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# Shaping Digital Transformation for the Canadian Armed Forces Military Personnel Management System

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## JCSP 49 DL

## Exercise Solo Flight

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# Shaping Digital Transformation for the Canadian Armed Forces Military Personnel Management System

**Commander Christopher Harding**

**SHAPING DIGITAL TRANSFORMATION FOR THE CANADIAN ARMED FORCES MILITARY PERSONNEL MANAGEMENT SYSTEM**

From a personnel generation and retention perspective - the objectives of *Strong, Secure, Engaged: Canada's Defence Policy* (SSE) have not been achieved. SSE was published in 2017 and set the intention to increase the Canadian Armed Forces (CAF) ranks by 3, 500 Regular Force members, bringing the total strength to 71, 500, while also increasing the Reserves by 1, 500, bringing the total strength to 30, 000.[1] That goal was reiterated in Our North, Strong and Free: A Renewed Vision for Canada's Defence (ONSF), although notably the target date was softened, stating instead that the CAF would 'focus on building back to its authorized force size' *through* 2032.[2] As of January 2024, the CAF Regular Force Total Strength was at 63, 390, a decrease of over 4000 personnel from the time of SSEs publication in 2017, and the Reserves were at 29, 022, a small increase.[3][4] SSE also included the direction to increase the percentage of women in the CAF from 15% to 25.1% by 2026.[5] As of January 2024, the percentage of women in the CAF was at 16.1%, and Regular/Reserve combined was at 16.5% (Ref January COP). Interestingly, the target of 25.1% was not reiterated in ONSF, however SSE remains extant and until officially revoked it can be assumed to still be the target.

Blame for not meeting personnel generation targets has been placed on everything from COVID-19 and the rapid growth of technology to sexual misconduct and Gen Z expectations, but arguably those realities presented opportunities as much as they presented challenges - if learned from and capitalized on correctly. As the CAF moves forward, leadership needs to take

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[1] Government of Canada. (2017). Strong, Secure, Engaged: Canada's Defence Policy. Pg 19. https://www.canada.ca/en/department-national-defence/corporate/policies-standards/canada-defence-policy.html

[2] Government of Canada. (2024). Our North Strong and Free: A Renewed Vision for Canada's Defence. Pg 19. https://www.canada.ca/en/department-national-defence/corporate/reports-publications/north-strong-free-2024.html

[3] Definition of Total Strength: Consists of the sum total of uniformed members regardless of status, including personnel on or awaiting training and those on retirement leave.

[4] Director General Military Personnel Research and Analysis. (2024). Common Operating Picture January Update.

[5] Government of Canada. (2017). Strong, Secure, Engaged: Canada's Defence Policy. Pg 12. https://www.canada.ca/en/department-national-defence/corporate/policies-standards/canada-defence-policy.html

responsibility and accept that the institution failed in providing quality strategic direction and/or did not execute that direction effectively. The focus in this paper is on one of the most important opportunities in military personnel generation and management which the CAF has failed to adequately capitalize on - digitalization and the integration of emerging technologies.

We reached a crisis point in personnel generation in 2020 with the CAF bleeding personnel due to retention issues, and unable to recover due to deteriorating recruiting numbers. In response, on 9 July 2021 the CDS released a Planning Directive for CAF Reconstitution, followed by a CDS/DM Directive on Reconstitution on the 28th of September 2022. Those directives ordered the "modernization of the Military Personnel Management System" and coincided with the CDS CAF Digital Campaign Plan released in June 2022, and subsequent direction from the VDCS in May 2023. In particular, the latest direction from the VCDS ordered CMP to "…lead the shaping of military personnel management related digital capabilities into a modernized Military Personnel Management System…"[6] ONFS places particular emphasis on recruiting and states the need for 'ready' and 'resilient' personnel which includes having "sufficient numbers of well trained, motivated, and supported people", all of which will be greatly supported by modernization of the Military Personnel Management System (MPMS).[7]

SSE/ONFS, the Reconstitution directives, the Digital Campaign Plan and the VCDS direction form the current policy nexus for modernization and digitalization of the MPMS going forward. Modernizing the CAF's MPMS to achieve a state of continuous innovation by 2030, as directed in the Digital Campaign Plan, will require a quick pivot from how we have traditionally looked at problems and solutions in the past. The requirement for modernization of MPMS will be further explained in this paper, and arguments for key design considerations and challenges to optimize that digital transformation will be provided. Although every L1 has an integral role to play in CAF human resources, this analysis is focused on improving the Chief of Military Personnel and Military Personnel Command (CMP/MPC) who serves the other Level 1's (L1's) personnel readiness needs through administration of the MPMS.

**What is the Military Personnel Management System?**

The MPMS is a system of systems that encapsulates the CAF's human resources or personnel generation and management capabilities.[8] The core functions of the MPMS include recruiting, training, career management, compensation and benefits, support mechanisms such as health services, honouring and recognizing our members and transition services. A visual depiction of the key components of the MPMS follows:

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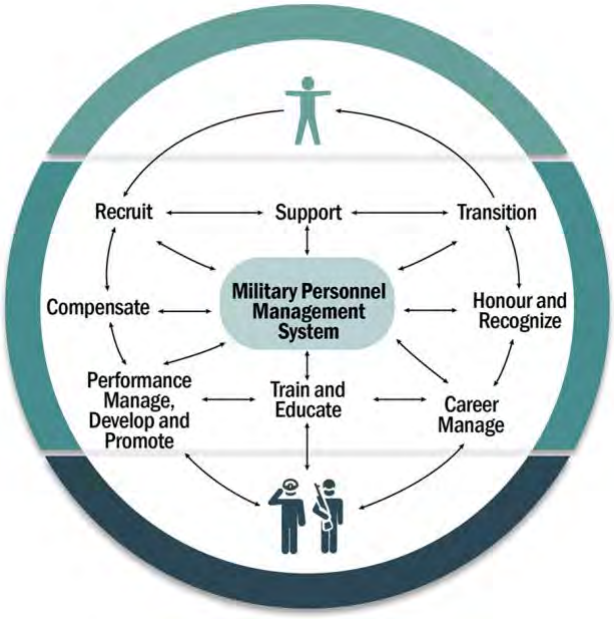
[6] Government of Canada. (2023). VCDS Directive For CAF Digital Transformation. Pg 16-17

[7] Government of Canada. (2024). Our North Strong and Free: A Renewed Vision for Canada's Defence. Pg vii. https://www.canada.ca/en/department-national-defence/corporate/reports-publications/north-strong-free-2024.html

[8] Department of National Defence. (2018). Canadian Forces Joint Publication 1.0 : Military Personnel Management Doctrine. Pg 1-2. https://publications.gc.ca/collections/collection_2010/forces/D2-252-100-2008-eng.pdf

Figure 1[9]




Each one of the components depicted could be broken down much further. For example, recruiting includes attraction efforts (public relations and marketing), selection tools like cognitive and personality assessments, medical and security screening as well as general processing and enrollment administrative functions.

Although each part of the MPMS system is unique, it is an integrated ecosystem where everything interacts. For example, career management and training happens throughout a member's career, and transition could result in moving to Regular, Reserve, Civilian workforce, or retirement with the possibility of re-enrollment after that. Another example is with what happens at the back-end in workforce and operational planning directly impacts front-end recruiting objectives. Therefore, seeing the MPMS as an integrated ecosystem is critical to maximizing the potential of each sub-system and is necessary to optimally ensure interoperability and systems/data integration going forward. The overall objective of the MPMS is to ensure personnel readiness – in other words - the right quantity and quality of personnel, who are trained, healthy, resilient and ready to support or deploy on operations. Although the MPMS is much more then just the software and the systems it employs, digitalization presents significant opportunities to improve efficiencies and effectiveness of the MPMS overall.

[9] Depiction of the Military Personnel Management System. (2021). Kyle Green.

**Digitalization is Critical to the Success of Military Personnel Management**

Digitalization, sometimes referred to as digital transformation, refers to a type of organizational change that centers around implementing and optimally leveraging digital technologies. The three key aspects of digitalization are 1) the environment in which it is taking place and what it is intended to effect including members, the organization and the overall context; 2) The outcomes that are desired/intended and 3) The means and mediums of change which include business processes and technologies centered around computing and software including Artificial Intelligence (AI).[10]

The current technology and business processes within the MPMS are extremely human-labour intensive. The examples where digital transformation would improve the focus and resource allocation of the MPMS are abundant, but to give a simple illustration - we currently employ approximately 600 recruiters who are temporarily pulled from operational positions for a 2-4 year posting in recruiting. These recruiters spend a significant percentage of their training and work time focused on basic administration that could be automated to be more efficient. That automation has the potential to improve the speed and accuracy of administration, and more importantly would allow the recruiter to be trained and focused on where they have the most value - direct interaction and engagement with applicants and the public. Automation of basic administration would also free Canadian Armed Forces Recruiting Group (CFRG) to focus on selecting recruiters who demonstrate the Knowledge, Skills and Abilities relevant to interacting with the public and applicants. This would ensure recruiters are more effective at direct human attraction and recruitment interactions, thus improving the overall effectiveness of CFRG. Intelligent automation would also decrease the number of personnel required in recruiting roles which would be less burdensome on operations. Another important benefit, and a key focus when implementing technology in the CAF, is the impact on the workforce itself. Research provides evidence (not surprisingly) that employee job satisfaction increases with automation of mundane tasks (i.e. low value and repetitive tasks). [11] Part of the focus of digitalization is to improve job satisfaction which could positively impact member well-being, performance and the organizations' ability to retain top talent.[12]

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[10] Paul, Justin & Ueno, Akiko. (2024). Digital transformation : A multidisciplinary perspective and future research agenda. International Journal of Consumer Studies, Vol 48, Iss 2. https://onlinelibrary.wiley.com/doi/full/10.1111/ijcs.13015

[11] Dobson, Sarah. (2022). Happy Workplaces Have High Level of Automation. Canadian HR Reporter. Accessed 13 May 2024. https://www.hrreporter.com/focus-areas/automation-ai/happy-workplaces-have-high-level-of-automation/367626

[12] Kumar, Pavan. (2022). Influence of University Teacher's Job Satisfaction on Subjective Well-Being and Performance. Journal of Engineering and Education Transformations, Vol. 35. https://journaleet.in/download-article.php?Article_Unique_Id=JPR1630; Sabbagha, Michelle. Ledima, Ophillia & Martins, Nico. (2018). Predicting Staff Retention from Employee Motivation and Job Satisfaction. Journal of Psychology in Africa, Vol. 28, Iss. 2. https://doi.org/10.1080/14330237.2018.1454578

Digitalization is critical to ensuring the MPMS can meet the personnel readiness needs of the CAF. If done correctly it will decrease resources required and free our personnel to focus on higher level tasks while also improving data driven decision making and overall speed of action. It is also a crucial step to ensure that MPMS can scale as necessary in times of larger conflict (an important part of CAF readiness). The vision for digitalization of the MPMS is that our systems are functioning optimally in that they are usable, interoperable, automated, adaptable, scalable, and secure.

**Designing the Future Military Personnel Management System – Six Pillars**

**Usability:** Designing technical HR systems for usability is critical to the success of those systems. Usability aims to ensure improvements have clear purpose, and that they are easily accessible to the end-user. The end-user includes everything from serving members or an applicant wanting to apply to the CAF, to administrators who process information through HR systems, and leaders trying to understand and optimally manage their personnel. Key concepts include ensuring intuitive user interfaces (UI). The reality is that "A well-designed UI can enhance satisfaction, increase productivity, and ultimately drive business success."[13] Other key usability concepts involve ensuring things such as accessibility for all (e.g., hearing or visually impaired) and official language integration/optionality. Another distinct concept of usability is that the system or digital process has a clear benefit to improving overall efficiency and effectiveness. In other words, designing for usability is about ensuring modernization efforts transparently and overtly solve problems, and does not create them. At its core, usability is simply about decreasing the friction between the user, and the capability/potential of the technology itself.

**Interoperability:** Designing technical HR systems for interoperability aims to ensure "the ability of systems to purposefully interchange interpretable information".[14] Interoperability addresses the need to connect systems in meaningful ways, while ensuring users and systems can share relevant information seamlessly. This is critical in that the speed and accuracy of decision making can be increased, and a change in one system that impacts other systems can happen instantaneously. For example, workforce design changes such as increasing the number of personnel in a certain occupation could take months before being actioned in the recruiting and training systems, and this is partially due to connecting information through people instead of systems. A common 'human in the loop' scenario would be an individual or team collecting information in a disconnected database such as an excel spreadsheet, then passing that information up one chain of command and then down another only to be inputted or actioned by individuals in a separate sub-organization. This disconnected process is slow, provides multiple

[13] Kennedy, Marie. (2023). Understanding the Power of Intuitive User Interface Design. Medium. Accessed 13 May 2024. https://medium.com/@marieckennedy/understanding-the-power-of-intuitive-user-interface-design-81802b93824d

[14] Sjarov, Martin; Kibkalt, Dominik; Lechler, Tobias; Selmaier, Andreas & Franke, Jorg. (2021). Towards "Design for Interoperability" in the context of Systems Engineering. Procedia CIRP, Vol. 96, Pg 145

points where errors can be introduced, and is hindered by disruptions such as when personnel involved in the process are on leave. Another example where interoperability will improve the functioning of the MPMS is the ability for an end-user, like any CAF member, having the ability to go to one location (an everything app) to ask a question about policy or their career. An everything app becomes possible when interoperability is at the forefront of design. Data integration is the cornerstone of interoperability and will require connecting the MPMS to one or two central personnel data lakes that can combine information in meaningful ways to inform decision making. Interoperability also puts the MPMS in a position to fully capitalize on the potentials of automation.

**Automation:** Designing technical HR systems for automation improves efficiency and even employee satisfaction by "freeing employees from tedious repetitive tasks and allowing them to focus on more complex assignments such as decision-making and strategy creations."[15] It also reduces the risk of human error and has the potential to dramatically increase the speed of processing. When referring to the MPMS it is about specifically addressing software level automation using a mix of basic and sophisticated computer algorithms. An example is removing direct admin interaction with a leave application. At present, this requires a human administrator actually directly inputting the leave information into a separate system (Guardian). There are numerous examples of unnecessary 'human in the loop' interactions currently happening throughout the MPMS. Interoperability and automation is meant to completely eliminate those unnecessary human interactions thus reducing resource requirements and improving speed of processing. An important sub-component of automation is 'Intelligent Automation' which includes integrating aspects of AI over-and-above sophisticated computer algorithms and automating the traditionally more human elements of decision making and execution.[16] This is most certainly the way of the future but requires careful oversight to avoid mistakes being implemented at scale such as bias towards individuals.

**Adaptability:** Designing systems for adaptability is necessary when accounting for, and seeking to leverage, the exponential growth of technology. Systems need to be future-proofed - what is built today must be able to readily incorporate the beneficial advances of tomorrow or we will quickly be left behind. Terms like 'rapid' and 'exponential' growth of technology get thrown around so much that they have lost some meaning. Reference to exponential growth in technology, also known as Moore's Law, dates back to 1965 when the co-founder of intel - Gordon Moore, observed that "the number of microchips roughly doubles every two years, whereas its cost is halved over the same timeframe" and that observation has held true to date.[17]

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[15] Mishra, Shubham; Kunte, Monica; Neelam, Netra; Bhattacharya, Sanjay & Mulay, Preeti. (2021). HR Process Automation: A Bibliometric Analysis. University of Nebraska – Library of Philosophy and Practice (e-journal).
[16] Coombs, Crispin; Hislop, Donald; Taneva, Stanimira & Barnard, Sarah. (2020). The strategic impacts of Intelligent Automation for knowledge and service work: An interdisciplinary review. The Journal of Strategic Information Systems. Vol. 29. Iss. 4.
[17] Tardi, Carla; Catalano, Thomas & Velasquez, Vikki. (2024). What is Moore's Law and Is It Still True? Investopedia. Accessed 6 May 2024.

There's a potential that the pace of change will increase with the advent of AI, and the eventual ability for AI to create ever greater AIs. On the flip side, potential things that could slow down growth of technology are power consumption, and the fact that once we reach the size of an atom when designing microchips, we will no longer be able to decrease the size of microchips.[18] That said, there have been assumptions of limitations in the past that were ultimately overcome, and regardless, barring some catastrophic event, technology will continue to advance rapidly, and we need to make capitalization on that advancement as seamless as possible. One of the methods to do that is designing systems which leverage enterprise architecture such as Amazon Web Services or Microsoft Office Suite. When we utilize enterprise architecture, we can reasonably anticipate that, driven by the engine of free-market capitalism, the software will be upgraded continuously with minimal effort required on behalf of the CAF itself.

**Scalability:** Even if fully staffed the CAF keeps a small standing military relative to population and geographic size. When looking at military personnel as a share/percentage of total population, The CAF ranks 29th out of 30 NATO countries.[19] There have been surges in the past where more personnel needed to be recruited and trained in a brief period. A historical example where the CAF suffered because it lacked the ability to scale its recruiting and training functions happened during the Korean War. At the time the residing Minister of Defence was "frustrated by what he perceived as unacceptably slow processing for the number of available applicants" which resulted in the CAF skipping important initial selection and training processes.[20] 10 000 men were rapidly enrolled and within one year 3 500 (35%) "were either awaiting discharge or had deserted" which placed an enormous burden on operations.[21] In the past scaling up recruiting required more people who themselves were adequately trained in their roles. If digitalization is implemented correctly, in the future scaling up systems that are intelligently automated to recruit and train personnel will be more akin to increasing the flow of water in your tap, simply turning it up or down as required. As part of preparedness within the personnel generation domain, system design needs to have scalability incorporated from inception.

**Security:** Security of personnel data is imperative and must be at the forefront of systems design, and when establishing new business processes around that design. When it comes to national security, aggregated personnel data or metadata can be used by our enemies to undermine personnel capabilities. On an individual level, ensuring privacy is critical for their safety and to

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https://www.investopedia.com/terms/m/mooreslaw.asp#:~:text=In%201965%2C%20Gordon%20E.,growth%20of%20microprocessors%20is%20exponential.

[18] Ibid

[19] Speer, Sean & Jackson, Taylor. (2024). Deep Dive: Just how bad is Canada's defence spending problem? Downright disastrous—with little hope in sight. The HUB. Accessed 7 May 2024. https://thehub.ca/2024-04-29/deepdive-just-how-bad-is-canadas-defence-spending-problem/#:~:text=Indeed%2C%20not%20only%20is%20the,also%20starting%20to%20raise%20concerns.

[20] McMillan, Sarah; Stevens, Sonya & Kelloway, Kevin. (2009). History and Development of Industrial/Organisational Psychology in the Canadian Forces Personnel Selection Branch: 1938-2009. Canadian Psychology, Vol. 50, No. 4, Pp 284-285

[21] Ibid Pg 285

ensure their trust in the institution itself. CAF members will need to be protected from breech of sensitive personal information and confident that their own data will not be compromised, whether it is their health records, performance evaluations, or selection test results, just as examples. Basic hygiene such as For Eyes Only, not storing data locally, and anonymizing personnel information need to be built into systems and business processes. Part of the effort of modernizing the MPMS will require getting a clear grip on security protocols and procedures in system design, data management, and business processes.

**Overcoming Challenges**

The path to digitalization will not be easy, especially in the early stages as the pieces are put in place and old systems and processes are replaced. Following are some highlights of CMP/MPCs key digital transformation challenges when modernizing the MPMS.

**Challenge 1 – Resistance to Change**

Research by McKinsey indicates that less than 30 percent digital transformation efforts succeed, in large part due to resistance to change.[22] In a large slow-moving and rigidly hierarchical bureaucratic organization like the CAF that resistance is one of the most prescient challenges to overcome. That resistance is overcome with a clearly articulated vision that is undeniable and inspiring, combined with a top down refocusing of resources towards priorities that align with that vision. Digital transformation also becomes undeniable when the technology itself becomes beyond obvious as a use-case and much easier to integrate, and we are passed that point today.

**Challenge 2 – Institutional Constraints**

Understanding and institutionalizing complex technologies is an enormous challenge for any organization, and can lead to budget miscalculations, delays in implementation, and outright stalling. The CAF has structural quirks that add to this challenge, including that project management is often undertaken by non-experts who are on a two- or three-year posting cycle which results in lack of deep understanding and accountability. By the time an individual knows what they need to know, have networked with key stakeholders, and understands how to navigate the bureaucracy around that particular challenge, they are on to their next posting. Despite efforts to improve knowledge transfer within the bureaucracy, this inevitably leads to disruption at varying degrees. There is also a diffusion of responsibility that can allow someone to move in the wrong direction and not be accountable for the outcomes as they simply move on to the next position. These institutional constraints are being overcome by instituting digital transformation focused organizations including the newly established Digital Services Group, as well as

[22] Boutetiere, Hortense. Montagner, Alberto & Reich, Angelika. (2023). "The keys to a successful digital transformation." McKinsey & Company. https://www.mckinsey.com/capabilities/people-and-organizational-performance/our-insights/unlocking-success-in-digital-transformations

supporting and coordinating entities within each L1s such as the Digital Transformation Team which was initiated within CMP/MPC in the Fall 2023.[23]

**Challenge 3 – Data Security**

Data will be the lifeblood of the new MPMS, and the ability to connect data is imperative to fully understand our personnel and improve key aspects of readiness such as talent management. That said, it comes with significant risk if not done correctly. Cross pollination of information could mean that errors in one system could result in errors in other systems, and, as mentioned, combing personnel data can result in higher security classification requirements due to the increased individual or organizational damage that could be caused by an information breach. One of the issues surrounding the safe and effective use of data has been the disparate direction from the Government of Canada and the Department of National Defence as they worked to provide a new foundation for leveraging data going forward. This direction is now being further honed by the Defence Chief Data Officer and Digital Services Group (DSG) who recently released a directive to bring everything together and provide a clear direction for the CAF.[24] This direction includes DSG's intention to provide direct collaboration with L1s to establish a Metadata Use Case Tiger Team to ensure organizations have an optimized and secure data plan that is in line with Government direction while maintaining interoperability with our Allies.[25]

**Conclusion**

Although challenges in digitalizing systems abound, the direction the CAF needs to go in digitally transforming the MPMS is clear. That modernization effort will be successful if usability, interoperability, automation, adaptability, scalability, and security are at the forefront of design considerations. If done correctly the CAF will have a well-oiled personnel generation and management machine that optimizes business processes and data-driven decision making in the personnel domain. This modernization effort will significantly improve the CAF's ability to seamlessly attract, select, recruit, train, performance manage, develop, promote and transition our service members. It will also improve the experience of members themselves as they are less burdened by mundane and repetitive tasks, freeing them to focus on what matters most to both them and the organization – supporting the mission through meaningful work.

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[23] Government of Canada. (2024). DM/CDS Announcement of the Digital Services Group. The Maple Leaf: Defence Stories. Accessed 22 May 2024. https://www.canada.ca/en/department-national-defence/maple-leaf/defence/2024/05/dm-cds-announcement-digital-services-group-dgs.html

[24] Defence Chief Data Officer. (2024). Directive 002/24, Minimum Baseline Metadata. Department of National Defence. (Accessible through DWAN) http://intranet.mil.ca/en/organizations/dto/directive-minimum-baseline-metadata.page

[25] Ibid

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Tardi, Carla; Catalano, Thomas & Velasquez, Vikki. (2024). What is Moore's Law and Is It Still True? Investopedia. Accessed 6 May 2024. https://www.investopedia.com/terms/m/mooreslaw.asp