

Canadian
Forces
College

Collège
des
Forces
Canadiennes



SUSTAINMENT TOMORROW: THE BENEFITS OF AUTOMATED IDENTIFICATION TECHNOLOGY FOR THE CANADIAN ARMY

Major Travis Gaudet

JCSP 48

Service Paper

Disclaimer

Opinions expressed remain those of the author and do not represent Department of National Defence or Canadian Forces policy. This paper may not be used without written permission.

© Her Majesty the Queen in Right of Canada, as represented by the Minister of National Defence, 2022

PCEMI 48

Étude Militaire

Avertissement

Les opinions exprimées n'engagent que leurs auteurs et ne reflètent aucunement des politiques du Ministère de la Défense nationale ou des Forces canadiennes. Ce papier ne peut être reproduit sans autorisation écrite.

© Sa Majesté la Reine du Chef du Canada, représentée par le ministre de la Défense nationale, 2022

CANADIAN FORCES COLLEGE – COLLÈGE DES FORCES CANADIENNES

JCSP 48 – PCEMI 48

2021 – 2022

Service Paper – Étude militaire

**SUSTAINMENT TOMORROW: THE BENEFITS OF
AUTOMATED IDENTIFICATION TECHNOLOGY FOR THE CANADIAN ARMY**

Major Travis Gaudet

“This paper was written by a student attending the Canadian Forces College in fulfilment of one of the requirements of the Course of Studies. The paper is a scholastic document, and thus contains facts and opinions, which the author alone considered appropriate and correct for the subject. It does not necessarily reflect the policy or the opinion of any agency, including the Government of Canada and the Canadian Department of National Defence. This paper may not be released, quoted or copied, except with the express permission of the Canadian Department of National Defence.”

“La présente étude a été rédigée par un stagiaire du Collège des Forces canadiennes pour satisfaire à l'une des exigences du cours. L'étude est un document qui se rapporte au cours et contient donc des faits et des opinions que seul l'auteur considère appropriés et convenables au sujet. Elle ne reflète pas nécessairement la politique ou l'opinion d'un organisme quelconque, y compris le gouvernement du Canada et le ministère de la Défense nationale du Canada. Il est défendu de diffuser, de citer ou de reproduire cette étude sans la permission expresse du ministère de la Défense nationale.”

SUSTAINMENT TOMORROW: THE BENEFITS OF AUTOMATED IDENTIFICATION TECHNOLOGY FOR THE CANADIAN ARMY

AIM

1. The aim of this service paper is to discuss the technological changes the Canadian Army (CA) must embrace to enable a shift in paradigm and recruitment for the next generation of Canadian soldier. It will discuss what the CA needs to do to continue to successfully utilize the Defence Supply Chain (DSC) in a changing technological landscape. It will provide recommendations to CA Chief of Staff – Operations (COS Ops) on how best to position CA sustainers to harness the potential of future technology and position itself to continue to provide relevant capabilities, exploiting advancing technology and a younger, more technologically capable workforce.

INTRODUCTION

2. Since the commencement of the rollout of the Defence Resource Management Information System (DRMIS) in 2010,¹ the CA has experienced challenges embracing its digital supply system. This is due to a combination of factors, some of which speak to the system itself and others that speak to the need to change the nature of the relationship between the CA and the DSC. DRMIS is and always has been overly complicated, which has resulted in a generation of senior Supply Technicians (Sup Techs) who have been and are extremely hesitant to learn how best to use the system. Further exacerbating this problem, the officer corps has largely avoided becoming subject matter experts on the system, due at least partially to inadequate training opportunities. The collective knowledge of DRMIS in the CA has suffered due to these factors, and could have benefitted greatly from a more robust In-Service Support (ISS) contract, to include updates and in depth training for the life of the program.

3. The advancement of technology, both in the virtual and the physical realm, represents enormous potential for the utility of the DSC. Embracing technologically driven changes in the way sustainment is delivered within the CA, developing our training system to better prepare officers and technicians to utilize the system, and continuing to recruit technologically savvy individuals will allow the CA to overcome the shortcomings created by the rollout and employment of DRMIS. It also aligns with the goals established by Canada's Defence Policy in 2017 to enable the CA to evolve and fight in a technologically changing world.² The introduction of Automated Identification Technology (AIT) into the DSC will not only serve to improve the efficiency of the DSC

¹ Frontline, "DRMIS," last accessed 21 January 2022, <https://defence.frontline.online/news/1235/drmis-resource-management-dnd>.

² Department of National Defence, *Strong, Secure, Engaged: Canada's Defence Policy* (Ottawa, 2017), 110-111.

across the CA, it can also greatly increase the capability of tactical level CSS units to conduct their vital tasks during operations.

DISCUSSION

4. When investigating how the CA ties into the DSC, a critical question that needs to be asked is what is a key enabler to achieve successful sustainment operations in a tactical scenario? The system of choice moving forward for the CA needs to be capable of filling the requirements of the entirety of the DSC, which ends when the customer receives their required equipment or materiel in the fight. Critical to tactical success will be the speed in which transactions can be processed, and the human element can only conduct these transactions so quickly. AIT will undoubtedly increase the speed with which individual technicians can process and fulfill demands from and for their customers, enabling an increase in the quantity of demands that can be filled daily by CSS units.³ The use of AIT within the Canadian Armed Forces (CAF) is not without precedent, as 3 Canadian Support Unit (3 CSU) enjoyed successes implementing a version of AIT under the old Materiel Information Management System (MIMS) prior to the rollout of DRMIS. In fact, this AIT was used to help enable the drawdown of the CAF mission in Kandahar, Afghanistan in 2011 before MIMS was retired from service completely. While this tool, named the Batch Upload System, was not used widely across the CAF, its potential was clearly demonstrated during this mission as it was used to process massive quantities of equipment and materiel over a six-month deployment.⁴

5. A secondary benefit that the CA can extract from the implementation of AIT in the DSC is the improved ability for leadership to understand problems with, and thereby manage, inventory, whether the issues are regarding movement or quantities of materiel.⁵ This does not necessarily mean the improvement of the physical handling or movement of materiel in support to CA operations. Rather, this speaks to the efficiency with which materiel is handled and the speed with which errors in inventory management can be corrected. AIT has an immense capacity to demonstrate all movement and usage stats for materiel within a supply system. AIT also provides an improved capability for the CA to develop maximum and minimum holdings at each level of sustainment. As AIT conducts such a large quantity of its business automatically, it far exceeds the abilities of technicians to quickly and accurately develop holding requirements for organizations. Implemented properly, the AIT can continuously gather information and provide recommendations on what materiel needs to be held at each level and what materiel can afford to be left behind or held at a reduced quantity. As the CA continues to seek

³ Duncan McFarlane and Yossi Sheffi, "The Impact of Automatic Identification on Supply Chain Operations," (Cambridge: University of Cambridge, Department of Engineering, 2003), 25.

⁴ Government of Canada, "Operation ATHENA Closure," last accessed 21 January 2022, <https://www.canada.ca/en/department-national-defence/services/operations/military-operations/recently-completed/operation-athena/closure.html>.

⁵ Duncan McFarlane and Yossi Sheffi, "The Impact of Automatic Identification on Supply Chain Operations," (Cambridge: University of Cambridge, Department of Engineering, 2003), 6.

improvements in operational practices, one area for improvement could certainly be the quantity of materiel carried into the field by CSS organizations. If the AIT can better inform the CA on usage and consumption rates, the materiel required to successfully deploy, for example, a Brigade Group, could be efficiently and accurately reduced to a comfortable minimum. It must also be remembered that AIT contributes to several of the Defence Policy initiatives that have been outlined in Canada's Defence Policy,⁶ which speaks to the momentum that improving the DSC has gained nationally.

6. Concurrent to the development of technology that must be embraced within the DSC to provide the necessary support to the CA is the entry of a new generation of Canadians into the workforce. This generation is the first to enter the workforce having never known life without constant access to the internet and the opportunities that it presents. The CA can best employ this new generation by exploiting their interest and capability in the technological sector. Presenting the tech angle to jobs within the DSC on recruitment will help attract young Canadians to these roles, strengthening the profession in the process. This will have the follow on affect of integrating the old guard of senior technicians and officers who have been resistant to a new supply system with a motivated group of soldiers and officers with a natural tendency to excel within the technical environment, which is a benefit of a multigenerational workforce.⁷ If this natural capability is combined with a user-friendly interface, the efficiencies created for the DSC could be enormous.

7. One absolute certainty regarding the change to any new tools that the CA will use to access the DSC is that the rollout of the new tool needs to be handled carefully. As mentioned, a great deal of the difficulties experienced over the past decade with DRMIS have stemmed from the reluctance of senior technicians and officers to learn the system properly. In order to avoid this problem from happening again, the CA needs to implement the new system with a well fleshed out plan for change management.⁸ During the rollout of DRMIS the inability of the CA, and the greater CAF, to holistically adapt successfully to the new system can be linked greatly to the initial two steps of the Kotter change management model.⁹ It is essential that the CA creates a sense of urgency related to the rollout of the new supply system, and that the leadership assigned with the responsibility to implement the system be granted enough authority to drive change. This combination will place the CA on a path that will enable a shift in paradigm regarding the supply system as a whole, developing a professional responsibility for the senior

⁶ Government of Canada, "Automated Identification Technology," last accessed 20 January 2022, <http://dgpapp.forces.gc.ca/en/defence-capabilities-blueprint/project-details.asp?id=1589>.

⁷ Andrea Boatman, Academy to Innovate HR, "Understanding Today's Multigenerational Workforce: Benefits, Challenges, and 9 Best Management Practices," last accessed 19 January 2022, <https://www.aihr.com/blog/multigenerational-workforce/>.

⁸ John P. Kotter, "Successful Change and the Force That Drives It", in *Leading Change* (Boston: Harvard Business School Publishing Corporation, 1996), 5.

⁹ *Ibid*, 5.

technicians and officers to properly learn and exploit the supply system. This will in turn drive the professional development of the next generation of technicians and officers.

8. The idea of DRMIS modernization is certainly not a new one, and a DRMIS Modernization Project is currently in the works within the CAF. This Business Case Analysis has accurately identified the critical objectives in DRMIS modernization.¹⁰ These objectives will serve two purposes. Firstly, they will make the supply system more efficient and accurate through the development of the data stewardship portion of the program. Secondly, they will make the program more accessible and user friendly. The importance of user experience within the supply system cannot be overstated. AIT will be a crucial piece to this user interface and has been identified as a priority already by the CAF.¹¹ The CA does not have the luxury to assume that any soldier accessing the supply system is doing so from a warehouse. This system needs to be accessible in tactical situations to provide the CA its essential link to the DSC during operations. If the successful facilitation of this link is not achieved by DRMIS modernization, the project will create the same difficulties the CA currently experiences with DRMIS, and AIT will not benefit the CA to its full potential.

9. An inherent risk of the advancement of mechanisms to utilize the DSC will be the increased reliance on a network. This risk has been negligible in recent engagements for the CA due to the nature of asymmetric warfare and the capabilities of the CA's adversaries, particularly in Afghanistan. However, the CA needs to take into consideration the capabilities of potential adversaries in future warfare. As discussed in Strong, Secure, Engaged, investment in cyber security is critical for future operations, and this certainly expands to CSS activities in the rear area.¹² For example, Russia has an immense and developing capability to reach out and strike CSS assets well into the rear area, based on their electronic signature.¹³ Considering this, the CA needs to develop a manner to tap into the DSC while remaining decentralized to decrease their signature at any moment, as well as potentially exploring the capacity for autonomous vehicles to move supplies within the area of operations.¹⁴ In an effort to increase cyber security for CA CSS assets, blockchain technology should also be considered as it has a proven ability to decrease the risk of cyber-attack through preventative mechanisms such as

¹⁰ Department of National Defence, *Defence Resource Management Information System (DRMIS) Modernization* (Ottawa: 2021), 110.

¹¹ Government of Canada, "Automated Identification Technology," last accessed 20 January 2022, <http://dgpapp.forces.gc.ca/en/defence-capabilities-blueprint/project-details.asp?id=1589>.

¹² Department of National Defence, *Strong, Secure, Engaged: Canada's Defence Policy* (Ottawa, 2017), 110-111.

¹³ Andrew Radin *et al*, *The Future of the Russian Military: Russia's ground combat capabilities and implications for U.S.-Russia competition* (Santa Monica: RAND, 2019), 77-78.

¹⁴ Department of National Defence, B-GL-310-001/AG-003_EN, *Close Engagement – Land Power in an Age of Uncertainty – Evolving Adaptive Dispersed Operations* (Kingston: Army Publishing Office, 2019), 46.

“distributed census and cryptography”.¹⁵ Due to the critical nature of CSS to CA operations, all avenues must be explored to ensure the integrity of the supply system during future operations, and this must be a focus for the development of the next generation of sustainers.

CONCLUSION

10. If the CA wishes to exploit fully the advantages advancing technology presents to interactions between the CA and the DSC, it must adapt. As DRMIS modernization is rolled out across the CA, it needs to be accompanied by a change management plan and a training plan, both of which aim to quickly educate supply technicians and officers across the CA. The training plan must include those technicians and officers already working within the CA, as well as all new recruits to the applicable professions. The improved supply system, ideally developed out of DRMIS modernization, needs to embrace AIT and include an ISS agreement to continue to educate and adapt the system as required. Uniting all of these improvements needs to be the common purpose to improve the CA’s ability to exploit the DSC. Soldiers on operations must be capable of rapidly and accurately accessing and utilizing their supply system without risk of compromising their safety or the quality of information that is shared amongst units or formations. Without achieving these aims, the CA risks falling behind in the technological war and, consequentially, losing the opportunity to recruit the next generation of Canadians into sustainment jobs.

RECOMMENDATION

11. As established in this paper, it is highly recommended to COS Ops that the CA concentrate effort on adapting an AIT system during DRMIS modernization. The benefits of exploiting an AIT to enable CSS professions to increase their productivity are enormous as the AIT could greatly reduce the time spent conducting each transaction for each technician. An AIT also has the capability to provide feedback to leadership with a far superior degree of accuracy, increasing leadership’s capacity to alter course when either a plan or a Line of Communication is not functioning as intended. The AIT must be field enabled so that CSS units can continue to conduct their business uninterrupted when deployed in support of CA operations, whether in Canada or abroad, and must come with an ISS agreement that capitalizes on both advances and updates to the system and SME led training for CA personnel.

12. In order to maximize the value of training, the CA must also establish a change management plan to enable the rollout of the updated supply system. Many of the difficulties that the CA have experienced with DRMIS over the past decade have been

¹⁵ Edvard Tijan, Sasa Aksentijevic, Katarina Ivanic, and Mladen Jardas, “Blockchain Technology Implementation in Logistics,” *Sustainability* 11, no. 4 (February 2019): 1189, <https://doi.org/10.3390/su11041185>.

related to the reluctance of senior technicians and officers to become SMEs in the program. This has the follow on effect of creating a knowledge gap, where new technicians and officers do not have a sounding board against which to ask their questions and bounce ideas. As the millennial generation has advanced within the CA, the comprehension of technology amongst its members has increased. The CA can leverage this comprehension and, combined with a comprehensive training program for new technicians and officers, can establish a strong understanding of a new, more user-friendly supply system from the onset.

BIBLIOGRAPHY

- Boatman, Andrea. Academy to Innovate HR. “Understanding Today’s Multigenerational Workforce: Benefits, Challenges, and 9 Best Management Practices.” Last accessed 19 January 2022. <https://www.aihr.com/blog/multigenerational-workforce/>.
- Canada. Department of National Defence. B-GL-310-001/AG-003_EN, *Close Engagement – Land Power in an Age of Uncertainty – Evolving Adaptive Dispersed Operations*. Kingston: Army Publishing Office, 2019.
- Canada. Department of National Defence. *Defence Resource Management Information System (DRMIS) Modernization*. Ottawa, 2021.
- Canada. Department of National Defence. *Strong, Secure, Engaged: Canada’s Defence Policy*. Ottawa, 2017.
- Frontline. “DRMIS.” Last accessed 21 January 2022. <https://defence.frontline.online/news/1235/drmis-resource-management-dnd>.
- Government of Canada. “Automatic Identification Technology.” Last accessed 20 January 2022. <http://dgpaapp.forces.gc.ca/en/defence-capabilities-blueprint/project-details.asp?id=1589>.
- Government of Canada. “Operation ATHENA Closure.” Last accessed 21 January 2022. <https://www.canada.ca/en/department-national-defence/services/operations/military-operations/recently-completed/operation-athena/closure.html>.
- Kotter, John P. “Successful Change and the Force That Drives It.” In *Leading Change*. Boston: Harvard Business School Publishing Corporation, 1996.
- McFarlane, Duncan and Yossi Sheffi. *The Impact of Automatic Identification on Supply Chain Operations*. Cambridge: University of Cambridge, Department of Engineering, 2003.
- Radin, Andrew *et al.* *The Future of the Russian Military: Russia’s ground combat capabilities and implications for U.S.-Russia competition*. Santa Monica: RAND, 2019.
- Tijan, Edvard, Sasa Aksentijevic, Katarina Ivanic, and Mladen Jardas. “Blockchain Technology Implementation in Logistics.” *Sustainability* 11, no. 4 (February 2019): 1185-1198. <https://doi.org/10.3390/su11041185>.