

An Examination of Career Frameworks in Relation to the Defence Science (DS) Salary Administration System (SAS)

Defence Science Career Progression Working Group

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1. Introduction

The Defence Science Career Progression Working Group (DSCPWG) was established to:

- recommend areas where changes to the DS SAS would improve the re-enforcement of desired behaviours in the transformed DRDC by October 2013 for approval by ADM(S&T), and
- develop proposed changes to the SAS in those areas approved by ADM(S&T) by October 2014.

The DSCPWG is co-chaired by Ross Graham and Matt MacLeod. To address the first bullet above, work was divided into tasks and undertaken by teams within the WG. This document outlines one of the tasks undertaken by the authors: to examine the Scientific Research (SE) / Historical Research (HR) frameworks and the pay plans of allies, such as the United Kingdom (UK) and Australia, to look for good ideas and best practices for possible adoption into the SAS, including how to recognize the knowledge integrator/broker role.

2. Defence Science (DS) Salary Administration System (SAS)

In order for the knowledge integrator/broker role to be properly recognized, we believe it is important to clearly define the role, and to provide concrete examples of the role. Since that responsibility falls under other concurrent WG tasks, we used our understanding of the role¹ to do a cursory examination of the DS SAS and Defence Scientific Research Development and Analysis (DSRDA) activities. In our view, many of the DSRDA activities or aspects of the activities appear to be applicable to the knowledge integrator/broker role². From the DS SAS [1] (p3/4), DSRDA as currently specified includes:

- “the complete innovative R&D cycle, comprising basic research, applied research, technology demonstration, exploratory development, and advanced development. It may include concept definition and design; the development of new systems, equipment and techniques; laboratory and field experimentation; proof of concept; and the building, testing, development and technology demonstration at the equipment or systems level.
- scientific analysis of defence strategy and tactics, intelligence information, plans, programs and operations and of social and economic considerations. This analysis provides factually based advice, which may affect the formulation of defence policy and the conduct of operations. It includes operational research on military equipment, operations, personnel, logistics and other support systems and the development of associated scientific methodologies and tools. The assessment and evaluation of science and technology relevant to defence and to DSRDA programs and activities are included as part of the analytical component, as is the scientific and technological evaluation of foreign military activities, capabilities and equipment.
- provision of scientific and technical information to clients and other stakeholders.

¹ A knowledge integrator/broker, as we understand it, analyses the state of the art and uses their “judgment” (analysis) to provide advice. The amalgamation of knowledge to reach insightful conclusions in order to provide a way ahead (be it advice or a new project) is key.

² Some activities are more applicable to the knowledge integrator/broker role than others, just as some are more applicable to a “bench scientist” role. Whether or not the DSRDA completely captures the role is not the purpose of this analysis.

- provision of scientific liaison with DND and the CF, allied government organizations, other agencies, clients and stakeholders.
- technology scanning.
- assessment and forecasting of scientific and military trends and opportunities.
- integration of new scientific concepts into production design.
- defining and using novel approaches to evaluate off-the-shelf equipment.
- technology transfer and commercialization for defence and civilian applications.”

If the DSRSA (perhaps with some tweaking) can sufficiently capture the knowledge integrator/broker role, then recognizing the role may largely be a matter of interpretation of the SAS. As stated in the Guidelines for Assessing State of Professional Development (SAS p. 10):

“27. The guidelines in this document are intended to be practical; they identify expectations in terms of factual evidence of accomplishments, contributions, etc., and they integrate the effects of the many variables affecting performance. They are *written in terms of the kinds of evidence that managers expect and accept as the normal combined effects of the Performance Indicators for various DS levels. They, therefore, identify the kinds of evidence that must be considered by Professional Development Managers, Reviewing Officers and the Defence Scientist Career Progression Committee (DSCPC) when an assessment of the State of Professional Development of an employee is to be made for salary level, promotion and other Career Progression Management purposes.*” [Italics by authors]

The kinds of evidence that would be expected and accepted for the knowledge integrator/broker role may not be sufficiently captured by the SAS and likely need to be re-examined. Therefore, it is helpful to consult other frameworks as described below.

3. UK Defence Science and Technology Laboratory (DSTL) Career Level Framework

In its Career Level Framework [2], the UK DSTL has developed work descriptions and “person requirements” for nine career levels. The work descriptions include a “theme of work” and “contribution” description, while the person requirements include a “pen picture” for each career level and numerous examples for:

- 1) Approach to Problem Solving - e.g. "See the implications of decisions from a range of perspectives, including customer and other stakeholders." (Career Level 6)
- 2) Use of Skills, Knowledge & Experience - e.g. "Adapting communications to suit the needs of different audiences." (Career Level 6)
- 3) Use of Influencing & Leadership Abilities - e.g. "Interpreting requirements of project sponsors and keeping stakeholders informed." (Career Level 6)

This framework document could be consulted for descriptions of the knowledge integrator/broker role and examples at various levels and adapted as appropriate to the DS SAS.

4. Australia Defence Science and Technology Organization (DSTO) Working Level Standards

It's worth going through the first 14 pages of the Australia Working Level Standards document [3]. The dictionary in section 4.4 of the Working Level Standards serves a similar purpose to the "notes" section in the DS performance indicators. DRDC's notes are good at giving some contextual examples, but the Australian dictionary is a good addition, taking the interpretation out of some of the adjectives / superlatives in DRDC's notes.

Section 4.2 on Understanding Work Level Standards is of use as well as it gives an up-front description of concepts required to understand the system (the DS SAS describes this as well, but in a more narrative fashion). For example, there is an entry on Language that reads, "The consistent and careful use of language to describe the nature of work within each standard is essential to establish and maintain the gradations of value between the levels. *It is important to note that the terms used have specific meanings that may vary from the way they are commonly used in conversation.*" [Italics by authors.]

Section 4.3 "Science and Technology Structure" also does a good job on partitioning the various aspects of DSRDA and even includes a nice Job Elements matrix on page 7 that shows the evolution of the type of work (Job Elements) as one progresses through the Levels. However, the Australian standard does not do a particularly good job on the knowledge integrator/broker front.

5. Research (RE)/Historical Researcher (HR) Frameworks

The application of the Research (RE) framework for the Scientific Researcher "SE-RES" community [4] and the Historical Researcher (HR) framework [5] share four "valued outcomes":

- 1) Innovation;
- 2) Productivity;
- 3) Impact; and
- 4) Recognition

and three contexts of research work:

- 1) Research, development & analysis (RDA);
- 2) Managing of research;
- 3) Representation & client services.

The frameworks rely on evaluating researchers in the three contexts against the four valued outcomes. Note that the valued outcomes of the frameworks are essentially the same as the valued outcomes for DSs, with "innovation" in place of "creativity"³.

For the RE framework, the following table shows the relative importance of the valued outcomes within each context, which places "impact" at the top or near the top in each case.

³ The DS SAS considers three additional characteristics (under the headings of 'Competencies' and 'Responsibilities', distinct from Valued Outcomes – see Para 33 of Part IV): Knowledge and Expertise; Personal Interactions and Communications; Responsibilities

Research, Development & Analysis	Managing of Research	Representation & Client Services
Innovation	Impact	Impact
Impact	Recognition	Recognition
Recognition	Productivity	Productivity
Productivity		

It is recognized that DSs must demonstrate all seven characteristics (competencies, valued outcomes, and responsibilities); however, to highlight the knowledge integrator/broker role and re-enforce desired behaviours, emphasis could be placed on some characteristics, such as impact.

6. Rating Scales

The DGMPRA report, "Defence Scientist Salary Administration System: Review of Best Practices and Comparable Performance Appraisal Systems" [6], recommends the use of rating scales for a variety of reasons, chief among them to reduce the ambiguity in the interpretation of assessments (a common employee complaint) and to provide greater consistency in assessments. It refers to the fact that both the UK and Australian systems use rating systems although the Australian system did not provide much granularity.

It is worth noting that the data from the rating scales can be used for feedback and consistency for management training. For example, a manager's ratings of his/her employees can be analyzed to see if it is an outlier, how it varies year-over-year, and data can be accumulated across labs and feed to the Evaluation Committees. For example, the DGMPRA report states that "...The problem is that managers interpret any rating scale or set of rating standard from their own viewpoints." With data, for example, a manager who assesses all of his/her employees as performing above the average of the rest of the organization should be able to recalibrate based on that feedback. It is possible that a rating scheme could help address all of the "Major Issues" addressed in Table 3 of the DGMPRA report.

Another advantage of a ratings scheme, particularly if a rating is applied to each of the seven characteristics, particularly if a manager is fed back their assessment data (e.g. you have rated 7 of your 9 employees as "superior" in this characteristic), is that it does make it harder for managers to avoid giving clear and direct feedback in cases where the feedback is not positive. The DGMPRA report does note that the desire to avoid confrontation diminishes the value of the assessment process.

A drawback of rating scales is that employees may be seen to be "in competition" with others for points within the schema, which does not necessarily need to be true. However, the reality is, comparisons are already made, inevitably, by both managers and employees in efforts to minimize subjectivity and reconcile their assessments.

Unrelated note: The example in Table 4 on page 30 of the DGMPPRA report reflects what many managers already use when assessing against performance indicators.

7. Conclusions and Recommendations

The main conclusions and recommendations from our overview of the DS SAS and other frameworks are:

- A clear definition of the knowledge integrator/broker role is required, along with a determination of whether or not the role is adequately captured in the SAS, how the SAS can be used for its evaluation and examples of the kind of evidence provided for the role.
- The UK DSTL Career Level Framework and Australia DSTO Working Level Standards can be used as references for developing descriptions of the knowledge integrator/broker role and examples of types of work for the various DS levels.
- The RE/HR frameworks have similar valued outcomes to the DS SAS. The RE framework places higher importance on some outcomes over others - the DS SAS could similarly prioritize some characteristics (e.g. impact) over others to emphasize the knowledge integrator/broker role.
- The use of rating scales for each indicator should be considered to reduce ambiguity in the interpretation of assessments, especially for the huge variation between the type of performance that garners a dwell and that which merits acceleration.

8. References

1. DS Salary Administration System, Part IV – DS Promotion and Salary Advancement Guidelines, 1 October 2007
2. DSTL Career Level Framework, DSTL/MS/Version 2.0, April 2012
3. Part 4 S&T WLS - Introduction & History, DSTO, 10 October 2005
4. Career Progression Management Framework for Federal Researchers: Application for the SE-RES Community, February 2006
5. Career Progression Management Framework for Federal Researchers: Application for the Historical Researcher Community, November 2006
6. Hadziomerovic, A., Simpson, S., "Defence Scientist Salary Administration System: Review of Best Practices and Comparable Performance Appraisal Systems", DGMPPRA CR 2012-002, April 2012

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