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## REAL RENEWAL: IMPLEMENTING BUSINESS INTELLIGENCE WITHIN DEFENCE

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**JCSP 42**

***Exercise Solo Flight***

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WITHIN DEFENCE**

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## **REAL RENEWAL: IMPLEMENTING BUSINESS INTELLIGENCE WITHIN DEFENCE**

### **INTRODUCTION**

The ability to control, adapt and focus processes and procedures to ensure the effective and efficient achievement of objectives is a fundamental tenet of any organization. It is a drive towards the improvement of business decisions and increased organizational knowledge which facilitates better performance and effective and efficient outputs. This drive and focus is not limited solely to the private sector. In fact, the federal government as a whole has been looking to improve its product and service functions and the Department of National Defence (DND) is no exemption. DND is looking to “comprehensively transform our major business processes and create a lean and efficient organization that can generate savings to be reinvested in military capabilities and readiness.”<sup>1</sup>

In order to transform major business processes and achieve business oriented objectives, organizational leaders require timely and accurate information to make informed, evidence-based decisions. That information comes from the copious amounts of data all organizations generate and store. Again, DND is no exception. However, to collect, integrate and analyze all that raw data in a timely, relevant manner, Business Intelligence (BI) is required. BI has been employed to great effect in both the private and public domains as of late. Unfortunately, the Defence Team has been slow in its acceptance and application of business best practices and trends. With the future objective of realizing efficiencies in the “business of defence”<sup>2</sup>, and to provide leaders the

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<sup>1</sup> Department of National Defence, *Defence Renewal – Annual Report 2014-2015* (Ottawa: Government of Canada, 2016), 1.

<sup>2</sup> “Business of Defence” in this paper refers to all the functions the Department of National Defence undertakes that coincide with those within private sector organizations. These functions, although modified in their use and delivery, work in the same fashion and therefore should be amendable to changes based on private sector business best practices.

information they require to make evidence-based decisions, this paper argues that DND must embrace BI and integrate it into business functions at all levels of the Defence Team organization.

This paper will begin by defining what BI is, outlining its background and history as well as its functional framework. By doing so, it will become clear that BI is not simply another “business best practice” trend that can be ignored. Next, this paper will examine and outline how BI has been utilized successfully in both the private and public sector. Here it will be demonstrated that BI is highly regarded and well established in both the private and public sector and is capable of aiding the Defence Team in the realization of its business function based objectives. Finally, this paper will outline the requirements of the government of Canada with respect to evidence-based decision making and future reporting requirements. This section will highlight the necessity of BI in order to meet the requirements as outlined in Defence Renewal and by the new Government of Canada. It must be stated that this paper is focusing on business intelligence from a “business of defence” viewpoint and is focused on business support functions. It is not within the realm of this paper to explore the opportunities BI presents from an operational readiness perspective. The RCN Command Analytics program is currently investigating this potential.

## **DEFINING BUSINESS INTELLIGENCE**

### **Technology or Concept?**

There are a number of different definitions of BI. These range from strictly technological definitions to definitions that employ management fundamentals combined with the technological applications. The phrase “Business Intelligence” was coined by IBM researcher H.P. Lund in 1958. Within his article titled “A Business Intelligence System”, Lund defined

intelligence as “the ability to apprehend the interrelationships of presented facts in such a way as to guide action towards a desired goal.”<sup>3</sup> He then took that definition and applied it to business in order to define what BI was. To Lund, BI was an automated system that would disseminate information to sections of organizations within government, industry or research.<sup>4</sup> Since the Lund article, BI has been described in numerous publications and articles as a business system that allow business leaders and managers to improve upon business decisions using facts and information to their advantage. However, definitions and use of the term still fluctuate to this day.

To some, the outcome of BI is simply a dashboard that provides real time, up-to-date information for managers at all levels and thus permits evidence-based decision making.<sup>5</sup> It is seen as an umbrella under which there are a number of different software and Enterprise Resource Planning (ERP) applications that can be used to conduct data gathering and then presents that data in a manner which can then be turned into information.<sup>6</sup> To others, BI is not simply just the technology and software related applications. It is the “capability of the organization to explain, plan, predict, solve problems and learn in order to increase organizational knowledge.”<sup>7</sup>

In order to ensure continuity and understanding, for the purposes of this paper BI shall be defined as “the collection of tools and methodologies that transform the raw data that

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<sup>3</sup> H.P. Luhn, “A Business Intelligence System,” *IBM Journal of Research and Development* 2, no. 4 (1958): 314.

<sup>4</sup> *Ibid.*, 315.

<sup>5</sup> Celina Olszak, “The Business Intelligence-Based Organization – New Chances and Possibilities” *Academic Conferences International Limited*, February 2013, 243.

<sup>6</sup> *Ibid.*, 244.

<sup>7</sup> Chief Information Officer (CIO.com), “Business Intelligence Definition and Solutions,” last accessed 25 April 2016, <http://www.cio.com/article/2439504/business-intelligence/business-intelligence-definition-and-solutions.html>.

organizations collect from their various operations in useable and actionable information.”<sup>8</sup> This definition adds the human element to the raw data processes that are executed utilizing BI specific technology and applications. BI includes the interface between IT and the analytical human component of an organizations leadership. This interface takes place once a leader is provided information upon which he/she can contemplate and make informed, evidence-based decisions. BI is a managerial concept and methodology that delivers relevant and reliable information to the right people at the right time in order to achieve better decisions faster.

### **History and Evolution**

Collecting, interpreting and then reacting to data in order to shape and guide an organization to its desired end state are, and has been, a fundamental concept of management and business. BI, as we view it today, has evolved since the 1960s when Decision Support Systems (DSS) were being introduced into the marketplace. DSS were computer aided models that were implemented to assist in decision making and planning for leaders and managers of organizations.<sup>9</sup> DSS were utilized mostly in the private sector during that time period. DSS expanded and were further developed through the mid-1980s to include data warehouses, executive information systems, online analytical processing (OLAP) systems and eventually business intelligence systems.<sup>10</sup>

In the late 80s and early 90s, BI systems evolved and BI itself came to be viewed as a concept and a method utilized to improve decision making by using fact-based support systems.<sup>11</sup> Its usage became widespread during this period. As the world changed and

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<sup>8</sup> Rajeev Kaula, "Business Intelligence Rationalization: A Business Rules Approach," *International Journal of Information, Business and Management* 7, no. 1 (Feb 2015), 129.

<sup>9</sup> Borut Hocevar and Jurij Jaklic, "Assessing the Benefits of Business Intelligence Systems - A Case Study," *Management : Journal of Contemporary Management Issues* 15, no. 1 (2010), 87.

<sup>10</sup> *Ibid.*, 92.

<sup>11</sup> *Ibid.*, 110.

organizations constantly sought ways to improve both effectiveness and efficiency, the need to analyze historical data intensified. The ability to predict future trends and improve business forecasting kept organizations relevant and in business. In the business world, lean and efficient processes kept costs down which in turn kept shareholders happy. BI and its associated software products, in its present day form, have exponentially risen in implementation and usage since 2003.<sup>12</sup>

### **Functions**

In order to understand how BI can help the Defence Team, we must have an understanding of how BI works. More specifically, we need to understand what it does, how it does it, and what it actually provides. First, BI utilizes an organization's data. That data, sometimes referred to as "Big Data", is essentially vast repositories of raw information found in both standard and non-standard databases.<sup>13</sup> BI utilizes organizations historical and current data which gets turned into information that leaders of organizations can utilize, in a method that increases an organizations efficiency and effectiveness. Ultimately, "the major objective of BI is to extract the information and find the hidden knowledge from all sources of data... to make decisions for enhancement of any organizational goal."<sup>14</sup> It does this by utilizing a number of computer software applications to "data mine" or query specified data to provide information. This data capturing can be from any one of a number ERP software applications in any number of organizational functions such as finance, human resources, supply chain management and

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<sup>12</sup> Alexandra Rusaneanu, "Comparative Analysis of the Main Business Intelligence Solutions," *Informatica Economica* 17, no. 2 (2013), 149.

<sup>13</sup> Gregory Richards, "Big Data and the Public Service," *The Ottawa Citizen*, last accessed 28 March 2016, <http://ottawacitizen.com/news/politics/big-data-and-the-public-service>.

<sup>14</sup> Herison Surbakti, "Integrating Knowledge Management and Business Intelligence Processes for Empowering Government Business Organizations," *International Journal of Computer Applications* 114, no. 5 (2015), 37.

procurement, to name a few. Within the Defence Team, as previously mentioned, these functions are inherent and are an integral component of the “business of defence”.

It is this data which is driving efficiencies. As noted by the Canada Revenue Agency (CRA):

. . . we are seeing massive increases in the amount of digital data created every day, from the web, social media, sensors, and other sources. Technology is evolving to enable the capture and processing of these data. Most importantly, there has been a realization in the business environment that there is a potentially significant payoff to be had if these data could be tapped to improve products, services and/or customer reach.<sup>15</sup>

Once that data is gathered or mined, BI software solutions process that data into information. It does this by displaying that data in a variety of ways such as graphs, charts and dashboards. The BI concept itself then utilizes that information, applies it to business purposes in order to drive the business functions mentioned above. The purposes could also be viewed as outputs of BI. These outputs could be any number of the following: performance management, performance metrics, predictive analytics, predictive analysis, prescriptive analysis and process improvement, to name a few. Ultimately, BI permits an organization to measure, analyze, report, collaborate and increase knowledge management of the organization and its functions which in turn informs leaders and managers about their processes.<sup>16</sup>

## **BENEFITS OF BUSINESS INTELLIGENCE**

BI has been used to outstanding effect in the improvement of business processes’ of organizations in both the private and public sector for more than a decade. That improvement has led to a marked increase in both the efficiency and effectiveness of the functions of those organizations. In the interest of this paper and in keeping in line with a focus on what BI can do

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<sup>15</sup> Canada Revenue Agency, *CRA Business Intelligence Strategy* (Ottawa: Government of Canada, 2014), 2.

<sup>16</sup> Hsinchun Chen, Roger H. L. Chiang and Veda C. Storey, "Business Intelligence and Analytics: From Big Data to Big Impact," *MIS Quarterly* 36, no. 4 (2012), 7.



for DND and CAF, the business processes referred to are the same processes and functions that are consistently working behind the scenes that provide the daily support to the operational point of the CAF (that being the units either on, training for, or reconstituting from operations). More specifically, the functions and processes referenced include but are not limited to: supply chain management; transportation and maintenance services, procurement and contracting, corporate resources to include human resource management and administrative functions; food services; public financial management; and non-public funds management and operations.<sup>17</sup>

BI provides the information required to allow managers to analyze internal processes and identify any deficiencies in the process. Specifically, “BI provides info on trends, identifying problems and bottlenecks to be tackled and by providing information and analysis of “best” and “worst” practices and deviations from the realization of strategic plans.”<sup>18</sup> It is able to present business process information in a fast, simple and efficient way that permits users to employ a wide range of analytical possibilities in order to understand the meaning and logic of the information. It is from this analysis that decisions can be made on evidence that is both concrete and factual. Essentially, BI represents the most basic of tasks that managers and leaders of any organization must do. That is taking data, converting that data into useful information, analyzing that information and then making a decision based on the information you’ve analyzed to do what is best for the organization. “A true novelty of BI is its ability to present business information . . . so that users can understand the logic and meaning of business information by employing a wide range of analytical possibilities and ad-hoc queries.”<sup>19</sup>

One example of this novelty in use and ability to aid in evidence-based decision making is the DataMASTER BI project commissioned by Portland State University (PSU). PSU

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<sup>17</sup> Department of National Defence, *Defence Renewal Charter* (Ottawa: Government of Canada, 2013), 42.

<sup>18</sup> Olszak, *The Business Intelligence-Based Organization* . . . , 244.

<sup>19</sup> Hocevar and Jaklic, *Assessing the Benefits of Business Intelligence Systems* . . . , 89.

implemented the DataMASTER project “to create a single, organized accessible repository of data that would develop a culture of data-driven decision making.”<sup>20</sup> This project was created owing to the fact that the university’s legacy system often could not provide the combination of data sets needed to answer some of the key questions university administrators had. The results, when viewed after two years of the implementation, have led to real change within the university.<sup>21</sup> First, the university found that users of the data are asking better questions about the data itself. One can realize that this trend implies that people are thinking more about the business itself. The university has also found that reports that used to take it two weeks to assemble are now run in minutes.<sup>22</sup> The take away is that the time savings can be devoted to other functions / processes. Last, but certainly not least, the university has also stated that increased efficiencies have spawned many business process improvements.<sup>23</sup>

Kraft Foods is another private sector company that has introduced a BI program in order to realize business process efficiencies. This introduction into its business has contributed immensely to its latest business growth. Kraft stated that the “underlying catalyst for the growth was that BI allowed more business users to access the wealth of data in the companies ERP system via a simplified user interface.”<sup>24</sup> By doing this, Kraft allowed its users of BI, at all levels of the management chain to “drill down” into the data quickly, which permitted them to identify trends or issues that they would not have been able to before, without the introduction of BI. What Kraft also found was that BI empowered their employees. Throughout the process, BI self-

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<sup>20</sup> Sharon Blanton, “DataMaster: Success and Failure on a Journey to Business Intelligence,” *Educause Review Online*, last accessed 18 April 2016, <http://er.educause.edu/articles/2012/7/datamaster-success-and-failure-on-a-journey-to-business-intelligence>.

<sup>21</sup> *Ibid.*

<sup>22</sup> *Ibid.*

<sup>23</sup> *Ibid.*

<sup>24</sup> Dave Hannon, “Kraft Foods' Recipe for Successful Business Intelligence,” *SAP Insider* (2016), 12 April 2016., 1.

serve reporting increased throughout the organization and reports were being produced across the organization that helped people make better business decisions.<sup>25</sup>

BI has also been successfully implemented and utilized within the public sector as well. Both Canada Revenue Agency (CRA) along with CBC/Radio-Canada have BI strategies and have implemented BI software and concepts into their organization's daily functions. CRA, utilizing BI to analyze operational results of compliance interventions, has been able to "continuously improve the management and development of its compliance programs."<sup>26</sup> This has led to estimated gross annual benefits of approximately \$180M.<sup>27</sup> The CBC/Radio-Canada has also implemented BI into its organization within functional areas such as finance, human resources and contract management. It too has seen increased benefits of utilizing BI to improve its functionality. It also feels that a proactive focus on BI will "help the organization to meet its goals."<sup>28</sup> The benefits of BI in helping improve an organizations performance have also been studied and proven. As outlined in her dissertation looking at the relationships of BI to organizational performance benefits, Betsy Sparks wrote that:

. . . the use of information from BI in business processes was found to have a positive impact on organizational performance benefits. In addition, analytical decision-making culture, information content quality, and information access quality were found to impact the use of information.<sup>29</sup>

However, BI is not the all-encompassing solution that will put every organization on the path to success. BI also has its downfalls that must be investigated and assessed prior to implementation. BI "implementation and understanding by important players can be difficult,

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<sup>25</sup> *Ibid.* 3.

<sup>26</sup> Canada Revenue Agency, *CRA Business Intelligence Strategy . . .*, 5.

<sup>27</sup> *Ibid.*

<sup>28</sup> Canadian Broadcasting Corporation, "Business Intelligence at Work for CBC/Radio-Canada Managers," *Reporting to Canadians - SYNC*, no. 2 (2012)., 3.

<sup>29</sup> Betsy H. Sparks, "The Relationship of Business Intelligence Systems to Organizational Performance Benefits: A Structural Equation Modeling of Management Decision Making" ProQuest Dissertations Publishing, 2014), 84.

time consuming and expensive.”<sup>30</sup> It also is not an all in one, fully integrating plug in technology that works with any legacy system. BI, to be utilized to its maximum capacity, also requires change within the organization and its culture, especially in the Information Technology (IT) department. In some cases, with IT projects driven by IT departments and without due process and attention being paid to the required objectives, major investments in BI technology may not lead to improved efficiencies. This has been attributed to limited information being captured by inadequate, improper systems.<sup>31</sup> This possibility of risk can be mitigated, especially within the Defence Team. Implementation of such technology and the process / project behind it, could easily be managed and quarterbacked from the highest level down. This would ensure all stakeholders are engaged and each level within the organization has a ‘champion’ pushing this agenda. In addition, considering DND already utilizes an ERP software suite that includes BI modules; implementation risk related to certain technology not matching is eliminated.

Providing leaders of the Defence Teams at all levels (especially those at levels 4 and 5) with up-to-date, easy to extract information on the business processes’ within their organization should be a priority of the Defence team. BI would empower employees at all levels to question status quo and to analyze the information BI provides in order to identify trends, either positive or negative, and make appropriate, well informed decisions based on that analysis. No longer would decisions at all levels be made anecdotally or by utilizing a combination of intuition, past experience and a lot less guesswork.

What BI also could provide is a drill down capability. When viewing business functions from a strategic or operational level through a BI dashboard, a trend can be noticed much easier

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<sup>30</sup> Mehrdad Nouri Koupaei and Saeed Rouhani, “Integrated Framework for Promotion of Quality Management Utilizing Business Intelligence,” *International Journal of Operational Management, Marketing and Services* 2, no. 1 (June 2012): 80.

<sup>31</sup> Alaskar Thamir and Efthimios Poulis, “Business Intelligence Capabilities and Implementation Strategies,” *International Journal of Global Business* 8, no. 1 (June 2015): 36.

through a line graph and that trend could then prompt a question. In wanting an answer to that question, CAF members would then be able to ‘drill down’ further into the data to truly find the answer. As previously alluded to, they would also be able to obtain that information quicker than it would have taken before. This ‘drill down’ capability would encourage CAF members to think more about the functions of the organization and therefore spend more time analyzing the problem itself rather than trying to simply come up with a solution.

The ability of DND organizations to visualize what exactly is going on within their organizations would increase their comprehension of how their respective organization is functioning and would create an understanding and empowerment to act in the appropriate manner. This would drive ingenuity and foster further inquisitiveness within each of DNDs lower level organizations such as local Base Supply or Base Logistics. BI would focus and permit an organization to assess itself and would empower leaders at all levels to question their processes and look for and realize efficiencies. It would also facilitate higher level organizations, such as those at the Director level, to identify trends and best practices within and across environments and implement new, updated SOPs and processes to realize the positive trends, best practices, and adopt a CAF wide approach. These realizations would reverberate throughout the organization and as a whole, be applied and realized across the department. As stated in the introduction to this paper, the realization of these efficiencies is a core component and goal of Defence Renewal for the Department. Utilizing BI to effect these realizations is a necessity that will now be demonstrated.

## **REQUIREMENTS FOR BUSINESS INTELLIGENCE**

Since the great financial crisis of 2008, coupled with a prolonged, lackluster economy, public tolerance of taxpayers’ dollars not being appropriately managed or utilized has been

trending towards zero. This feeling has reverberated throughout the government and a push towards greater accountability, efficiency and effectiveness has been increasing. Objectives have been set that all departments within government are required to meet. The objectives set out within Treasury Board Secretariat policy and within Defence Renewal itself are just an example of measures already in place. The future application of “deliverology” by the new Liberal government is another measure that government departments can expect to have to deal with as well. Satisfying these objectives can only be accomplished through DNDs use of BI.

### **“Deliverology”**

With the Liberal party now forming the Government of Canada, the way in which government departments manage themselves and measure their performance is likely soon to change as well. “Deliverology”, coined by its founder Michael Barber, seeks to ensure that governments actually do what they have promised the electorate.<sup>32</sup> It is, simply stated; the art of ensuring the government of the day meets its goals.<sup>33</sup> In order to do that however, the government, at its highest of levels, will look to form and utilize “high-level delivery units to push key goals across the entire public service, sometimes bypassing the hierarchy of cabinets, departments and administrators.”<sup>34</sup> The mission for the governments is to cut through the many bureaucratic layers in order to deliver on the most important and difficult items on their agenda. It does this by asking itself a number of questions related to the functions it is most interested in, and then looks for those answers through indicators and metrics.<sup>35</sup>

Ultimately, “deliverology” and these high level “delivery-units”, seeks to analyze information provided to them in order to shift course, if required, or at the very least, track

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<sup>32</sup> Paul Wells, “Meet Sir Michael Barber, the political delivery man,” *Macleans*, 18 February 2016, 2.

<sup>33</sup> Michael Barber et al., *Deliverology 101: A Field Guide for Educational Leaders* (Thousand Oaks, Calif: Corwin Press, 2011). 35.

<sup>34</sup> Jeremy Leung, “How the Liberal dream machine will work,” *Globe and Mail*, 23 October 2015.

<sup>35</sup> Michael Barber, *Deliverology 101*. . . , 35.

progress of a project or of a near or medium term objective. Delivery units will most definitely asks very specific, varying questions to each department so the PM can be assured progress is made on any promises made or projects initiated. The only tangible way the Defence Team will be competently able to respond to such inquiries in a reasonable timeframe will be if BI is incorporated into the daily business functions of defence. As Barber stated “the real world never works out exactly as you anticipate. So having routines to correct and adjust the plan all the time is important.”<sup>36</sup>

### **Treasury Board**

The Treasury Board of Canada is responsible for the proper fiscal management, accountability and ethics, personnel and administrative management, comptrollership and approval of regulation for the Government of Canada.<sup>37</sup> Effectively, through the policies and directives it provides, the Treasury Board strategically manages the government of Canada. Treasury Boards Management, Resources and Results Structure policy is abundantly clear in its strategic objectives and the way governmental departments are to go about achieving their objectives. The objective of this policy is to “ensure government and parliament receives integrated financial and non-financial program performance information to use to support informed decisions on program management, and new program proposals.”<sup>38</sup> In order to meet this objective TB expects each department to ensure they have clearly defined and measurable Strategic outcomes, a Program Alignment Architecture (PAA) in place that provides a framework to link performance measure to each level of its program along with a description of

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<sup>36</sup> Paul Wells, *Meet Sir Michael Barber . . .*, 7.

<sup>37</sup> “Policy on Management, Resources and Results Structure,” Government of Canada, last accessed 21 April 2016, <https://www.tbs-sct.gc.ca/ip-pi/tb-ct/index-eng.asp>.

<sup>38</sup> *Ibid.*

governance provided for each program.<sup>39</sup> In order to accurately meet this objective, any department within the government of Canada, including the DND, requires the timely and accurate information in order to provide itself with a baseline upon which it could set goals and assess itself against. BI would allow DND to meet this requirement. BI would also allow DND to identify trends and set researched, informed metrics that it could then consistently assess itself against. Without these metrics and self-assessment, DND is unable to truly provide accurate program performance information to support informed decisions at the highest levels where the program funding is approved. The ability to justify a requirement, be it for a budget increase to fund capital equipment programs or training, through the use of concrete data and stringent analysis (the kind provided by utilizing BI), will place DND in a better bargaining position in comparison to departments who are unable to back up their requirements.

### **Defence Renewal**

In 2013 DND launched the Defence Renewal (DR) initiative. This initiative was put into place in order to investigate ways to find savings that can be reinvested in military capabilities and readiness. It would complete this task through a review and ultimately transformation of how the Defence Team conducts the “business of defence” in order to realize efficiencies.<sup>40</sup> The “business of defence”, and realizing efficiencies within its functions continues to be a priority, yet BI is not at this time being utilized fully across the Department to aid in this priority.

As stated in the *Departmental Performance Report 2014/2015*, “Defence requires a corporate governance and business framework to deliver sustainable business management efficiencies, effectiveness, and accountability in order to maintain public confidence and trust.”<sup>41</sup>

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<sup>39</sup> *Ibid.*

<sup>40</sup> Department of National Defence, *Defence Renewal Annual Report 2014/2015* (Ottawa: Government of Canada, 2015), i.

<sup>41</sup> Department of National Defence, *Departmental Performance Report 2014/15* . . . , 110.



During FY 2014/2015, approximate 32% of the overall Defence budget was being spent on Sub-Program 4.2: Materiel Lifecycle. Included within that sub-program were materiel portfolio management, acquisition, equipment upgrade and insertion, divestment and disposal, engineering, test, production and maintenance, inventory management and distribution and strategic coordination, development and control.<sup>42</sup> As the Supply Chain Management functions within the Department of National Defence account for such a significant portion of the budget and personnel, maximization of the efficiencies should be a top priority. This is where BI would be able to help.

As previously alluded to, an output of BI is performance measurement and metrics. Without the data and information provided by BI, proper baseline metrics, and the ability to assess and analyze against those metrics is next to impossible. This statement is as true for level 1 organizations as it is for level 4 and 5 organizations and their respective business functions. If something is not being measured, then how can one really know how well that process is performing? Currently, within a level 4 Base Logistics, there are no overarching, top down driven, data enabled performance metrics in place. BI could change this. Once implemented, BI could allow Command Teams and Division Heads to generate and analyze unit and organization specific reports that would permit them to assess the performance of their business functions. Based on that analysis, they could confidently make timely, evidence-based decisions of factors such as Full Time Equivalent (FTE) position requirements within their respective lines rather than a recommendation based on a “guestimate”. The evidence of course would be drawn from HRMS and PeopleSoft data which could allow for instantaneous access to demographic information.

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<sup>42</sup> *Ibid.*, 119.

With this information leaders would also easily be able to notice trends on various indicators. As an example, this trend could be as simple as a rising Vehicle Off-Road Rate (VOR).<sup>43</sup> With BI, management could drill down into the data further to begin to understand what is causing the rising VOR. It could be ascertained whether said increase is owing to preventative or corrective maintenance measures. From that it could be further extrapolated to answer some of the following questions: If it was found the VOR increase was owing to corrective maintenance vice preventative, was there an increase in accidents and therefore corrective maintenance increased? If there was an increase in accidents, does this correlate to the road safety program or DND 404 licensing program? Was there a corresponding increase in accidents by a certain unit or group of units? All this data, and the ability to access and “drill down” into it in a vastly quicker timeframe, allows decisions to be made on fact and actual analysis and implemented immediately. In the case above, if the data concluded that the spike in VOR was owing to an increase in accidents by a single unit, focused attention and efforts towards that unit’s driving program could be undertaken immediately.

The data would also engage and empower junior leaders and managers to understand the business they are responsible for and ask the questions rather than rely on the “it’s the way it has always been done” mantra. The objectives set out within Defence Renewal are one example of what BI would be able to assist in accomplishing if implemented throughout the DND. Another example where BI would aid DND in meeting another requirement is with Treasury Boards Management, Resources and Results policy.

Admittedly, an argument could indeed be made that BI is only required in order to gain a competitive advantage in a business environment and DND itself, is by no means a business. The

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<sup>43</sup> VOR refers to Vehicle Off-Road Rate. For a base or formation, it is an indicator of how many vehicles within a formations fleet of vehicles are currently “off the road” and unable to be in service and utilized.

goal of DND and the CAF is not to be efficient. It is required however to be effective. As outlined by the Minister of National Defence in the Minister's Message in presenting the latest Departmental Performance Report, the Minister's, and hence the department's overarching goal "is to ensure Canada's military is stronger and more agile, with modern and effective capabilities."<sup>44</sup> Effective is the key word and there is no argument that being effective is a priority. However, adopting BI would allow the department to become more effective while owing to increased efficiencies. The savings DND could realize through efficiencies could be put towards equipment, training and operations leading to increased effectiveness.

The Government of Canada has indicated that evidenced-based decision making and realizing efficiencies within government departments is a priority. DND has one of the largest expenditures in the government's budget and employs the greatest number of personnel of all government departments.<sup>45</sup> Owing to those two factors alone, it would behoove the Defence Team to also look to realize efficiencies. The BI toolset has been proven to benefit strategic planning, predictive modeling, forecasting, monitoring operations as well as identifying redundancies which in turn can lead to lowered costs.<sup>46</sup> The Government of Canada's commitment to strengthen public sector management and accountability coupled with the new government's inclination towards "deliverology" necessitates the Defence Teams adoption and implementation of business intelligence. By doing so, the Defence Team will find itself well positioned and able to provide the required information and analysis to the government while reducing the time, cost and effort to do so.

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<sup>44</sup> Department of National Defence, *Departmental Performance Report . . .*, 1.

<sup>45</sup> Department of National Defence, "About the Department of National Defence and the Canadian Armed Forces," last accessed 20 April 2016, <http://www.forces.gc.ca/en/about-us.page>.

<sup>46</sup> Olszak, *The Business Intelligence-Based Organization - New Chances and Possibilities*, 243.

Within the government, vitality and effectiveness of the organization is inherently important. The products and services a government and military provide are of significant importance to society as a whole and are, for the most part, proprietary by nature and without competition from outside competitors (think health care, education, security and defence). It would therefore be remiss of the government and in turn the military, to not ensure that it has the proper processes and procedures in place to not only determine an appropriate functional business strategy for the respective organization, but also a means of measuring and quantifying the results towards said strategy to ensure it is meeting its mandate. BI can be this solution.

As indicated, the current government is looking to put into place a system to measure its outputs in order to ensure it is meeting its objectives and election promises made to the populace. Strategic management and performance measurement are not new to DND. TB regulations and policy have been in place for a number of years and have ensured the department's mindset has shifted towards ensuring objectives and results are set, performance indicators are in place and progress is tracked. This will only continue to become more specific and focused as time goes on and the public dictates it necessary. In order to appropriately complete this task, BI needs to be utilized.

## **CONCLUSION**

The positive effects BI can produce coupled with its proven record within both the private and public sector solidify the need for the Defence Team to embrace and integrate BI into its business functions at all levels of the Defence organization. BI is not simply a trend that DND can ignore. Its use throughout both the private and public sector to enhance business functions such as procurement and contracting, supply chain management and human resource

management have been proven to increase business processes efficiencies and reduce costs. There is no reason to think that BI would not be able to do the same for DND's business functions. Realizing these efficiencies and reducing expenses, as documented in TB regulations and Defence Renewal are a priority of the Government of Canada and by extension DND. It is not a question of whether DND should do it, but a question of what is the best method to achieve it.

This paper began by defining and providing context with respect to BI. It then proved the applicability, suitability and track-record of BI within both the private and public sector, highlighting how the business functions it has helped improve are the same business functions that are found within the DND. This paper then examined the requirements of the Government of Canada for proper performance measurement. These requirements came from the highest level being the new Liberal government and its acceptance and soon to be implementation of "deliverology" to DND itself and its commitment to Defence Renewal. In the future, this requirement of accountability and performance measurement is not likely to recess but actually increase as the amount of data available for analysis will continue to grow. This requirement will also be a result of a public that will no longer accept what could be viewed as wasting of the public's tax dollars. The Defence Team needs to understand this and implement the appropriate tools and techniques that will allow them to ensure they are meeting these requirements.

It is highly recommended that the Defence Team closely investigate and ultimately implement the utilization of the BI module contained within our ERP. This implementation needs to be driven from the top down and as a priority. Currently, standard reporting measurements and proper KPI's to drive efficiency in the defence organizations business functions do not exist. This needs to be amended and managed appropriately. Imagine the

operational effectiveness the CAF would have if the cost, time and resource inefficiencies in the support business functions could be eliminated or reduced significantly and those savings applied to further training and operationally focused spending?

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