Comprehensive Approach Workshop

Hard Problem First Steps

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Abstract

The 2011 S&T Functional Planning Guidance refers to hard problems within the Defence & Security domain, which typically require multiple expertises to solve. This Technical Note proposes a number of steps that Defence R&D Canada may adopt in order to manage and solve hard problems. A Comprehensive Approach workshop was held specifically to conduct the initial steps towards managing and solving the hard problem related to the Comprehensive Approach including defining and scoping the hard problem as well as determining the related S&T being done and to be done.

It is important to have the right people involved in these initial steps included those performing and managing the science as well as seeking early endorsement of the science activity from Defence and Security partners. The notion of hard problems and a Hard Problem Director has been overtaken by events as the new ADM(S&T) seeks to simplify processes and ensure alignment of the DRDC programme with its partners' outcomes. However, similar steps can be applied to High Level Effects and Essential S&T Deliverables.

Résumé

La guide de planification fonctionnelle S&T pour 2011 fait référence à des « hard problems » ou problèmes difficiles dans le domaine défense & sécurité, qui ont généralement besoin de plusieurs expertises à résoudre. Ce rapport propose un certain nombre d'étapes qui Recherche et développement pour la défense Canada (RDDC) peut adopter afin de gérer et de résoudre des problèmes difficiles. Un atelier pour « Comprehensive Approach » a été organisé spécifiquement pour effectuer les premières étapes de la gestion et la résolution du problème difficile. Il a compris la définition et la portée du problème difficile ainsi que la détermination de la recherche ce qui est fait et sera fait.

Il est important d'avoir les bonnes personnes impliquées dans ces étapes initiales comprenaient ceux de la scène et la gestion de la science ainsi que pour faire approuver au début de l'activité scientifique des partenaires de la défense et sécurité. La notion de problèmes difficiles et d'un directeur pour ça a été dépassée par les événements que le nouveau Sous-ministre adjoint(S&T) veut simplifier les processus et assurer l'alignement du programme de RDDC avec des résultats de ses partenaires. Mais, les étapes similaires peuvent être appliquées aux effets de haut niveau et des livrables essentielle de S&T.

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Executive summary

Comprehensive Approach Workshop: Hard Problem First Steps

Philip S. E. Farrell; David Connell; DRDC Corporate TN 2011-005; Defence R&D Canada – Corporate; October 2011.

Introduction: The 2011 S&T Functional Planning Guidance refers to hard problems within the Defence & Security domain, which require multiple expertises to solve. This Technical Note proposes a number of steps that Defence R&D Canada may adopt in order to manage and solve hard problems including:

- Defining and scoping the hard problem

- Determining the related S&T being done to date

- Determining the related S&T needed in the future to fill gaps

- Identifying responsibilities and accountabilities for development and exploitation

- Developing a hard problem program plan including tasks, timelines, and required resources

- Periodically reviewing the plan; its intended outcomes and current tasks and progress in order to make required changes and/or adjustments

Results: A Comprehensive Approach workshop was held to not only progress this specific hard problem but also pilot test the initial steps towards managing and solving hard problems in general. The workshop participants agreed that the Comprehensive Approach is about entities working together towards the resolution of a complex situation that typically involves human conflict. They concluded that hard problems requiring the Comprehensive Approach are similar to the hard problem of "crime": it cannot be definitively solved but there are ways to improve the approach to such problems. A number of gaps in the DRDC program were identified and suggestions were made that would improve the Comprehensive Approach. Thus, the workshop conducted the first four steps towards managing and solving the hard problem.

Significance: One lesson learned from the workshop was to have the right people attend the workshop: those performing as well as managing the science. Another lesson learned was to seek early endorsement of the science activity from Defence and Security partners.

Future plans: The notion of a hard problems and a Hard Problem Director has been overtaken by events as the new ADM(S&T) seeks to simplify processes and ensure alignment of the DRDC programme with its partners' outcomes. However, research into the Comprehensive Approach continues including the Joint Interagency Multinational Public study, a historical look as the Comprehensive Approach, as well as exploring Organizational Agility as a key enabler to the Comprehensive Approach.

Sommaire

Comprehensive Approach Workshop: Hard Problem First Steps

Philip S. E. Farrell; David Connell; DRDC Corporate TN 2011-005; R & D pour la défense Canada – Corporate; Octobre 2011.

Introduction ou contexte: La guide de planification fonctionnelle S&T pour 2011 fait référence à des problèmes difficiles « hard problems » dans le domaine défense & sécurité, qui nécessitent de multiples expertises à résoudre. Présente note technique propose un certain nombre d'étapes qui Défense R & D Canada peut adopter afin de gérer et de résoudre des problèmes difficiles, y compris:

- Définir le problème difficile

- Déterminer la S&T ce qui est fait à ce jour

- Déterminer la S&T ce qui sera fait dan l'avenir

- Identifier les responsabilités et les obligations pour le développement et l'exploitation

- Élaborer un plan de problème difficile du programme y compris les tâches, les délais et les ressources nécessaires

- L'examen périodique du planification, les résultats escomptés et les tâches actuelles et les progrès réalisés en vue d'apporter les changements requis et / ou ajustements.

Résultats: Un atelier pour « Comprehensive Approach » a été tenue pour non seulement les progrès à ce problème difficile, mais aussi pilote d'essai les premières étapes vers la gestion et la résolution des problèmes difficiles en général. Les participants à l'atelier ont convenu que « Comprehensive Approach » est sur les entités qui travaillent ensemble vers la résolution d'une situation complexe qui implique généralement des conflits humains. Ils ont conclu que des problèmes difficiles ce qui utiliser « Comprehensive Approach » sont similaires au problème difficile de «crime»: il ne peut pas être résolu définitivement mais il ya des façons d'améliorer l'approche de ces problèmes. Un certain nombre de la recherche qui sont manqués dans le programme de RDDC ont été identifiés et des suggestions ont été faites qui permettraient de l'améliorer. Ainsi, l'atelier effectué les trois premières étapes vers la gestion et la résolution du problème difficile.

Importance: Une leçon tirée de l'atelier était d'avoir les bonnes personnes y participeront: ceux qui faire et gérer de la science. Une autre leçon apprise était de rechercher l'approbation rapide de l'activité scientifique des partenaires de la défense et sécurité.

Perspectives: La notion de problèmes difficiles et d'un directeur problème difficile a été dépassée par les événements que le nouveau Sous-ministre adjoint(S&T) veut simplifier les processus et assurer l'alignement du programme de RDDC avec des résultats de ses partenaires. Toutefois, les recherches continue sur « Comprehensive Approach », et compris de l'étude de « Joint, Interagency, Multinational, Public », un regard historique, et d'explorer d'agilité organisationnelle comme un facteur essentiel d'améliorer « Compreshensive Approach ».

Table of contents

List of tables

Acknowledgements

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1 Introduction

1.1 Background

The 2011 draft S&T Functional Planning Guidance (FPG; DRDC Corporate, 2010) lists as a hard problem under the Defence & Security domain the provision of a "rigorous foundation for defence & security emerging concepts & doctrine (comprehensive, integrated, adaptive, networked)". However, this statement of the problem does not address those specific aspects of an operation that require Defence & Security partners to be comprehensive, integrated, adaptive, and networked – if these are indeed the essential qualities that a collective needs to be successful in future missions. This issue highlights the cross-cutting nature of hard problems and the requirement to seek solutions to these same problems.

Cross-cutting hard problems are not being addressed in a holistic (cross-PG or cross-Thrust) manner. The authors studies the FPG and determined which hard problems are cross-cutting and may require a Hard Problem Director (see Annex A). The Comprehensive Approach workshop described herein represents a pilot test for the initial steps required to tackle any hard problem. These steps include:

- Defining the hard problem
- Scoping the hard problem
- Determining the related S&T being done to date
- Determining the related S&T needed in the future to fill gaps

Next, the management of the solution is required and would include:

- Identifying responsibilities and accountabilities for development and exploitation
- Developing a hard problem program plan including tasks, timelines, and required resources
- Periodically reviewing the plan; its intended outcomes and current tasks and progress in order to make required changes and/or adjustments

Thus the purpose of the workshop was two-fold: 1) to pilot test for a systematic approach to a hard problem, and 2) to progress the Comprehensive Approach as a potential example of a hard problem.

The workshop started on the evening of 8 March with an informal meeting where participants set the stage for the next day's discussions. Both Mr. Connell and LCol Hobbs provided real world anecdotes of CA from their experiences in Afghanistan. Participants immediately realised that the workshop would involve the development of a common understanding of the Comprehensive Approach as well as its scope (the application of CA to expeditionary ops, domestic ops, major sporting events, natural disasters, etc.). One key idea that came from this discussion was the metaphor of combating crime to describe the real challenge of these types of complex endeavours. That is, just like crime, any resolution to the complex endeavour problems may not completely eradicate them. The best one might hope for is that a specific instance of CA that

resolves the problems to some extent may lead to tactics and techniques that ease the burden for future instances of the Comprehensive Approach.

1.2   Workshop Introduction

The participants (Table 1) followed the agenda (Table 2). On 9 March, Dr. Haslip provided the context for the workshop and re-iterated the workshop purpose and objectives. He also noted that there is a movement within DRDC to begin to manage for outcomes, and subsequent management of this hard problem could lead the way in this respect.

Table 1: Workshop Attendees

Name	Affiliation	Name	Affiliation
Dr. Dean Haslip	DSTIC	Ms. Micheline Bélanger	Valcartier
Mr. David Connell	DSTIC 2	Mr. Michel Lizotte	Valcartier
Dr. Philip Farrell	DSTIC 3	Dr. Daniel Lafond	Valcartier
Mr. Chris Hough	DSTIC 5	Dr. Megan Thompson	Toronto
Mr. John Verdon	OCS	Dr. Angela Febbraro	Toronto
Dr. Tony Masys	CSS	Dr. Marie-Eve Jobidon	Toronto
Dr. Jacque Lavigne	DSRI	LCol Dwayne Hobbs	Toronto

Table 2: Agenda

Date	Time	Item
8 March	1600	Arrival and Check In
	1800	Setting the Stage
	1900	No Host Dinner
9 March	0830	Workshop Introduction (Dr. Dean Haslip)
	0845	Develop a common understanding of the comprehensive approach hard problem

	0945	Develop Comprehensive Approach working definition
	1030	Break
	1100	Develop hard problem outcomes and S&T roles that contribute to outcomes
	1145	No host Lunch
	1230	Identify Comprehensive Approach outcome gaps
	1445	Summary and Next Steps
	1500	End of Workshop

2 Hard Problem Common Understanding

How we frame the problem will influence how we choose to solve it. Therefore, the first step in the process was intended to encourage participants to think deeply within the context of their knowledge, experience and interests and broadly from the perspective of multiple stakeholders. This deepening and broadening facilitates the competition for ideas through discussion and debate via productive arguing. In this manner, group awareness, consensus and common understanding can be achieved.

Mr. Connell provided a general Comprehensive Approach statement for discussion, background information on COIN, NATO experiences, as well as the new ARP project 10ao to evaluate past operations and use the lessons learned to underpin the development of a Comprehensive Approach concept. CA is related to risk management in that any potential threat would be assessed from multiple organizational lenses. Outcomes need to be defined clearly and assessed fully in order to determine to what extent the outcomes are being realized. In addition, the requirement to capture lessons learned provides the necessary feedback for returning to the initial problem and the related actions and activities intended to address the problem.

Relationships and inter-player relations are important factors to consider when dealing with a complex endeavour as each action influences the entire environment (e.g., the *butterfly effect*) and the only way to effectively deal with the changed environment is through strong relationships among the players. Cultural differences (silos) between and within Departments (players) continue to exist (or are perceived to exist) related to joint planning and joint operations (e.g., Vancouver 2010 Olympics and G8 and G20 events). This drives the requirement for a governance framework to contend with this complexity. The Major Event Security Framework was an initiative aimed at breaking down these silos and at least understanding each other's cultures.

A number of important questions were posed and only some were answered explicitly:

"Do we need a Comprehensive Approach?"

"What are the elements that are needed to sustain a Comprehensive Approach?"

"What are the principles that bound the issue?"

"Why JIMP?"

- CF is resource limited and JIMP is a form of force multiplication.

"Why Whole of Government?"

- Rationale seeks greater efficiencies and effectiveness

- To take full advantage of distributed Knowledge

- To cover all jurisdictions

- The situation has many Interdependencies that no one government organization can address, and any small change in one government sector may have several rippling or secondary effects across the entire government.

- To develop inter-governmental Interrelationships capable of more meaningful engagements and achieving more sustainable impacts

The workshop did not separate defining the hard problem from scoping the hard problem, where defining the problem infers the development of a single problem statement while scoping the hard problem is about articulating the key dimensions that make the problem difficult to solve. Since the workshop participants did not make this separation, this suggests that there may be no need to have two distinct steps.

The Hard Problem was never stated explicitly. However, given the context of the participants' comments it is assumed that the hard problem would involve any variety of situations that deal with human-human conflict, human-nature conflict, and human-self conflict (from Pigeau presentation at the 2010 S&T Symposium on Agility and Resilience). Examples of such situations include (but are not limited to) major combat operations, natural disasters, and major sporting and political events. Thus the solution to these 'hard problems' or complex endeavours would often require multiple entities working together towards common goals, purposes, objectives, or outcomes – that is, the Comprehensive Approach.

3 Comprehensive Approach Solution

3.1 Working Definition

During the latter part of the morning, Participants divided into two groups and crafted the following two definitions for CA:

Group 1: The concept of involving, leveraging, including, engaging, and/or using all required governmental and non-governmental entities to develop a shared understanding of the problem, shared goals and develop and implement a shared strategy to address the problem.

Group 2: A collective stance (promoted through doctrine, culture, and training) of a number of organisations (with complementary capabilities) that achieve individual and collective goals. This end state is achieved through the adoption of key enabling collaborative processes, including achieving a common understanding of the complex situation, and collaborative design of agreed upon end states and methods of implementation. The Comprehensive Approach must be flexible enough to accommodate a range of possibilities, ranging from awareness and de-conflicting of activities among some entities, to coordination and to full integration of activities among other entities. The result is greater effectiveness and impact through resource sharing and coordination.

These descriptions of CA have a number of elements in common as well as with CFD's CA concept (DG PEI, 2010a). It is about a broad engagement of stakeholders (entities) working together towards a common outcome within a complex situation. These entities require a number of enablers including (but not limited to) shared understanding, goals, strategy, doctrine, culture, training, collaborative processes, coordination, resources, transparency, information sharing, trust, institutional framework (governance/set of rules), systems thinking, knowledge management, "knowledge" transfer[1], mutual respect, and a common view of how to move forward (social relationships).

3.2 Desired Outcomes

The next portion of the workshop was dedicated to examining outcomes related to the problem statement(s). Outcomes should be consistent with the problem statement(s) and logically lead to or explicitly/implicitly identify actions necessary to address the problem. This is the approach that was followed, however; outcomes are difficult to identify and define in exclusion of the actions and plans. In retrospect, it may be more beneficial to directly address outcomes and associated actions (plans) as opposed to developing outcomes and actions separately.

In our workshop, participants listed a set of outcomes as a result of employing the comprehensive approach to a situation/mission. There was some confusion regarding whether desired S&T outcomes were to be listed as well. However, the focus was on the expected, desired outcomes of complex situations and how S&T would contribute to these outcomes primarily by developing the

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[1] Quotes were added because only information and data is transferred through some physical medium. Subsequently the recipient converts the information into knowledge coloured by their own values, culture, expectations, and experience. This knowledge is held in memory.

Comprehensive Approach to the point where it could be readily exploited by Defence and Security partners.

In the end, participant's listed CA outcomes – that is, those end states that CA hopes to yield: coordination of interagency activities, common strategy, truly lessons learned and not just observed, increased chances of mission success (but not guarantee it).

DRDC can play several roles in achieving these outcomes. S&T informs planning and decision-making from the very beginning. S&T may develop an Institutionalized method of lessons learned, training and educational programs, metrics of incentives to volunteer, and tools for working together. S&T may continue to evolve, develop and maintain an institutional framework for CA as well as provide a common understanding, framework, or landscape of risk and Risk Management. With respect to human resources, DRDC has expertise in designing and representing CA roles and responsibilities. Also, S&T may bring some understanding to the conflict space.

3.3   DRDC Program Gaps

The final portion of the workshop dealt with attempting to identify programme gaps associated with the problem statement, its respective outcomes and associated actions. The distillation of the problem and required outcomes and actions would ultimately be compared to on-going DRDC activities and projects in order to rationalise and refine current efforts as well as foster recommendations for required changes and new initiatives.

The CA RoadMap Dec 2010 published by CFD outlines the current DRDC support to the CA concept (DG PEI, 2010b). It also provides Key Knowledge Areas (KKA) that are to be explored to further develop the comprehensive approach: organizational culture, roles and tasks of likely partner organizations, strategic planning, operational planning, trust, learning and adaptation, and complexity theory. The DRDC program has projects and WBEs in all of these areas. However, there is no oversight function that brings the objectives and outputs of each project and WBE together, and then delivers a holistic results package to the defence and security partner.

Other DRDC program gaps that were mentioned include: Whole-of-Government is not explicitly part of the S&T Strategy and there is no laboratory for Comprehensive Approach research. A number of suggestions were made to fill these and other gaps. A Comprehensive Approach Centre of Excellence could be formed. Yearly CA workshops would help in disseminating the information, networking, and perhaps be a catalyst for collaboration. DRDC is well positioned to participate in Comprehensive Approach training and doctrine development. Agent-based modelling could be used to investigate the impact of policy changes and new policy. A CA Project Director or Champion could bring the much needed oversight and coordination function to bear.

In a broader context, other CA gaps exist with respect to: developing and fostering a WoG culture beyond DRDC and DND; employing the CA approach on operations at the operational and tactical levels nationally and internationally; examining the relationship of CA with other concepts such as failed and fragile states, counterinsurgency, global warming, pandemics etc. ;

participating and contributing to CA concept development with our allies and international organisations; and, selecting, training and deploying individuals within a CA context.

4 Conclusion

4.1 Workshop Summary

The workshop explored types of operations that requires a Comprehensive Approach to make any inroads. Participants came to the conclusion that such complex situations of human conflict are similar to "crime": it cannot be definitively solved, but there are ways to improve our approach to the problem. The two groups came to the same conclusion that CA is about entities working together towards the resolution of a complex situation that typically involves human conflict. Enablers like trust and information technologies become important for realizing the benefits of a Comprehensive Approach. However, more work is needed to identify outcomes. Gaps in the DRDC program were identified, and a number of suggestions were made to fill the gaps.

4.2 Hard Problem Director Lessons Learned

As stated in the background, this workshop provided an opportunity to pilot test the initial steps required to tackle any hard problem:

- Defining and Scoping the hard problem

- Determining the related S&T being done to date

- Determining the related S&T needed in the future to fill gaps

The workshop was successful in accomplishing all of these steps. One important lesson learned was to have the right people attend the workshop. Even for this "internal to DRDC" meeting, some key individuals could not participate. An effort was made to inform them of the workshop outcomes, but their contribution was not captured. Also, there was agreement that this workshop would be followed by a workshop with participation from our Defence & Security partners to integrate their views on the hard problem and entertain possible solutions from their perspective.

Another lesson learned is that any future research requires endorsement from Defence and Security partners. This lesson was identified very early on but endorsement or 'buy-in' was sought first from the research community, which this workshop represents in part. The intention is to consolidate the researcher's perspective, present it to the partners, and then seek their endorsement for continuing the research.

4.3 HLE and ESTD Implications

The notion of a Hard Problem Director has somewhat been overtaken by events. The new ADM(S&T) presented at the 2011 DRDC Manager's Workshop 'Managing by Outcomes', which ensures that the DRDC programme is explicitly aligned to Defence and Security partner desired outcomes. High Level Effects (HLEs) are an expression of the partner's outcomes, and Essential S&T Deliverables (ESTDs) are those S&T products that are essential for the realization of the HLEs.

The process for generating HLEs and ESTDs is very similar to the four initial steps for tackling a hard problem, except 'HLE' is substituted for 'hard problem.'

- Defining the HLE

- Scoping the HLE

- Determining the related S&T being done to date

- Determining the essential S&T deliverables (ESTDs) needed to fill gaps

Thus, by extension, one could imagine that the management of the ESTDs is similar to the proposed management of the hard problem solution that would include:

- Identifying responsibilities and accountabilities for ESTD development and exploitation

- Developing an ESTD program plan including tasks, timelines, and required resources

- Periodically reviewing the plan; its intended outcomes and current tasks and progress in order make required changes and/or adjustments

References

DRDC Corporate (2010). Draft Science and Technology Functional Planning Guidance (For Internal Discussion 2012 – 2013, December, 2010.

DG PEI (2010a). The Comprehensive Approach Concept. Issued on authority of the Chief of Force Development, December, 2010.

DG PEI (2010b). Chief of Force Development's Comprehensive Approach RoadMap, November, 2010.

Annex A   Hard Problem Director

The Functional Planning Guidance provides a list of hard problems that the DRDC S&T program must address and ultimately provide a solution that can be exploited by Defence and Security partners.   However, due to the cross-cutting nature of some hard problems such as Comprehensive Approach, Readiness, CBRNe, Arctic, and Cyber, there is no unifying mechanism that steers the S&T projects towards an exploitable solution.

We propose a new role within DRDC called the Hard Problem Director (HPD) who provides direction, coordination, and oversight to projects that contribute to the solution. Given that the overarching objective is to deliver mature, exploitable solutions to hard problems, the HPD would have a specific mandate to 1) determine the requirements for an exploitable solution to the cross-cutting hard problem, 2) direct, coordinate, and oversee a number of S&T projects[2] where each project solves some aspect of the hard problem, and 3) deliver a holistic and mature solution to Defence and Security partner for exploitation. This three-fold mandate reflects the ADM(S&T)'s five-year message that S&T is a full service organization: from idea creation to idea exploitation.

The HPD determines the solution requirements in consultation with the appropriate Project Managers and their associated Thrust Leaders and DSTs, as well as the suitable Defence and Security Partners. The product for this front-end phase of the work would be a Statement of Required Outputs needed to achieve the anticipated outcomes. The required outputs would imply certain S&T projects that have the potential to deliver the outputs, as well proposed S&T projects that would fill the gap if certain required outputs are not being sought after by the existing S&T program.

Once the required outputs are identified (these could morph slightly over time), the HPD would direct, coordinate, and oversee the existing and proposed S&T projects.   The HPD may recommend changes to existing projects or generate a call for proposal in order to produce the required outputs. The HPD will need to coordinate projects by liaising, minimizing overlaps, and sequencing projects as needed. The HPD would work with the DSTs and oversee the projects ensuring that they remain relevant, excellent, effective, and efficient.

The HPD would be responsible for delivering a proven and exploitable solution for the cross-cutting hard problem to the Defence and Security partner. In most cases, the solution would take the form of a system that would include one or more of the following: policy, processes, organizational structures, technology, and infrastructure recommendations.

Given the tasks of determining requirements, directing, coordinating, and overseeing projects, and delivering solutions, the HPD is likely to be a senior scientist who has expertise in the cross-cutting hard problem, understands DRDC's vision, mission, and role within Defence and Security, and is well-connected across multiple DRDC centres, academia, industry, and internationally.

We imagine that the HPD would lead by influence rather than delegated authority.   Not only would they need to be a knowledge integrator of project outputs, but also the HPD would need to

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[2] An S&T project may take the form of an ARP, WBE, TIF, TDP, or DEE.

be a trusted advisor that works closely with the DSTs and maintains close ties with Thrust Leaders and Section Heads. A senior scientist at a centre or at corporate office (e.g., Thrust Coordinator) may have the necessary skills to fill this role.

List of symbols/abbreviations/acronyms/initialisms

ADM(S&T)	Assistant Deputy Minister (Science and Technology)
ARP	Applied Research Project
CA	Comprehensive Approach
CFD	Chief of Force Development
COIN	Counter Insurgency
CSS	Centre for Security Sciences
DG PEI	Director General Partnership and Emerging Issues
DRDC	Defence Research & Development Canada
DRDKIM	Director Research and Development Knowledge and Information Management
DSRI	Defence and Security Research Institute
DSTIC	Directorate Science and Technology Integrated Capability
ESTD	Essential S&T Deliverables
HLE	High Level Effect
KKA	Key Knowledge Areas
NATO	North Atlantic Treaty Organization
OCS	Office of the Chief Scientist
PG	Partner Group
R&D	Research and Development
S&T	Science and Technology

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It is important to have the right people involved in these initial steps included those performing and managing the science as well as seeking early endorsement of the science activity from Defence and Security partners. The notion of a hard problems and a Hard Problem Director has been overtaken by events as the new ADM(S&T) seeks to simplify processes and ensure alignment of the DRDC programme with its partners' outcomes. However, the similar steps can be applied to High Level Effects and Essential S&T Deliverables.

La guide de planification fonctionnelle S&T pour 2011 fait référence à des « hard problems » ou problèmes difficiles dans le domaine défense & sécurité, qui ont généralement besoin de plusieurs expertises à résoudre. Ce rapport propose un certain nombre d'étapes qui Recherche et développement pour la défense Canada (RDDC) peut adopter afin de gérer et de résoudre des problèmes difficiles. Un atelier pour « Comprehensive Approach » a été organisé spécifiquement pour effectuer les premières étapes de la gestion et la résolution du problème difficile. Il a compris la définition et la portée du problème difficile ainsi que la détermination de la recherche ce qui est fait et sera fait.

Il est important d'avoir les bonnes personnes impliquées dans ces étapes initiales comprenaient ceux de la scène et la gestion de la science ainsi que pour faire approuver au début de l'activité scientifique des partenaires de la défense et sécurité. La notion de problèmes difficiles et d'un directeur pour ça a été dépassée par les événements que le nouveau Sous-ministre adjoint(S&T) veut simplifier les processus et assurer l'alignement du programme de RDDC avec des résultats de ses partenaires. Mais, les étapes similaires peuvent être appliquées aux effets de haut niveau et des livrables essentielle de S&T.

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.)

Comprehensive Approach, Hard Problems