet.

4 Application of the DRDC MAF

This section describes the application of the proposed DRDC MAF. It begins with a description and analysis of pilot studies conducted during EXPEDITION 09 and then proposes the framework for a steady-state operational MAF. The findings in Section 4.1 are a summary of those reported in the companion cycle 2 report¹¹⁵, which provides details of responses to individual questions in the surveys and organizes findings at the individual Measure level, rather than at the element level.

4.1 Pilot Studies

Three pilot studies were conducted as part of the cyclic development of the DRDC MAF. All three pilots employed surveys of DRDC Managers. The first pilot study examined the Stewardship element, and demonstrated the feasibility of the survey approach. The second pilot study examined the Accountability and Risk Management elements. The third pilot examined Policy and Programs, Service and People, and revisited Stewardship to test an annual cycle. The following discussion will be organized on the basis of the DRDC MAF structure, rather than by chronology of the pilots.

The pilot studies addressed the core elements of the DRDC MAF primarily through surveys. The surveys are described in some detail in O’Blenis and Nethercote and Baroni and Nethercote, and so only the findings of the pilot studies are described here. The pilot study surveys demonstrate the feasibility of surveys for the DRDC MAF, but also the weaknesses of surveys. Table 15 summarizes returns from the three pilot surveys, and the decline in response rate (*survey fatigue*) is evident. Clearly, surveys are useful, but must be employed effectively, but sparingly and only where other data sources are not available. This conclusion is supported by responses to open-ended questions in the third pilot survey, where complaints of survey fatigue were made. After-the-fact conversations with DRDC managers indicate another issue, that the two-week availability for the later surveys was too short.

Survey returns predominantly reflect Level 3 managers. The numbers of available Level 2 and Level 4 managers are much lower, to the degree that these two groups could not be sorted by centre without risk of identifying individuals. O’Blenis and Nethercote and Baroni and Nethercote address this in more detail.

The four pillar elements (Defence R&D Canada Agency Values; Governance and Strategic Direction; Results and Performance; and, Learning, Innovation and Change Management) were not addressed explicitly in the pilot studies, but many of the measures and instruments applicable to the core elements will also support the pillar elements. This will be demonstrated in Section 4.2. Findings of the pilot studies for the core elements follow in Sections 4.1.1 through 4.1.6.

¹¹⁵ See Baroni and Nethercote, DRDC Atlantic CR2009-135 Sections 7 and 8 for more details.

Table 15: DRDC MAF Pilot Survey Participation

	Population (Address List ¹¹⁶)	Valid Addresses ¹¹⁷	Valid Responses	Response from Valid Addresses, %
First Pilot (open 3 weeks: Summer 2008)	97	73	45	62
Second Pilot (open 2 weeks, February 2009)	141	141	75	53
Third Pilot (open 2 weeks, June 2009)	149	147	70	48

4.1.1 Policy and Programs

According to survey responses, the strategic goals of Canada's national S&T strategy¹¹⁸ appear to be adequately represented in DRDC's programs, with most activities addressing multiple national goals. The workforce development goal of the national strategy is one that is not as well represented, largely because DRDC's commercialization and mission directed R&D activities require a level of expertise which is not conducive to many conventional workforce development goals.

Development of policy capacity, which for DRDC includes S&T capacity, is often problematic in DRDC. Many managers feel that key positions are not filled quickly enough, though once they are filled, the individual performs effectively in a reasonable timeframe. Additionally, there is no relationship between the identification of high performing employees and how quickly a key position is filled, nor how effectively a new employee in a key position performs. This may be a reflection of lack of succession planning. Generally, despite a lack of a succession plan in the organization, managers are identifying high potential employees in their units and seem to feel that there are employees ready to compete for key positions.¹¹⁹

Defence R&D Canada's mentoring program offers one component of a successful succession plan. Most participants in the DRDC mentoring program have had positive experiences, and would participate in the program in the future. Non-participants appear to have limited knowledge about the program, and little desire to participate.

¹¹⁶ For the first pilot, the address list was the manager attendee list for the 2008 DRDC Managers' Workshop. For the second and third pilots, the address list was those *eligible* for the 2009 DRDC Managers' Workshop, a considerably larger number. Attendance at the DRDC Managers' Workshop is normally limited to about 100 managers, thus giving rise to the moniker, "The One Hundred," used to describe DRDC's management cadre.

¹¹⁷ The number of valid addresses reflects the number of survey invitations that did not 'bounce back' as invalid. For the first pilot, *invalid* addresses also include those which returned answerback messages saying that the addressees would be absent on annual leave for the duration of the survey. The first pilot was executed during prime holiday season: the last two weeks of July and the first week of August. Pilots two and three were conducted during winter and spring, and no answerbacks were received indicating that addressees were on vacation for the duration of the survey.

¹¹⁸ Industry Canada, *Mobilizing Science and Technology to Canada's Advantage*, Ottawa: 2007.

¹¹⁹ In the experience of one of the authors it is entirely another matter whether employees ready to compete, will compete. The *attractiveness* of management is the topic of the Management Leadership Development task in WBE 1.4 of EXPEDITION 09.

As may be expected in an S&T based environment, most managers report that keeping up with new ideas, methods and technology is very important to their job performance; however, there are mixed reports as to the satisfaction with resources available to do so.

4.1.2 People

Although the Public Service Employee Survey¹²⁰ is the preferred survey instrument for the People element of the DRDC MAF, several relevant questions were asked of Level 2 managers during the third pilot survey. Neither the population nor the response rate for level 2 managers support confidence in the results; nonetheless, only one-third of the six level 2 respondents felt that employment equity groups were adequately represented in feeder groups for key positions. Half of Level 2 respondents reported offering developmental opportunities specifically for employment equity groups.

4.1.3 Service

The EXPEDITION series of organizational change initiatives are themselves indicative of an organization whose leadership is committed to transformation and service improvement.

Managers appear to be unaware of the results of the most recent client satisfaction surveys, although this may be in part due to suspension of such activities during stand-up of Defence S&T Enterprise processes.¹²¹ Overview Group or Thrust Advisory Group records can supplant missing client surveys, but cannot replace the candor of responses available from anonymous client surveys. In the absence of such information, managers' own perception of service quality may be misaligned with client or partners' perceptions, to the detriment of client/partner satisfaction.

Survey data point to better quality of internal collaboration than external collaboration (industry and academe). Survey results also indicate that higher quality collaborative relationships lead to increases in goal achievement.

4.1.4 Risk Management

Risk management has been problematic for DND in the TB MAF, and must necessarily be so for DRDC in its own MAF. A departmental Corporate Risk Profile (CRP) is the cornerstone of the TBS Risk management element. The Department of National Defence has not had a CRP, although one is reportedly close to approval and release.

There appears to be no comprehensive DRDC risk management profile, which should be no surprise in absence of a DND CRP.¹²² There is neither a process in place to identify risk management stakeholders, nor a communication plan to communicate with stakeholders. Stakeholder identification appears to be based on corporate memory of past consultations; this knowledge should be captured in a data system, and an approach, such as an environmental scan, should be developed to identify stakeholders who may not have been considered in the past.

¹²⁰ See "2008 Public Service Employee Survey," Available at: <http://www.tbs-sct.gc.ca/svdg/pses-eng.asp>.

¹²¹ Karim Dahel, Private communication.

¹²² An examination of *Descartes* revealed no policy statement or SOP.

Risk management is often weak among the DRDC management cadre, although evidence of expertise exists. It is commonly held that risk management is the purview of project managers, rather than a pervasive responsibility in the organization. This project manager-centric view is consistent with concentration of risk management activities in the Technology Demonstration Program (TDP). There is a need for staff development with respect to risk management, and for inculcation of risk management practices outside the TDP program.

Level 3 Managers do not appear to consistently have confidence that their subordinates understand their roles, responsibilities, or limitations on authority when managing risks. In each case, over half of respondents either have inconsistent or no confidence that their subordinates understand these risk management duties. Statistical testing supports the assumption that managers who make their risk management priorities and tolerances clear to subordinates are more likely to have confidence in their subordinates' understanding of their roles in managing risks.

Managers who report that project plans consistently identify the likelihood and impact of risks appear more likely to revisit risk assessments during the delivery of the project. This suggests that those who explicitly identify project risks through a likelihood/ impact matrix are more likely to revisit risk assessments during the delivery of that project. Managers who report 'always' or 'often' when comparing progress to established project milestones also appear somewhat more likely to report 'always' or 'often' when identifying the likelihood and impact of project risks.

These findings reflect the conventional vision of *risk as failure*, as embodied in formal, conventional risk management practices promoted by the TBS. The pilot study did not determine the level of failure in DRDC activities, to allow the significance of the risk management findings to be truly assessed. The *risk as opportunity* concept was not addressed in the pilot survey, so that DRDC's fundamental corporate role as risk reducer in the international defence and security context was not addressed. This aspect of risk management could be brought into play in a DRDC Corporate Risk Profile. Alternatively, the *risk as opportunity* concept could be addressed through the Policy and Programs element, although doing so would obscure rather than reveal the tension between risk as failure and risk as opportunity. Annex A to this report explores the application of culture theory to risk management as a means for DRDC to recognize and exploit *risk as opportunity* concepts.

4.1.5 Stewardship

Stewardship was examined in two pilots, the first and the third. This allowed demonstration of an annual cycle of a MAF. The third pilot survey (S3) revisited areas of interest from the first pilot survey (S1). Areas which garnered incomplete or unsatisfactory responses in the first pilot were of particular interest. Overall, there was little change in responses from S1 to S3, which is not unexpected since there was no organizational response to the first pilot survey, as there would be for an operational MAF.

Budgeting. The first pilot survey indicated that over half of respondents with budgeting responsibilities had budget tolerances set by their superior, and that of those, all but one individual successfully managed their budget within that tolerance. The third pilot survey investigated the significance of setting budget tolerances, and found that there appears to be

benefits to the organization. By setting budget tolerances and supporting employees' efforts to work within that tolerance, managers are encouraging delegation and a culture of accountability.

Capital Planning. As in the first pilot survey, respondents in S3 indicate that too few units have long term capital plans, which are necessary for building and maintaining capacity. Those which do have capital investment plans based on long term needs appear to be working towards future capacity needs incrementally. In S1, response trends suggest that many managers view capital planning as a frustrating exercise, particularly when Vote 5 funding is generally in short supply.

Procurement. The first pilot survey found that there was substantial dissatisfaction with the procurement processes, while S3 also determined that there appears to be too few procurement specialists for the level of procurement activity in many centres. The first pilot survey found that the majority of respondents generally or always had sound working relationships with procurement functional authorities; survey 3 investigated further and found that, overall, the procurement process and the relationships with procurement specialists appear to be better at traditional research centres¹²³ than at NDHQ centres. Traditional research centres were also clearly better than NDHQ-based centres at making progress of procurement files visible to clients, and responses indicate that of those, DRDC's Atlantic and Valcartier may be a source of best practices.¹²⁴

Projects. There continues to be a tendency to attribute project failures primarily to schedule and resource issues. In the third pilot survey, as in the first, it was noted that documentation for projects managed within a manager's unit did not include a responsibility matrix or some other formal assignment of responsibilities.

Records. Both pilot surveys found an overall good level of accountability for inventory items. Both identified areas of weakness in record keeping in general and in securing HR documents in particular. In both surveys, records were reported as not being sufficiently complete for the purposes of an audit, and in both surveys, personnel files are accessible to non-HR staff¹²⁵. Survey 3 followed up on the security and tracking of classified documentation, and found some improvement over Survey 1, which may be due to clarification of the question; however, there is still room for improvement in the tracking of classified correspondence.

4.1.6 Accountability

There is a clear recognition of the principles of accountability by DRDC managers, but execution of accountability relationships is often inadequate. Objective setting is generally based upon the requirements of superiors and corporate objectives, but those objectives frequently lack measurable performance standards, so that it is difficult to hold subordinates to account. Level 3

¹²³ Atlantic, Valcartier, Ottawa, Toronto, and Suffield.

¹²⁴ "DRDC Atlantic and DRDC Valcartier are the only centres using ORACLE-based applications to support local administrative functions, such as procurement." Private communication, D.C. Oxford.

¹²⁵ Note of caution: the surveys asked managers "if access to HR files was restricted to HR personnel only". Did managers respond based on personal experience of access refused or granted, did they have incorrect understandings of policy, or did their interpretation of 'access to files' differ from that of the survey designers? An example of misconception became apparent during focus group-based testing of S3, when a new manager was surprised to learn that personnel files would not be available to him directly; instead, he would have to obtain information from personnel files through HR staff. An example of differing interpretations would be that obtaining information via HR personnel was tantamount to 'access', which was not the survey designers' understanding.

managers who do set measurable performance standards for their subordinates also report receiving measurable performance standards from their superiors. This reinforces the important role of Level 2 managers in establishing effective accountability. Level 2 managers are role models for their subordinates.

Only half of Level 3 managers set performance objectives for their subordinates using milestones in CPME. Thus, a 'quick hit' opportunity for greater use of measurable performance standards exists: Level 3 managers should build stronger links between individual performance management (through goal setting, PERs and PRRs) and program or project management (through CPME milestones).

On a positive note, Level 3 managers reported various effective strategies to address performance deficiencies, ranging from consultation, through developmental training, to engagement of HR staff. Ineffective strategies were few.¹²⁶

Level 3 managers appear to be better at distinguishing between duties and tasks for their subordinates, than their superior Level 2 managers are at distinguishing between duties and task for Level 3s.¹²⁷ Those managers who do make a distinction between duties and tasks appear to have more effective working relationships with their subordinates.

4.2 Steady-state Application

An options analysis was used to develop a proposed implementation strategy for a DRDC MAF. Options were: (1) linking a DRDC MAF cycle to the TB MAF cycle; (2) linking a DRDC MAF cycle to the Executive PMA cycle; and (3) linking a DRDC MAF cycle to the DRDC business cycle. Option 2 was easily dismissed. Both options 1 and 3 were feasible, but since ADM(S&T) is not a Departmental OPI for any of the TB MAF elements, there is potentially greater benefit in selecting option 3. In any event, the TB MAF cycle is integrated with the Government of Canada (GoC) business cycle; therefore, a DRDC MAF integrated with the DRDC business cycle (and so the DND and GoC business cycles) will necessarily be in alignment with the TB MAF cycle. Thus a blend of option 1 and 3 was developed, as shown in Figure 7, overleaf.

The following discussion describes the steps and associated resources in the proposed DRDC MAF cycle. The discussion identifies proposed OPIs and assumes a steady-state situation.

4.2.1 Beginning at the End

The beginnings of a DRDC MAF cycle lie in the end of the last, where the output of the MAF processes identify strengths and weaknesses in DRDC management processes. Strengths offer opportunity for commendation whereas weaknesses offer opportunity for organizational development or process improvement. Thus, the end of the previous cycle presents the opportunity for RDEC to identify priorities for the next MAF cycle.

¹²⁶ For example, "Either I repeat what my expectations are or I change my expectations." (!)

¹²⁷ The TB MAF speaks of accountabilities for process (here, 'duties') and results (here, 'tasks').

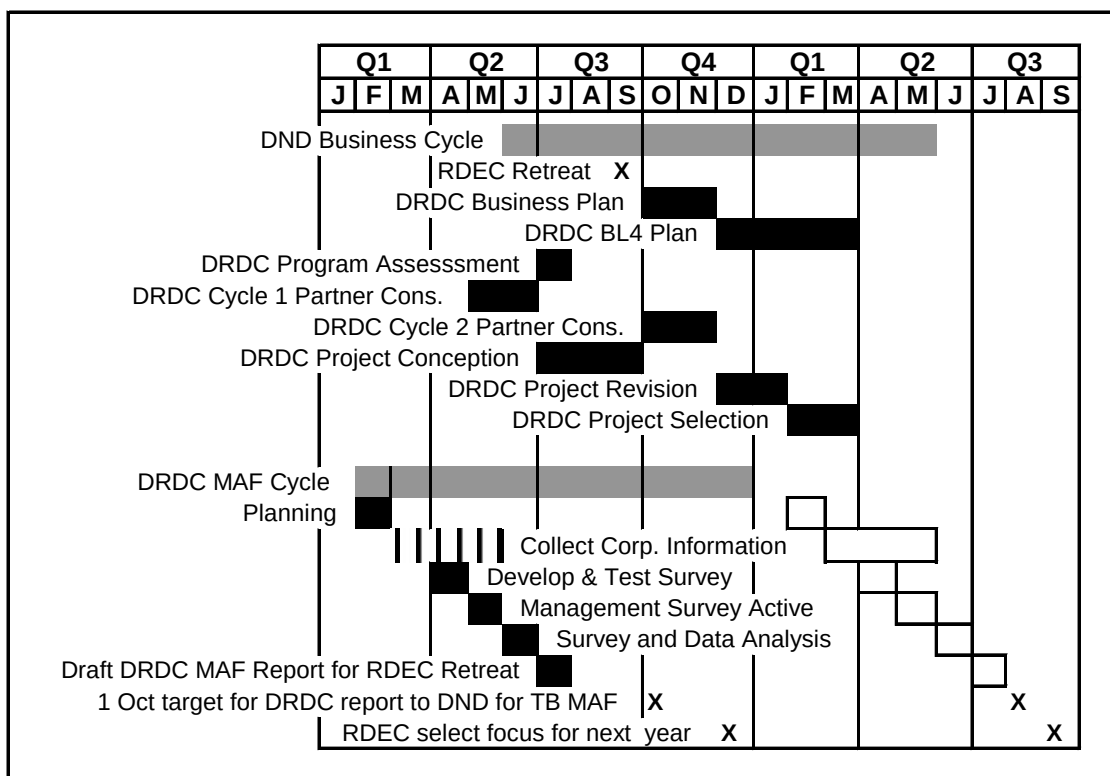


Figure 5: Annual Cycle for the proposed DRDC MAF.

This consideration and direction by RDEC is part of DRDC's normal executive overhead, so no MAF-related resource estimate is offered. Figure 7 shows this RDEC activity happening in December, but it might equally occur at any point during the Autumn timeframe.

4.2.2 Planning the DRDC MAF Cycle

The Director, R&D Program Oversight (DSTEA) is the proposed OPI for the DRDC MAF and will be responsible for planning the annual DRDC MAF cycle based upon the priorities identified by RDEC at the completion of the previous MAF cycle. The planning stage would evolve in two stages:

- The first would examine RDEC priorities and develop a MAF strategy, including elements of interest and appropriate measures and data sources; and,
- The second would identify required data not available corporately and use these requirements to develop themes and core questions for a survey of managers.

It is estimated that these activities would require four (4) person-weeks of DSTEA staff effort within the February timeframe.

4.2.3 Collecting Corporate Information

Based on the results of the planning exercise, DSTEAs will request information of interest that is available from corporate sources, from DGRDCS and DGSTO staffs. Such information might include, for example, milestone performance from CPME, financial performance from FMAS, training statistics from *PeopleSoft*®, or ethical performance from the Defence Ethics or Public Service Employee Surveys.

It is estimated that these activities would require five (5) person-weeks of staff effort from DGRDCS and DGSTO staff, combined. This effort would be spread over the March through May timeframe to ensure that end-of-year data were available if required.

4.2.4 Develop and Test Survey

The Director General, Military Personnel Research and Analysis (DGMPRA) is the proposed OPI for development and testing of the on-line survey instrument to be used to address those issues not covered by corporate data sets. Such issues will ordinarily be related to direct determination of managers' perceptions or performance in practice, rather than relying upon assumed compliance with policies or SOPs as proxies for managerial performance.

The survey instrument will require translation and will require Social Science Research Review Board (SSRRB) waiver or approval. For the third pilot, the SSRRB was asked to consider whether the DRDC MAF surveys actually represented research on humans, or whether they represented "quality assurance [or] performances reviews"¹²⁸ which were exclusions from the requirements for ethical review in the Tri-Council Statement. The SSRRB addressed the question as follows:

Board members considered it to be more in line with a program evaluation than "social science" research because the questions are not of a personal nature, they are specifically geared towards receiving feedback and evaluation and that SSRRB review was not necessarily required. Generally this type of research does not get sent to the SSRRB for review - it is just issued a coordination number.¹²⁹

Thus, it would appear that operational MAF surveys would be exempt from SSRRB review, although a release approval ('coordination number') by DGMPRA would still be required. This would not be an issue of any significance given that DGMPRA, the OPI for the DND SSRRB, is proposed as the survey instrument OPI.

It is estimated that these activities would require five (5) person-weeks of effort, exclusive of translation, in the April timeframe. It is recognised, based on the experience of the pilot studies, that translation services would be a critical path item in the development of any survey.

¹²⁸ "Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans," Public Works and Government Services Canada, Ottawa: 2003, Article 1.1(d), page 1.1.

¹²⁹ Email Aker – Nethercote, "RE: For SSRRB Review: Third MAF Survey," Mon 30/04/2009 3:06PM.

4.2.5 Management Survey Active

Since DGMPRA is the OPI for survey development, it is natural that it be the OPI for survey delivery. The on-line survey tool now used by DGMPRA, E-Listen, is currently limited to DWAN/DIN.¹³⁰ A DRENet-compatible survey instrument will be required for DRDC MAF surveys and would also allow the 2010 Defence Ethics Survey, or a subset thereof, to be administered to DRDC staff. Resource estimates for implementation of a DRENet survey capability by DGMPRA have not been made. The DRDC MAF pilot studies used a survey utility on DRDC Atlantic's ORACLE® server. Dalhousie University (the DRDC MAF contractor) uses the OPINIO®¹³¹ application as its corporate web-based survey tool, but an enterprise license for OPINIO is required to avoid privacy and security issues related to the US *PATRIOT* Act.¹³²

The on-line survey would be available to the DRDC management cadre for four weeks. It is recommended that survey participation be made a mandatory activity, rather than a recommended activity. Many survey tools, like OPINIO®, allow invitees' survey participation to be tracked without compromising anonymity of responses.

The survey would be active in the May timeframe, requiring about one-half (½) person-week of activity for the survey manager, and a total of about four (4) person-weeks of activity for managers' responses to the survey. Recommended rather than mandatory participation would likely reduce participation and resource requirements by half.

4.2.6 Survey and Data Analysis

DSTEa would be the OPI for survey and data analysis, supported by DGMPRA staff, who would deliver analysis of survey results, including cross-tabulations. DSTEa staff would aggregate the various data sets, including survey results, and analyze them to support assessment of those DRDC MAF elements of interest to RDEC.

It is estimated that these activities would require three (3) person-weeks of DGMPRA staff effort and six (6) person-weeks of DSTEa staff effort in the June timeframe.

4.2.7 Reporting

DSTEa would be the OPI for reporting. Initial effort in the early July timeframe would be directed towards key results reporting for the RDEC Retreat. Complete reporting would follow.

It is estimated that four (4) person-weeks of DSTEa staff effort would be required for reporting over the July to September timeframe.

¹³⁰ Email Bowser-Nethercote, "Re: Upcoming Survey for EXPEDITION 09," Mon 06/04/2009 5:39PM.

¹³¹ See <http://www.objectplanet.com/opinio/>.

¹³² Dalhousie University's enterprise license for OPINIO® provides for an executable source on a Dalhousie University server, thus protecting Dalhousie University data against the *PATRIOT* Act.

4.2.8 Support to TB MAF

Support to the TB MAF might be required on an ongoing basis, but should be regarded as a corporate overhead, rather than a charge to the DRDC MAF.

5 Recommendations and Conclusions

This section of the report provides recommendations and conclusions concerning two themes. The first theme is the DRDC MAF and particularly its adoption operationally. The second theme is organizational performance of DRDC, as determined during the cyclic development of the DRDC MAF. The recommendations in this section are a summary of those reported in the companion cycle 2 report,¹³³ which provides considerably more detail. The section closes with a reflection upon DRDC as an organization that represents risk management in its own right.

The research undertaken in EXPEDITION 09 leads to the following recommendations concerning the proposed DRDC MAF:

- It is recommended that DRDC adopt the proposed DRDC MAF, as described herein. There are, among others, a number of observations of note:
 - The pilot studies support the feasibility and effectiveness of surveys as instruments for the MAF, but declining participation throughout the pilot survey process, together with respondent comments, point to the need to limit surveys to a single annual offering, and to restrict questioning to those data which cannot be obtained elsewhere. Where genuinely unique surveys are the norm, it is recommended that survey participation be mandatory for managers.
 - DGMPRA has an in-house capability for the cost-effective execution of surveys through the E-LISTEN tool. That survey capability is unfortunately limited to the DWAN/DIN.¹³⁴ Defence R&D Canada should implement a DRENet-compatible survey capability at DGMPRA, probably through E-LISTEN so that DGMPRA could execute surveys to all DRDC managers and staff, most of whom do not have DWAN/DIN access. This would support the DRDC MAF and permit the inclusion of DRDC staff in the next Defence Ethics Survey in 2010.
 - The SSRRB approval process for surveys requires submission of data and reports to DGMPRA. This archival practice points to the value of information and knowledge management around the DRDC MAF process. Both DGMPRA and DSTEA should be engaged in information and knowledge management (IKM) for the DRDC MAF. The DRDC R&D Executive Committee should identify the most appropriate OPI for this activity.
 - DRDC should exploit the availability of raw data from the Public Service Employee Survey to support the People element.
- Although the proposed DRDC MAF is itself a product of EXPEDITION 09, future surveys of DRDC managers for the proposed DRDC MAF would offer an excellent means of determining the organizational adoption of the outputs of the EXPEDITION XX series of organizational development projects.

The pilot studies undertaken in EXPEDITION 09 lead to the following observations about the performance of management in DRDC and recommendations for organizational development.

¹³³ See Baroni and Nethercote, DRDC Atlantic CR2009-135 Section 9 for more detailed recommendations.

¹³⁴ Email Bowser-Nethercote, "Re: Upcoming Survey for EXPEDITION 09," Mon 06/04/2009 5:39PM.

While the tenor of many of the observations is negative, the general impression of DRDC management practices was positive.

- In support of Policy and Programs, there is a need for a formal, agency-wide succession plan, so that the full career potential of managers is realized, to the benefit of DRDC's policy capacity. Stronger succession planning might also contribute to increased representation of employment equity groups in the management cadre. Exit and post-employment surveys of student employees (Co-ops, Defence Research Assistants, FSWEs, etc.) could assess DRDC's attractiveness as a recruiter, both of students, and of employees at large.
- The People element was not a key focus of the pilot studies, aside from observations, consistent with DRDC's Annual Report,¹³⁵ that employment equity groups were under-represented in the management cadre.
- DRDC should re-institute the practice of regular client satisfaction surveys (presumably to be known as partner group surveys, following the *Defence S&T Strategy* vernacular) to ensure the availability of frank assessment of DRDC services.
- Risk Management, as envisioned by Treasury Board, is often weak among the DRDC management cadre, although evidence of expertise exists. It is commonly held that risk management is the purview of project managers, rather than a pervasive responsibility in the organization. This project manager-centric view is consistent with concentration of formal risk management activities in the TDP program. There is a need for staff development with respect to risk management, and for inculcation (or recognition where appropriate) of risk management practices outside the TDP program. Care is required to ensure that bureaucratic risk management practices are not advocated to the detriment of *risk as opportunity*, which is a central characteristic of S&T organizations like DRDC.
- The quality of Stewardship across DRDC was found to be variable, but generally good. Better capital planning would serve to strengthen DRDC's S&T capacity. Some internal procurement processes require improvement, but fortunately best practices seem to be available within DRDC. Project management practices appear to be recognized, but improvement is required in areas such as development of responsibility matrices outside the TDP program.
- There is a clear recognition of the principles of accountability by DRDC managers, but execution of accountability relationships is often inadequate. Objective setting is generally based upon the requirements of superiors and corporate objectives, but those objectives frequently lack measurable performance standards, so that it is difficult to hold subordinates to account. Level 3 managers who do set measurable performance standards for their subordinates also report receiving measurable performance standards from their superiors. This reinforces the important role of Level 2 managers in establishing effective accountability. Level 2 managers are role models for their subordinates.

Risk Management in the TB MAF focuses upon identifying, avoiding, or in the worst case mitigating the effects of 'bad things' or 'dangers,' the ubiquitous view of *risk as failure*. The

¹³⁵ DRDC Annual Report for the year ending 31 March 2008, p. 61.

DRDC MAF introduces the concept of *exploiting* risk in its Expectations statement, but largely as a result of Treasury Board's focus on failure, and the need to support the TB MAF, the Indicators and Measures for the DRDC MAF focus on the negative side of risk. Yet DRDC is an organization that represents risk management in its own right, an organization whose mission statement begins:

DRDC's mission is to ensure that the Canadian Forces are technologically prepared and operationally relevant ...

and whose mission statement includes a requirement to “anticipat[e] and advis[e] on future science and technology trends, threats and opportunities.”¹³⁶ Defence R&D Canada's very mission reflects science and technology as a risk reduction measure in the international defence and security context; thus, risk management is ubiquitous in DRDC.

The results of the DRDC MAF survey of managers do not reflect the ubiquity of risk management in DRDC, largely due to a Treasury Board-based focus on avoidance of failure. This focus may not be warranted, if DRDC does not experience an unusually high number of program failures. Information on incidence of failure was not available for the pilot studies and so no conclusions can be drawn here, but it is important that DRDC determine the incidence of failure to ensure that the operational application of the DRDC Risk Management element does not so formalize risk management that *risk as opportunity* is forgotten, to the detriment of DRDC's mission. Quigley's Annex to this report examines risk management in the context of culture theory and offers developmental training recommendations that would support a risk management regime in DRDC that balanced the tension between failure and opportunity.

Notwithstanding this caveat about risk management, the proposed DRDC MAF described herein would meet the needs of an operational DRDC MAF, and the findings of the pilot studies would provide a sound baseline for the first operational cycle of a DRDC MAF.

¹³⁶ DRDC Annual Report for the year ending 31 March 2008, p. 3.

Annex A Using Cultural Theory to Examine Risk Management Practices: A Commentary for Defence Research and Development Canada

by Kevin Quigley, PhD

A.1 Introduction and Key Observations

The overall aim of this paper is to introduce a theoretical framework to examine and understand risk management, and to use this framework to stimulate thinking about risk management challenges and potential solutions at Defence Research and Development Canada (DRDC). The paper draws on the risk literature from the social sciences generally and from Cultural Theory in particular (Douglas 1982; 1992).

In addition to this first section, this paper has four additional sections.

- Section A.2 summarizes Cultural Theory.
- Section A.3 considers how the insights from Cultural Theory can help us to understand risks and risk governance at public agencies such as DRDC and how one might respond to these risks.
- Section A.4 draws conclusions and proposes some relevant training for public managers.
- Section A.5 provides a reference list for this appendix, separate from the bibliography for the main body.

A.1.1 Key Observations

Section A.2. Cultural Theory: Risk, Blame and Good Governance

Culture Theory suggests that a person's sense of value and risk is determined by formal and informal regulation and social integration. Drawing on these two variables, the Culture Theory typology describes four 'types' that emerge, each with its preferred governance structure, sense of risk and who or what to blame when things go wrong.

A **hierarchist** understands good governance to mean a stable environment that supports collective interest and fair process through rule-driven hierarchical organizations. Any departure from this rule-bound hierarchy represents risk for the hierarchist. When things go wrong, hierarchists blame unclear and/or weak rules, or a lack of expertise within the organization.

An **individualist** understands good governance to mean minimal rules and interference with free market processes. Individualists understand risk to be government regulation of the economy or government's management of public services. When things go wrong they blame faulty incentive structures.

An **egalitarian** understands good governance to mean local, communitarian and participative organizations. Egalitarians understand risk to mean hierarchies and organizations outside their

system. When things go wrong, egalitarians blame externals: ‘management,’ ‘the executives,’ ‘the system,’ ‘Wall Street.’ They blame governments for usurping local powers and processes.

A **fatalist** understands good governance to mean ‘resilience’—the capacity to bounce back, or withstand the pressures of unanticipated setbacks. Fatalists feel that having faith in formal planning is a risk. When things go wrong, they blame ‘random chance’ and ‘the cards that you were dealt.’ Risk abounds and there is little one can do to mitigate it.

Each type of governance has strengths and weaknesses.

Cultural Theory has a potentially powerful impact when employed as a heuristic device. The Theory suggests people understand risk according to their own bias, set up governance structures to protect their preferred systems and blame failings of governance on the shortcoming of other ‘types.’ The Theory can help to explain the recurring nature of certain risk debates, guide our reasoning about potential shortcomings in specific institutional designs and detect the types of failures to which these types of design are susceptible.

Section A.3. Using Cultural Theory as a Guide to Examine Risk Management Practices

Section III of this paper is somewhat speculative; it has not been tested at DRDC. Rather, the discussion takes the insights of Cultural Theory at face value and reads them into DRDC, if you will. In many respects the analysis is fairly generic and could be applied to many public agencies that perform functions similar to those carried out at DRDC.

For the purpose of this discussion, I assume that DRDC has highly specialized research teams that exist as units within a bureaucratic framework.

Cultural Theorists would argue we establish institutions—such as DRDC—to manage specific ‘risks,’ which, according to this theory, means ‘bads’ or ‘dangers.’ If we accept this understanding of risk management, we see evidence of risk management in each project or program that DRDC runs, whether or not it is formally identified as ‘risk management.’

Managing teams within bureaucracies presents challenges. While bureaucracies—which show many hierarchical tendencies—expect those in subservient positions to account formally for their work to their superiors, strong teams—which show egalitarian tendencies—are generally not outwardly accountable; indeed, the groups will resist what they see as ‘outside’ interference. To overcome some of the challenges that this tension can create, management might require that research teams devise or have significant input into the performance standards by which the teams will be held accountable. Management might also emphasize peer assessments as opposed to top-down methods of evaluation.

There is no perfect approach to managing risk and uncertainty. There are many risks, and resources available to managing them are limited. Risk management strategies themselves can generate risks. Rather than eliminate risks, we often decrease certain risks by increasing other risks. Ultimately we seek to strike a balance: to reduce risks to acceptable levels of risk exposure. Public managers should develop and practise sound judgement in how resources should be spent, on which risks and with what goals in mind. Public managers should also develop an awareness

of the intended and unintended impact that their risk management processes are having on the target risk as well as related risks.

Complex risks have a multitude of potential causes and are therefore difficult to identify, quantify and control. This level of complexity and systems interdependence can also make it difficult to hold people accountable for risk management. While it is certainly important to try to determine the likelihood that failures will occur, public managers should always maintain a level of scepticism about their ability to understand—let alone control—risk. Public managers should be aware of the different quantitative and qualitative tools and processes available for assessing risks. Once the level of risk has been estimated (usually within some range), risk management tools, such as cost-benefit analyses, scenario planning, worst-case scenarios and precautionary approaches, can help to develop appropriate risk management plans. Different tools are appropriate in different contexts.

In the case of complex risks, which have a multitude of potential causes, public managers should be able to respond to uncertainty, ambiguity and unanticipated failures. When the complexity of the risk makes it difficult to assign responsibility to individuals, increasing the level of transparency and the frequency of reporting can be an alternative.

Exploiting risk can also be a springboard to innovation. Innovative environments tend to be deregulated, competitive, flat, and adaptive and offer private incentives. They also tend to tolerate a level of failure and conflict. These characteristics are not always achieved easily in bureaucratic arrangements. Public managers should develop the organizational design skills to motivate entrepreneurial behaviour. Internally, this can include offering incentives for improved performance; externally, this can include contracting with more flexible partners.

New and emerging social networking technologies, in particular, may present opportunities for enterprising public servants. Public managers might facilitate access to new technologies through strategic investments and deregulation within their organizations.

A.2 Cultural Theory: Risk, Blame and Good Governance

The anthropologist Mary Douglas argues that risk—which she defines as ‘danger’ or ‘threat’—cannot be understood without first considering values. A person understands a source’s danger or threat in relation to the source’s capacity to harm something the person values. In short, only when we understand what people value can we understand what they consider to be a risk.

Douglas believes values, risk and institutions reinforce one another. What a person thinks constitutes risk either to oneself or to one’s community¹³⁷ determines who or what the person blames when things go wrong. This understanding of blame informs the person’s accountability system. The community’s institutions, such as the judiciary, uphold this value system. According to Douglas, a person’s attempt to change these institutions is an effort to argue in support of different cultural values (1992, 24). Figure A1 illustrates the concept.

¹³⁷ Douglas sees the micro and macro approach equally.

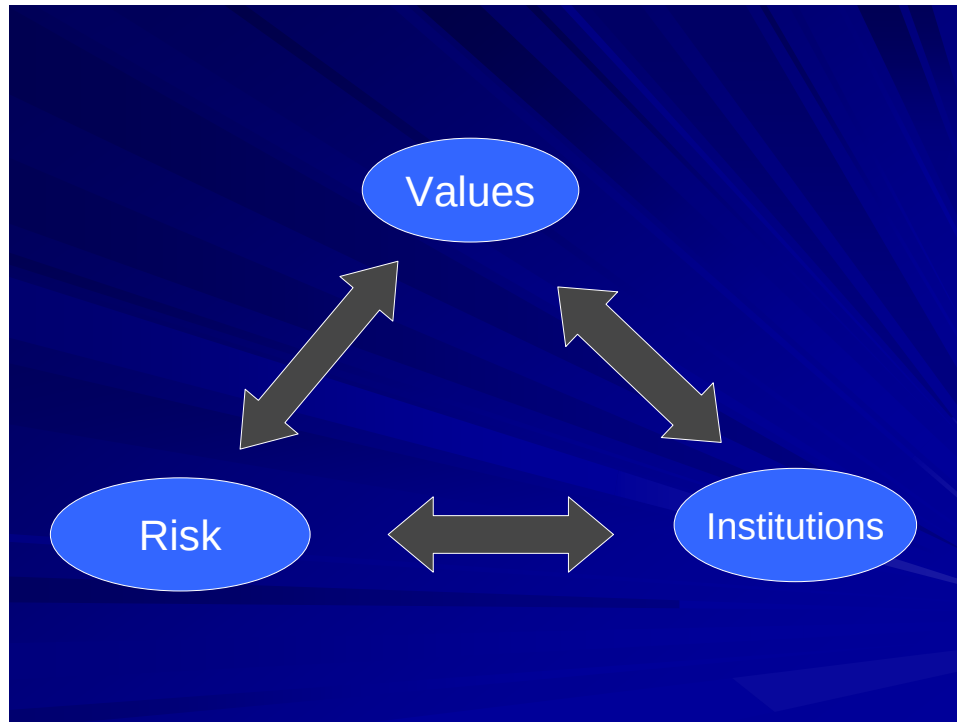


Figure A.1: Values, Risk and Institutions as Reinforcing

Douglas describes a person's value system in terms of the grid/group typology that she developed. Grid, which we will refer to here as regulation, measures the strength of formal or informal rules and social norms (1982 191-2). Group, which we will call integration, measures the extent to which community constraints are imposed on an individual (1982 191-2). At the intersection of regulation and integration, Douglas sees different 'types' of value systems emerging. Each of these different 'types' has different beliefs about what constitutes risk. The central assumption is that there is a relationship between modes of social organisation and responses to risk, and that risk and culture are adequately represented by the dimensions of the grid/group scheme. See figure A.2.

<i>Regulation</i>	<i>High</i>	Fatalist	Hierarchist
	<i>Low</i>	Individualist	Egalitarian
		<i>Low</i>	<i>High</i>
		<i>Integration</i>	

Figure A.2: Cultural Theory Typology

Based on this grid/group typology, Hood (1998)¹³⁸ and Thompson, Ellis and Wildavsky (1990) examine the four ‘types’ in more detail. They argue that each type has a distinct set of values, understanding of risk and preferred governance arrangement. Each governance arrangement has corresponding strengths and weaknesses, which we will review here.

The hierarchist (high regulation / high integration) understands good governance to mean a stable environment that supports collective interest and fair process through rule-driven hierarchical organizations. These institutions manage the society’s and the individual’s resources most effectively: the organization’s clearly defined rules and its capacity to recruit and assign responsibilities to subject matter experts enable fair, effective and efficient processes (Hood 1998, 75). Any departure from this rule-bound hierarchy represents risk for the hierarchist. As such, when things go wrong, hierarchists blame unclear and/or weak rules, or a lack of expertise within the organization. Their solution lies in strengthening and clarifying the reporting relationships and the rules that govern the organization, and recruiting more experts (Hood 1998, 53).

Despite the effort to make reporting relationships clear, however, hierarchical systems are susceptible to people working at cross-purposes. Although hierarchies may have performance measures, these measures are designed by experts who have their own biases. Similarly, the vastness of the typical hierarchy prevents organizations and their members from reacting quickly, absorbs significant resources and sweeps indiscretions ‘under the rug.’

The individualist (low regulation / low integration) understands good governance to mean minimal rules and interference with free market processes. Individualists believe that people are self-seeking, rational and calculating opportunists. Individual responsibility rules supreme and apathy means consent (Thompson, Ellis and Wildavsky 1990, 34 and 65). Public service provision aligns itself with private sector, market economy practices. Organizations evolve from the ground up and focus primarily on the needs of the ‘customers.’ Rather than merely following the prescribed rules, individualists employ ‘hands-on’ approaches to learning and ‘creative’ solutions to problems (Hood 1998, 55). What hierarchists understand to be risk—deregulation of the economy—individualists see as opportunity—the earning potential or the market efficiency gains from deregulation. In contrast, individualists understand risk to be government (over-regulation of the economy by ‘big’ government) or its management of public services.

Individualist practices have their own pitfalls. Within an organization, individualist practices, such as pay-for-performance, can undermine collective goals and lead to a lack of cooperation (even corruption or fraud), as employees compete for private gains instead of the collective good. Moreover, defining the citizen/public servant relationship as ‘customer/producer,’ as individualists are wont to do, changes the nature of the relationship. Public servants are accountable to elected officials, not ‘customers.’ Moreover, treating citizens as customers can threaten political equality, marginalize the politically weak and economically disadvantaged, and undermine the government’s guardianship responsibilities, as the public servants tend towards serving the most present, vocal and powerful ‘customers’ that they have (Fountain 1999, 2).

The egalitarian (low regulation / high integration) understands good governance to mean local, communitarian and participative organizations. For egalitarians, authority resides with the

¹³⁸ While Hood (1998) draws from Douglas’s work on Cultural Theory, Hood uses different terms to describe the four ‘types’—bossism, choicism, groupism, chancism.

collectivity. Individuals have a responsibility to participate and the masses are empowered with bottom-up decision-making. Moreover, organizations are flat, or at least there is minimal difference between top official and the rank and file. Fellow workers, not superiors, conduct performance appraisals. And in order to maximize transparency, maximum information is available to workers and the public. Their distrust informs their accountability system: maximum control, or face-to-face accountability. Egalitarians understand risk to mean hierarchies and organizations outside their system. When things go wrong, egalitarians blame externals: 'management,' 'the executives,' 'the system,' 'Wall Street' (Thompson, Ellis and Wildavsky 1990). They blame governments for usurping local powers and processes. Ultimately they seek solutions based on group norms and reciprocal processes.

Egalitarian systems strive for equality but frequently miss the differences. Egalitarian organizations are susceptible to treating everyone in the same manner. This one-size-fits-all approach can often result in splits or breakdowns in organizations as individuals strive to define themselves. While modern, decentralized technologies may have in some instances helped to overcome some of the challenges associated with distance, face-to-face accountability, maximum transparency and the regionalized interests of egalitarians often make it difficult and impractical to operationalize egalitarian projects on a large scale (Hood 1998, 130). Moreover, while individuals working within groups can motivate one another to work harder, equally these forms of governance can result in collective shirking.

The fatalist (high regulation / low integration) understands good governance to mean 'resilience'—the capacity to bounce back, or to withstand the pressures of unanticipated setbacks. The fatalist rejects clear-cut cause and effect relationships. Risk—like human nature—cannot be readily understood or controlled. In light of this potentially chaotic and unpredictable universe, fatalists anticipate lack of cooperation between citizens and employees (Thompson, Ellis and Wildavsky, 1990 35). Fatalists manage by surprise techniques, or by circumventing practised or routine responses. When things go wrong, they blame 'random chance' and 'the cards that you were dealt.' Risk abounds and there is little one can do to mitigate it.

The randomness that informs fatalist forms of governance undermines incentives to innovate, develop or compete. Without a clear cause and effect relationship, office holders are demotivated; team-building is difficult; employees work only as hard as they have to, and are susceptible to shirking.

While any one 'type' might seem extreme, Hood (1998) argues that hybrids often form when different types work together. Research granting bodies, such as the Social Sciences and Humanities Research Council (SSHRC) or the Natural Sciences and Engineering Research Council (NSERC), are good examples. These funding bodies combine the peer group judgment of egalitarianism and the competition of individualism when they strike expert committees to determine which research applications will receive grants.

These hybrid forms can be tenuous arrangements, however. When a hybrid system is under stress or fails, participants will revert to their preferred type. Because all types have Achilles' heels, participants will blame the failings of hybrid governance structures on the type with which they do not identify. Returning to the research granting bodies example, if such bodies fail, the individualists are likely to blame the lack of competition or the egalitarians' preoccupation with process over results. The egalitarians, on the other hand, might blame the pressure from external

forces to fund projects with some market or consumer value rather than what the ‘expert’ community itself values.

Generally governments move between types over time. Hood (1998) notes that governments tend towards one type; they experience the failures to which the type is susceptible and—by way of responding to the failures—they shift to another type. They employ the practices of the second type until they experience the failures related to this second type, and then they shift again, often back to the first type. For example, over-regulation in many Anglo-democracies in the 1970s—a hierarchical tendency—resulted in the individualist-type deregulation of New Public Management reforms of the 1980s and 1990s. The inability of pay-for-performance schemes to motivate public servants and the corruption associated with contracting-out many government services, however, resulted in a return to many command and control hierarchical tendencies in these countries in the 21st Century. Indeed it is like a pendulum; Cultural Theorists would suggest these types of shifts were and are inevitable.

Cultural Theory has had limited success when tested empirically. (See, for example, Dake 1991; Sjöberg 1997.) Dake had some success but noted the correlations between culture and bias were weak and of limited predictive value. The typology is also criticized on the grounds that the categories are too limiting. Assumptions about risk perception are far more complex and dynamic than the categories imply (Renn *et al* 1992), and Cultural Theory also fails to take the media into account (Zinn 2004, 15).

Still, its value should not be underestimated. Cultural Theory has been described as a revolutionary change to risk perception (Royal Society 1992, 112). If one accepts the argument that regulation and integration determine one’s understanding of risk and ‘good’ governance, then there is no single metric for risk analysis. Rather, people will understand risk according to their own bias, will set up governance structures to protect their preferred systems and will blame failings of governance on the shortcoming of other ‘types.’ This understanding of risk embeds a degree of instability at the heart of governance, which will be discussed further in the next section. Table A.1, overleaf, summarizes the discussion in Section II.

A.3 Using Cultural Theory as a Guide to Examine Risk Management Practices

Approximately two-thirds of the respondents in the DRDC survey consistently suggest that they ‘sometimes,’ ‘rarely’ or ‘never’ perform risk management. It is not clear exactly what definition of risk management they are using but it would seem to be one that refers only to practices formally labeled ‘risk management.’

One might conclude after reviewing the DRDC MAF survey data that the respondents know what risk management is and they are not doing it very often. Ironically, if one examines the situation through the lens of Cultural Theory one might draw the opposite conclusion; that in fact, the respondents are engaged in considerable risk management but they are not aware that what they are doing is a form of risk management.

Table A.1: Cultural Theory Summary Table (Based on Hood, 1998)

<i>Regulation</i>	Fatalist • Stress: unpredictability & unintended effects • Organisational design: rule-bound • Tactics: low trust • Blame: the 'fickle finger' of fate • Remedy: minimal anticipation, <i>ad hoc</i> responses • Watchword: 'resilience' • Weakness: Unwillingness to plan ahead or take drastic measures in extreme circumstances • Vulnerable: failures stemming from excessive inertia and passivity	Hierarchist • Stress: expertise, forecasting, management • Organisational design: top/down; bureaucracy • Tactics: rule-driven • Blame: poor compliance with procedures, lack of expertise • Remedy: more expertise, procedures • Watchword: 'Steering' • Weakness: misplaced trust in authority • Vulnerable: dramatic collapse of big projects, sweeping problems under the rug
	• Stress: individual potential; individuals as rational • Organisational design: atomised • Tactics: negotiation & competition • Blame: faulty incentive structures, lack of price signals • Remedy: market-like mechanisms, competition • Watchword: 'enlightened self-interest' • Weakness: Tendency to put individual before collective benefit • Vulnerable: failures stemming from lack of cooperation or individual corruption Individualist	• Stress: group and power structures • Organisational design: flat • Tactics: face-to-face accountability • Blame: abuse of power by top levels, system corruption • Remedy: participation, community • Watchword: 'community participation' • Weakness: Unwillingness to accept higher authority to break deadlocks • Vulnerable: failures stemming from unresolved feuds or collegiality degenerating into co-existence Egalitarian

Integration

Cultural Theorists would argue we establish institutions—such as DRDC—to manage specific ‘risks,’ which, according to this theory, means ‘bads’ or ‘dangers.’ If we accept this understanding of risk management, we see evidence of risk management in each project or program that DRDC runs, whether or not it is formally identified as ‘risk management.’ Policy branches manage defence research-related policy risks, communications branches manage defence research-related communications risks, and so on. The research projects in which DRDC is engaged are themselves responses to risks.

DRDC has responded to the risks by employing an institutional design that is borne out of its values, sense of risk and existing institutional arrangements. According to the Theory, this institutional design will inevitably have strengths and blind spots. Cultural Theorists would further suggest that DRDC’s response to risk may in fact reinforce the blind spots rather than challenge and correct them.

The following sections use Cultural Theory to diagnose possible tensions in the organizational culture, suggest failures that may emerge as a result of the organizational design and propose

ways of responding to these failures—either through organizational design and management practice or the development of competencies and specific training.

For the purposes of this analysis, I assume that DRDC—like many large public agencies—is largely bureaucratic. In Cultural Theory terms, it would have strong hierarchical tendencies. I also assume that DRDC has highly specialized research teams that are not especially hierarchical that exist as units within the bureaucratic framework.

This section is somewhat speculative; it has not been tested at DRDC. Rather, the discussion takes the insights of Cultural Theory at face value and reads them into DRDC, if you will. In many respects the analysis is fairly generic and could be applied to several public agencies that share DRDC's chief characteristics. As noted at the beginning of this paper, the purpose of the paper is to use the framework to stimulate some thinking about risk management at DRDC. Finally, Cultural Theory—as noted in the previous section *and* like all theories—has its own limitations; these limitations should be kept in mind when reading the analysis.

A.3.1 Hierarchy and Egalitarianism: Holding Groups to Account in Bureaucracies

Highly professional research teams situated within bureaucracies suggest both egalitarian and hierarchical characteristics. Bureaucracies have hierarchical tendencies; they lean towards clarifying roles and responsibilities and recruiting specialists, as required. Research teams, however, can often be egalitarian; they are flat (little hierarchy) and have a relatively small membership with a strong group identity that is borne of a commitment to the research subject and the team's professional training rather than as a commitment to the hierarchical organization itself.

Managing strong teams within bureaucracies presents challenges. While bureaucracies expect those in subservient positions to account formally for their work to their superiors, egalitarian communities resist outward (or upward, as the case may be) accountability. The key for the organization is to hold the teams to account for spending public money without demoralizing the team or losing the benefit of professional commitment to the research subject by what can be interpreted as 'excessive' bureaucratic reporting requirements.

It is important to strike a balance between the tendencies of the two types. Management might insist on having formal performance standards, for instance, but it might require that each research team devise or have significant input into the performance standards by which the team will be held accountable. Management might also emphasize peer assessments as opposed to top-down methods of evaluation. If the teams develop their own performance standards and assess one another's work, the team will not feel (to the same extent) its professionalism is being undermined by authorities outside of the research team. Management, on the other hand, will have standards by which they can judge the research team on a project or year over year basis. This approach does risk 'collective' shirking or underperforming; team-based performance awards can help to mitigate this risk.

A somewhat different but potentially useful example of this practice occurred at universities in the United Kingdom (UK). The UK government wanted to assess research productivity at publicly funded UK universities. At the government's request, UK universities devised their own

method of evaluating and reporting on research, the Research Assessment Exercise (RAE). The approach managed the competing pressures of holding universities to account for their publicly funded research while also allowing universities sufficient autonomy to pursue their work as best they saw fit.

The RAE combines the rules of hierarchy with the inward accountability of groups and financial motivators and competition of individualism. Under the RAE, academic departments submit publications to an academic peer review panel, which grades and ranks their work. The national funding councils then use the rankings to inform the allocation of each university. The RAE is not without its critics. Still, the method has been cited as having been successful at improving aspects of research performance at UK universities. (For a fuller discussion of the RAE, see the Roberts Review 2003.) For our purposes, the RAE highlights the capacity to improve accountability and transparency without eroding the benefits of a strong, professional and egalitarian culture.

This tension between egalitarians and hierarchists suggest competencies that DRDC may wish to develop within the agency. Public managers should consider a particular unit's location on the grid/group typology, and develop an awareness of the unit's preferred governance structures. Strong groups are difficult to hold to account within bureaucratic structures; in this context, negotiation between parties—rather than command and control style—may be a more successful approach to developing performance standards.

A.3.2 Fatalism: The Complexity of Modern Systems

Many failures occur because the systems (and their interdependencies) are not easily understood. (See for instance Perrow 1999; Vaughan 1996; Clarke 2006.) Renn (2008) draws a distinction between simple risks—in which cause and effect relationship are clear—and complex risks—in which causal links between a multitude of potential cause agents and specific observed effects are difficult to identify and quantify. Complex risks challenge even the most sophisticated risk management plans.

We often respond to complex risks by attempting to model the systems. Up until the 1980s the study of risk was dominated in most Western countries by scientists, engineers, economists and decision analysts. Arguably, it continues to be today. In these communities formal modeling—employing statistical analyses and probability risk assessments, for instance—is a very common practice. These techniques potentially make opaque systems more transparent. Within this view, technical risk analyses are assumed to be able to reveal, avoid and/or modify the causal agents associated with unwanted effects.

Still, from a normative standpoint formal modelling embeds key assumptions that potentially hinder its success. To start, when we model we assume complex technological systems are accessible to detailed human comprehension and that a reductionist approach is the best way to understand the systems. This approach has limitations. Problem framing, scientific conventions and screening techniques are all subject to methodological biases, for instance. Consider the following. First, and as noted, formal models frequently do not account for all causal variables—there are too many and they are not always known. Second, data is often collected and models are built on past experiences, as is usually the practice in actuarial science, for instance. These models will fail to predict new or rare events because there is insufficient data to satisfy the

model. Third (and relatedly), when data is unavailable for risk models—and it often is unavailable when we are exploring rare events (e.g. acts of terrorism)—the data is often estimated. Estimations embedded at several levels of complex models will weaken the overall validity of the model.

There are also several human aspects that are difficult to account for in formal models. The concept of ‘consequence’ is embedded in our understanding of ‘risk’ (that is, risk is probability multiplied by consequence). However, what people perceive as ‘unwanted effects’ or ‘consequence’ differs, which can undermine attempts to have a standard risk measurement. Willingness to tolerate certain risks will vary across individuals, organizations, societies and time periods, for instance. Moreover, the interaction between human activities and consequences is more complex and perhaps subtle than the average probabilities captured by most risk analyses. Finally, the institutional structure of managing and controlling risks is prone to organizational failure, which may increase actual risks (Jaeger *et al.* 2001, 86). For instance, risk data can be difficult to collect because individuals who are potentially responsible for operational failures may not wish to disclose their failures to others, and especially not to their superiors. In short, they tailor the information or withhold it altogether.

Rather than a perfect formula or model, risk management requires a measure of deliberation and judgement, balance and indeed, good luck. When organizations expend resources on certain risks, other risks are inevitably neglected. Moreover, the very act of intervening with a risk management strategy is a risk in itself, and therefore risk management creates risks. Sunstein noted when asked about the precautionary principle and guarding against risks to critical infrastructure:

The problem is that the precautionary principle forbids the very steps that it requires, because precautions themselves create risks. If the precautionary principle says that we should build a margin of safety into all decisions, there’s a problem: risks are on all sides, and so it’s hard to have a margin of safety against all risks! If you stay home, you create risks; so too, if you go to work; so too, if you exercise; so too, if you don’t exercise. The Iraq War was plausibly defended partly on precautionary grounds; it was plausibly criticized on those same grounds. Aggressive steps to prevent climate change are plausibly defended on precautionary grounds, but such steps might well violate the precautionary principle because they too create risks. We can imagine steps involving critical infrastructure that are required by the principle – but that also offend it, because they impose costs and create risks of their own (Sunstein, as cited in Quigley 2008).

Decision-makers must allocate limited resources to manage unlimited risks. They must therefore strike a balance in the resources they allocate to managing different risks; they must also recognize that even the best intended risk management intervention can go awry due to errors in judgements or due to the risks one generates by one’s own intervention strategy.

That risk is not easily identified or controlled has five implications for risk management competencies.

First, *complex risks* have a multitude of potential causes and are therefore difficult to identify and quantify. Public managers should be aware of the different quantitative and qualitative tools and

processes available for assessing risks. At the same time, public managers should always maintain a level of scepticism about their ability to understand and control risk fully.

Second, public managers should be able to prioritize risks, yes, but also to develop a self-awareness of their actions. They should monitor not only the progress on the target risk source but also consider the unintended consequences of their behaviours. Training should help public managers develop this sense of awareness and allow them to practise making judgements about when and how much to invest in managing an unlimited list of risks.

Third, because cause and effect relationships are problematic, organizations on occasion will have to respond to events that cannot be anticipated. Public managers should therefore develop a capacity to respond ‘on the fly’; to get up and running after the organization has been dealt a setback. The key word here is ‘resilience.’

Fourth, it is important to consider the consequences of failures and extend that analysis to risk management planning. Often public agencies are criticized for over-reacting / over-regulating risks. Cost-Benefit Analyses (CBAs) provide useful guides in determining appropriate levels of regulation. CBAs aim to create a consistent and logically sound model of a person’s or institution’s knowledge and preference structure (Jaeger *et al.* 2001, 79).

Nevertheless, many social and organizational dynamics constrain our ability to develop accurate CBAs. CBAs require that participants engage in multiple acts of conversion, assigning values to such entities as human lives, human morbidity and a range of harms to the environment. The concept assumes ‘positives’ and ‘negatives’ can be articulated, compared and judged in a single measurement: usually dollars. Such conversions are difficult, potentially unstable and rarely done consistently within organizations.

Moreover, there may be times when CBAs may be unhelpful, and more precautionary approaches may be more appropriate. Sunstein—normally a sceptic of precautionary approaches—suggests that when we consider ‘irreversible harms’ or ‘catastrophic disasters’ for instance, we may wish to proceed with more caution, considering worst-case scenarios, however unlikely they may be (Sunstein 2005; 2007).

In sum, public managers should practise the application of these risk management concepts—CBAs, worst case scenarios and precautionary approaches—and know how and when to use them.

Fifth, the complexity of the risk can make it difficult to assign responsibility to individuals. This can be particularly frustrating in a bureaucratic context. In certain cases, increasing the level of transparency and the frequency of reporting can be a helpful alternative. Again, public managers must determine what level of reporting is appropriate, knowing that regular reporting can be a drain on resources and potentially undermine staff morale.

A.3.3 Individualism: Deregulation as a Springboard to Innovation

Risk and innovation might usefully be thought of together. If we think of risk as ‘uncertainty’—that something potentially ‘good’ may occur as well as something ‘bad’ or ‘dangerous’—then there may be opportunities to exploit conditions for individual or collective gain. Public

agencies might therefore promote a level of policy entrepreneurship, which might encourage or celebrate those public servants who can negotiate and exploit the complex social and institutional context to achieve in the face of uncertainty an institutional goal.

New and emerging technologies present one such example for policy entrepreneurs. As many in the public service retire, considerable institutional memory will exit. At the same time the new generation entering the public service is perhaps more comfortable with leveraging new social technologies that facilitate the networking with universities, think tanks, and on-line and virtual communities that may help to fill the gap that those heading towards retirement will leave behind. Indeed, policy entrepreneurs can exploit new technologies to tap into committed groups and subject matter experts that do not necessarily see themselves as traditional ‘stakeholders’ but can help inform public policy debates.

Cultural Theorists would argue that in order to achieve a setting that is conducive to more creative outcomes public institutions should deregulate. This deregulation can include facilitating access among public servants to new and emerging technologies, including the removal of unnecessary firewalls, for instance. This approach would also emphasize more competition and market-like mechanisms as a way of encouraging entrepreneurialism, such as the RAE example cited above, in which research teams compete against each other for financial rewards. This arrangement is potentially less stable and has the potential for more conflict, but it can be more dynamic and adaptive, also.

These ends are not easily achieved in traditional bureaucratic structures or strong teams. Public institutions would adopt practices that align public managers’ private interests with the public good through pay-for-performance contracts among public servants, for instance. Governments could also partner with more flexible and deregulated delivery agents, especially in the private sector, though contract management would then become a risk the organization would have to manage more often.

Finally, benefits designed to appeal to the individuals alone can potentially undermine group cohesion within research teams. Performance awards might therefore work at the group level rather than the individual level. Alternatively, individual awards can be determined by the research group itself in order to maximize face-to-face accountability.

A.4 Conclusion and Proposed Training

There are several theoretical frameworks one could employ to analyze risk management in organizations. Cultural Theory is one way. High Reliability Organizations (HROs)¹³⁹ and Normal Accidents Theory¹⁴⁰ are recognized alternatives.

Cultural Theory can be a useful heuristic device that can help guide our reasoning about risk management and its potential blindspots. It can help us to anticipate failings, and teach us how to avoid them or at least reduce their negative impacts. As different ‘types’ understand risk differently, however, solutions from Cultural Theory can often be unstable.

¹³⁹ For a discussion of HRO, see, for example, Laporte (1996) and Laporte and Consolini (1991).

¹⁴⁰ For a discussion of NAT, see, for example, Perrow (1999), Vaughan (1996) and Clarke (2006).

The purpose of the paper is to stimulate some thinking about risk management practices. With this in mind, I took the insights of Cultural Theory at face value and read them into DRDC, if you will. I assume, for instance, that DRDC's is largely bureaucratic and has strong hierarchical tendencies, that research teams are essentially flat (i.e. not hierarchical), and that these two arrangements likely exemplify a clash between egalitarianism (research teams) and hierarchy (the DRDC bureaucracy itself). This analysis is somewhat speculative; it has not been tested at DRDC.

The paper suggests that managers within the organization can reduce the negative tensions that result from the clash of egalitarianism and hierarchy by emphasizing negotiation and cooperation between management and the research teams rather than employing a top-down, command and control style. It also suggests that the organization might stimulate innovation through deregulation, partnering with flexible organizations and emphasizing individual and team rewards.

Finally, the paper underscores that there is no perfect approach to managing risk and uncertainty. There are many risks, and resources available to manage them are limited. Risk management strategies themselves can generate risks. Rather than eliminate risks, we often decrease certain risks by increasing other risks. Ultimately we seek to strike a balance; to reduce risks to acceptable levels of risk exposure. Understanding the context in which risk emerges and is interpreted is crucial.

Building on the themes in this paper, a related training plan for staff at DRDC would include:

- familiarizing staff with a broad understanding of risk, risk assessments and risk management, drawing on diverse literature and methods;
- introducing staff to the challenges of and limitations to measuring risk, of determining the probability and consequence of events, for instance;
- helping staff develop a greater self-awareness of their risk management plans (e.g. when they are engaged in risk management activities; the unintended consequences of their risk management interventions);
- introducing staff to tools, processes and heuristic devices that do not necessarily give definitive answers about risk management but can help guide public managers' reasoning when they make risk management intervention (e.g., cost-benefit analyses; precautionary approaches; multi-disciplinary methodologies);
- incentivizing entrepreneurial behaviour to exploit risk and uncertainty for institutional advantage.

A.5 Reference List for Annex A

- Clarke, L. (2006), *Worst Cases: Terror and Catastrophe in the Popular Imagination*. Chicago: University of Chicago Press.
- Dake, K. (1991), "Orienting Dispositions in the Perception of Risk: An Analysis of Contemporary Worldviews and Cultural Biases." *Journal of Cross-Cultural Psychology*. 22:61-82.
- Douglas, M. (1982), *In the Active Voice*. London: Routledge.
- Douglas, M. (1992), *Risk and Blame: Essays in Cultural Theory*. London: Routledge.
- Fountain, J. (1999), "Paradoxes of Public Sector Customer Service" taken from website www.harvard.edu in May 2001.
- Hood, C. (1998), *The Art of the State: Culture, Rhetoric, and Public Management*. Oxford: Clarendon.
- Jaeger, C., Renn, O., Rosa, E. and Webler, T. (2001), *Risk, Uncertainty and Rational Action*. London: Earthscan.
- Laporte, T. (1996), "High Reliability Organizations: Unlikely, Demanding and At Risk." *Journal of Crisis and Contingency Management*. 4: 2, 60-71.
- La Porte, T. R. and Consolini, P. (1991), "Working in Practice but not in Theory: Theoretical Challenges of High Reliability Organizations." *Journal of Public Administration Research and Theory*. 1: 19-47.
- Perrow, C. (1999), *Normal Accidents: Living with High Technologies*. (Second Edition.) Princeton: Princeton University Press.
- Quigley, K. (2008), "The Worst of Times: Cass Sunstein discusses Worst Case Scenarios and the Precautionary Principle." Halifax: School of Public Administration, Dalhousie University.
- Renn, O., Burns, W., Kasperson, R., Kasperson, J. and Slovic, P. (1992), "The Social Amplification of Risk: theoretical foundations and empirical application." *Social Issues* 48:137-160.
- Renn, O. (2008), "White Paper on Risk Governance: Toward an Integrative Framework" in O. Renn and K. Walker K. (eds.) *Global Risk Governance: Concept and Practice Using the IRGC Framework*. Dordrecht: Springer.
- Roberts, G. (2003), Review of Research Assessment. Retrieved on August 5, 2005, at http://www.rareview.ac.uk/reports/roberts/roberts_summary.doc
- Royal Society (1992), *Risk: Analysis, Perception and Management, Report of a Royal Society Study Group*. London: The Royal Society.

Sagan, S. (1993), *The Limits of Safety: Organizations, Accidents, and Nuclear Weapons*. Princeton: Princeton University Press.

Sjöberg, L. (1997), "Explaining Risk Perception: An Empirical Evaluation of Cultural Theory" in *Risk Decision and Policy* 2, 2: 113-130.

Slovic, P. (1992), "Perception of Risk: Reflections on the Psychometric Paradigm" in S. Krimsky and D. Golding (eds) *Social Theories of Risk*. London: Praeger.

Sunstein, C. (2005), *The Laws of Fear: Beyond the Precautionary Principle*. Cambridge: Cambridge University Press.

Sunstein, C. (2007), *Worst Case Scenarios*. Cambridge: Harvard University Press.

Thompson, M., Ellis, R. and Wildavsky, A. (1990), *Cultural Theory*. Boulder CO: Westview.

Vaughan, D. (1996), *The Challenger Launch Decision: Risky Technology, Culture and Deviance at NASA*. Chicago: Chicago University Press.

Zinn, J. (2004) "Literature Review: Sociology and Risk" Working Paper. Social Contexts and Responses to Risk Network, University of Kent at Canterbury. Paper obtained at <http://www.kent.ac.uk/scarr/papers/Wkgpaper2004.htm>.

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Bibliography

Aucoin Peter and Mark D. Jarvis. *Modernizing Government Accountability: A Framework for Reform* (Ottawa: Canada School of Public Service, 2005)

Aucoin Peter, Jennifer Smith, and Geoff Dinsdale, *Responsible Government: Clarifying essentials, dispelling myths and exploring change*, (Ottawa: Canadian Centre for Management Development, 2004)

Baroni, Judy A. and Nethercote, W.C.E., "A DRDC Management Accountability Framework: Results of Cycle 2," Dalhousie University School of Public Administration, DRDC Atlantic Contract Report, CR2009-135, November 2009

Bereano, Philip L., "Reflections of a Participant-Observer: The Technocratic/Democratic Contradiction in the Practice of Technology Assessment" *Technological Forecasting and Social Change*. 54:1997

Brown, Stephen W., and Theresa A. Swartz, "A Gap Analysis of Professional Service Quality," *The Journal of Marketing*, Vol. 53, No. 2 (Apr., 1989), pp. 92-98

Canada, Report of the Commission of Inquiry into the Deployment of Canadian Forces to Somalia, *Dishonoured Legacy: The Lessons of the Somalia Affair*, (Ottawa: Public Works and Government services Canada, 1997)

Carstairs, Senator Sharon, speech, Move Second Reading of *Public Service Modernization Act*. June 5, 2003

Davis, James H., F. David Schoorman, and Lex Donaldson, Toward a Stewardship Theory of Management, *Academy of Management Review*, 22:1, 1997, 20-47

Defence R&D Canada, "Framework Document," Ottawa (Approved by Treasury Board Ministers, 27 July 2000)

Department of National Defence, "Defence S&T Strategy: Science and Technology for a Secure Canada," Ottawa, December 2006.

Department of National Defence, *Organization and Accountability: Guidance for Members of the Canadian Forces and Employees of National Defence*, Second Edition, Sept 1999 Available from: <http://www.forces.gc.ca/admpol/Organization-e.html>.

Department of National Defence, "Report on Plans and Priorities 2008-2009," Ottawa, undated.

Department of National Defence. *Strengthening Accountability & Comptrollership in National Defence*. June 2004. Available from: <http://www.admfincs-smafinsm.forces.gc.ca/sacnd-rfcdn-eng.asp>.

Depuis, Jean, "Modern Comptrollership and the Management Accountability Framework," Parliamentary Information and Research Service, Library of Parliament PRB 06-23E, Ottawa, April 3, 2006

Dietmar Braun and David H. Guston, "Principal-agent theory and research policy: an introduction" *Science and Public Policy*, October 2003 30:5

Dubnick, Melvin J. and Jonathan B. Justice. "Accounting for Accountability." 2004 Annual Meeting of the American Political Science Association, September 2004

E. Melanie DuPuis and Brian J. Gareau, "Neoliberal Knowledge: the Decline of Technocracy and the Weakening of the Montreal Protocol" *Social Science Quarterly*, 89:5, December 2008

Evert Lindquist, "How Ottawa Assesses Departmental/ Agency Performance: Treasury Board's Management Accountability Framework" in *How Ottawa Spends, 2009 – 2010: Economic Upheaval and Political Dysfunction*, Allan M. Maslove, ed. Forthcoming, October 2009

Fraser, Kyle, "The 2007 Defence Ethics Survey: Summary of the Overall CF and DND Findings for Decision Makers," Defence R&D Canada, DRDC CORA TN 2008-016, August 2008

Ghobadian, Abby, Simon Speller, and Matthew Jones. "Service Quality: Concepts and Models." *International Journal of Quality & Reliability Management*. 11:9, 1994, 43-66

Grundeis, Jens. "Chapter 3: Examining the Relationship between Trust and Control in Organizational Design" in *Organization Design: the Evolving State of the Art*. Burton, R.M., Eriksen, B., Håkansson, D.D., Snow, C.C., eds. Springer Information and Organization Design Series. 6, 2006

Guston, David H., "Principal-agent theory and the structure of science policy, revisited: 'science in policy' and the US *Report on Carcinogens*." *Science and Public Policy*, October 2003 30:5

Hu, Hsin-Hui, Jay Kandampully, and Thanika Devi Juwaheer, "Relationships and impacts of service quality, perceived value, customer satisfaction and image: an empirical study", *The Service Industries Journal*, 29:2 Feb 2009

Industry Canada, *Mobilizing Science and Technology to Canada's Advantage*, Ottawa: 2007

Irwin Feller, "Mapping the frontiers of evaluation of public-sector R&D programs." *Science and Public Policy*, December 2007

Ivan Blake, "Management Accountability Framework", (Treasury Board of Canada, Secretariat: 2005), http://www.tbs-sct.gc.ca/maf-crg/documents/video-video/video-video_e.asp

Jackson Brian A., "Federal R&D: Shaping the National Investment Portfolio" in *Shaping Science and Technology Policy: The Next Generation of Research*, David H Guston and Daniel Sarewitz, eds. Madison: University of Wisconsin Press, 2006, pgs 33-54

Jaques Elliot. *A General Theory of Bureaucracy*, (London, Heinemann Educational Books Ltd., 1976)

Jassanoff, Sheila, "Rationalizing Politics" in *The Fifth Branch: Science Advisors as Policymakers*. (Cambridge: Harvard University Press. 1994)

Medical Research Council of Canada. "Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans," Public Works and Government Services Canada, Ottawa: 2003

Nethercote, W.C.E., "A DRDC Management Accountability Framework – First Thoughts," Dalhousie University School of Public Administration, Discussion paper, 28 February 2008

Nethercote, W.C.E., "A DRDC Management Accountability Framework: A Straw-man, April 2008," Dalhousie University School of Public Administration, Discussion Paper, April 21, 2008

O'Brien, Craig and Nethercote, W.C.E. "A DRDC Management Accountability Framework, Cycle 1 Final Report," Dalhousie University School of Public Administration, DRDC Atlantic Contract Report, CR 2008-188, October 2008

Painter, Martin, and Jon Pierre. "Unpacking Policy Capacity: Issues and Themes". *Challenges to State Policy Capacity*. Martin Painter and Jon Pierre, eds. New York: Palgrave Macmillan, 2005

Privy Council Office, "Annual Report," <http://www.pco-bcp.gc.ca/index.asp?lang=eng&page=clerk-greffier&sub=reports-rapports&doc=reports-rapports-eng.htm>

Privy Council Office, "Guidance for Deputy Ministers" <http://www.pco-bcp.gc.ca/index.asp?lang=eng&page=information&sub=publications&doc=gdm-gsm/doc-eng.htm>

Romzek, Barbara S. and Melvin J. Dubnick. "Accountability in the Public Sector: Lessons from the Challenger Tragedy". *Public Administration Review*. Vol. 47, No. 3. May/June 1987. 227-238

Treasury Board of Canada Secretariat, "Quality and Affordable Service for Canadians: Establishing Service Standards in the Federal Government – An overview," http://www.tbs-sct.gc.ca/pubs_pol/opepubs/TB_D3/OQUA-eng.asp

Treasury Board of Canada Secretariat, "Organizational Report for Department of National Defence Assistant Deputy Minister Science and Technology Group," 2008 Public Service Employee Survey Results, <http://www.tbs-sct.gc.ca/ps-es-saff/2008/results-resultats/res-eng.aspx?cd=&o1=03&o2=019&o3=000&o4=000&o5=000#tphp> accessed 28 May 2009

Treasury Board of Canada Secretariat. "Result for Canadians: A Management Framework for the Government of Canada," March 30, 2000

Treasury Board of Canada Secretariat. Succession Planning and Management Guide. <http://www.tbs-sct.gc.ca/gui/sure-eng.asp>

Treasury Board of Canada Secretariat. *Values and Ethics Code for the Public Service*, Public Works and Government Services Canada, Ottawa: 2003

Zeithaml, Valerie A., A. Parasuraman, and Leonard L. Berry, *Delivering Quality Service*, (New York: Free Press, 1990)

List of acronyms/initialisms

ADM	Assistant Deputy Minister
ADM(S&T)	Assistant Deputy Minister (Science and Technology)
ATI	Access to Information
CANDID	Canadian Defence Information Database
COSO	Committee of Senior Officials
CPME	Collaborative Program Management Environment
CR	Contract Report
CRG	Cadre de Responsabilisation
CRP	Corporate Risk Profile
CRS	Chief Review Services
CRTI	CBRN (Chemical, Radiological, Nuclear and Biological) Research and Technology Initiative
CT	Conseil du Trésor
DGMPPRA	Director General Military Personnel Research and Analysis
DGRDCS	Director General R&D Corporate Services
DGSTO	Director General Science and Technology Operations
DM	Deputy Minister
DND	Department of National Defence
DRDC	Defence R&D Canada
DRDKIM	Director R&D Knowledge and Information Management
DRENet	Defence Research Network
DSTEA	Director S&T Enterprise Affairs
DWAN/DIN	Defence Wide Area Network/Defence IntraNet
EAP	Employee Assistance Program
FMAS	Financial Management System
HR	Human Resources
IKM	Information and Knowledge Management
LMCC	Labour Management Coordination Committee
LMRC	Labour Management Relations Committee
MAF	Management Accountability Framework
MCI	Modern Comptrollership Initiative
MDN	Ministère de la défense nationale
NDHQ	National Defence Headquarters
OPI	Office of Primary Interest
PAA	Program Activity Architecture
PER	Performance Evaluation Report (for the Defence Scientist occupational group)
PGA	Partner Group Agreement (a service level agreement on planned S&T activities)
PLP	Personal Learning Plan
PMA	Personal Management Agreement (for the Executive Group and other groups receiving performance pay or ‘pay at risk’)
PMP	Performance Management Program
PRR	Personnel Review Report (an annual performance review and goal setting report for most federal public servants)
PS	Public Service or Public Safety Canada

PSC	Public Service Commission of Canada
PSMA	Public Service Modernization Act
R&D	Research and Development
RDDC	Recherche et développement pour la défense Canada
RDEC	Research and Development Executive Committee
S&T	Science and technology
SCT	Secrétariat du Conseil du Trésor
SMAF	Staffing Management Accountability Framework
SOP	Standard Operating Procedure
SSRRB	Social Science Research Review Board
TB	Treasury Board
TBS	Treasury Board Secretariat
TDP	Technology Demonstration Program
TOS	Taken on Strength (date of an employee's appointment)

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Defence Research and Development Canada (DRDC), a special operating agency of the Department of National Defence, contracted Dalhousie University to support the development of a management accountability framework (MAF) as part of DRDC's EXPEDITION 09 organizational change project. The DRDC MAF used the Treasury Board MAF as a model, with Expectations, Indicators and Measures tiers. The proposed DRDC MAF reflects the DRDC vernacular and utilizes a survey instrument to assess managerial cadre performance directly, rather than using policies and standard operating procedures as proxies for organizational performance. Pilot studies were used to test the survey instrument approach against the six core elements of the DRDC MAF: Policy and Programs; People; Service; Risk Management; Stewardship; and Accountability. The results of the pilot studies confirm the feasibility of the survey-based approach and provide a first assessment of DRDC's organizational performance against indicators for the elements of the proposed DRDC MAF.

Recherche et développement pour la défense Canada (RDDC), organisme de service spécial du ministère de la Défense, a embauché l'université Dalhousie pour l'aider à élaborer un cadre de responsabilisation de gestion (CRG) pour EXPEDITION 09, projet de changement organisationnel. Le CRG de RDDC s'inspire du CRG du Conseil du Trésor comme modèle et de ses paliers Attentes, Indicateurs et Mesures. Le CRG de RDDC proposé reflète les termes communément employés à RDDC et utilise un sondage pour évaluer directement le rendement des gestionnaires. Sont en outre examinées les politiques, les procédures de fonctionnement habituelles et l'information de l'organisme comme mesures du rendement de l'organisme. Des études pilotes ont été effectuées pour tester l'approche par sondage au vu des six éléments clés du CRG de RDDC : Politique et programmes, Employés, Service, Gestion du risque, Gérance et Responsabilisation. Le résultat des études pilotes a confirmé la faisabilité de l'approche par sondage et fourni une première évaluation du rendement organisationnel de RDDC au vu des indicateurs pour les éléments du CRG de RDDC propose.

14. **KEYWORDS, DESCRIPTORS or IDENTIFIERS** (Technically meaningful terms or short phrases that characterize a document and could be helpful in cataloguing the document. They should be selected so that no security classification is required. Identifiers, such as equipment model designation, trade name, military project code name, geographic location may also be included. If possible keywords should be selected from a published thesaurus, e.g. Thesaurus of Engineering and Scientific Terms (TEST) and that thesaurus identified. If it is not possible to select indexing terms which are Unclassified, the classification of each should be indicated as with the title.)

Management Accountability Framework; Accountability; Risk Management; Service; Stewardship; Human Resource Management; Policy and Programs; Survey

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