**CANSOFCOM GOES TO MARS: AN INTERNSHIP EXPLORATION TO MARRY CANSOFCOM CHALLENGES WITH MARS SOLUTIONS**

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# CANSOFCOM GOES TO MARS: AN INTERNSHIP EXPLORATION TO MARRY CANSOFCOM CHALLENGES WITH MARS SOLUTIONS

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**ABSTRACT**

Innovation synergies exist between Canadian Special Operations Forces Command (CANSOFCOM) and the MaRS Solutions Lab (MSL). An eight-week Masters of Defence Studies (MDS) internship provided an opportunity to explore and exploit the best practices of both organizations. CANSOFCOM is a maturing organization seeking new ways to innovate and solve its challenges for a competitive advantage for the defence of Canada. The MSL is an innovation centre whose raison d'être is to facilitate large organisations in the public and private domains to find solutions to complex problems.

Over the course of months' long research, several CANSOFCOM challenge themes emerged: the intellectual agility of its people, explicitly aligning culture, and adopting modern innovation policies and processes. Looking at the innovation processes within the MSL, CANSOFCOM can leverage them in the following ways: provide experiential learning in systemic design processes to all members, invest more time up front in stakeholder engagement for new initiatives, and open a storefront within the MaRS ecosystem. Additionally, CANSOFCOM can improve its innovative and operational outputs by: better inculcation of new members, pushing for early adoption of innovation from conscientious objectors, and personalising career paths both internal and external to CANSOFCOM and the Canadian Armed Forces (CAF).

A lasting relationship between CANSOFCOM, the MSL, and the greater MaRS Discovery District can enable both organizations in the realms of innovation and operations. The first step was an internship, and the next steps are capitalizing on the

synergies identified in the following paper.

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**CANSOFCOM GOES TO MARS**

**INTRODUCTION**

Canadian Special Operations Forces Command (CANSOFCOM) is Canada's and the Canadian Armed Forces' (CAF) highest readiness asset, poised to defend the country and its interests against emerging threats anywhere in the world, at any time. The world today is more complex than ever due to factors such as networks, globalisation, supply chains, information access, social media. The capabilities and requirements for CANSOFCOM to maintain this omni-competent posture are not insignificant, and as such every advantage must be pursued in order to enable the constantly evolving mandate to be ready. Non-traditional pursuits and novel methods will give CANSOFCOM significant advantage over adversaries that cannot exploit 21st Century advances as fast or as well. A Joint Command and Staff Program (JCSP) student internship connecting CANSOFCOM and an innovative company specialised in solving complex problems is a new creative lever to unearth a multitude of opportunities for CANSOFCOM.

MaRS (formerly Medical and Research Sciences) Discovery District (hereafter referred to as MaRS), in the words of CEO Yung Wu, is one of the largest innovation hubs in the world.[1] It is attracting global talent and thousands of new ventures in highly advanced fields to Toronto in order to leverage the hub that it has created to access capital, networks, and customers. MaRS is a registered not-for-profit (NFP) that considers itself an ecosystem for early adopters and innovation and has extensive experience with both the private and public sectors in Canada and abroad. As an

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[1] Kristen Marano, "A Bold New World For Canadian Innovation: In Conversation With MaRS CEO Yung Wu," *YouInc*, February 27, 2018, https://youinc.com/content/leadership/a-bold-new-world-for-canadian-innovation-in-conversation-with-mars-ceo-yung-wu.

environment that aggregates new ideas, sources of funding, policy innovations, and has

amassed a collection of innovative perspectives, processes, tools and techniques, MaRS is

an unlikely but well suited candidate to offer opportunity to CANSOFCOM to tap into

the ecosystem of early adopter advantages.

MaRS is a large enterprise with many focus areas. Within MaRS resides the

MaRS Solutions Lab (MSL) team. The MSL is a unique directorate that combines

systems thinking and design into a practical application known as "systemic design."[2]

This productive combination of systems thinking and design are what inspire the entire

team in the MSL to provide the service of guiding large public, private and NFP

organizations into co-creating innovative solutions for their wicked problems.[3]

The contemplation of a partnership between CANSOFCOM and an innovative,

forward-thinking, problem-solving Canadian company began the exploration of ideas for

an internship that would marry the best partnership for organizational learning. The result

has been the fruitful placement of a JCSP student, pursuing research for CANSOFCOM,

into the MSL for an internship of 8 weeks. The goal was to garnish as many lessons and

benefits as possible from the systemic design paradigm and greater MaRS ecosystem to

be able to consolidate and bring them back to CANSOFCOM for exploitation as

appropriate.

In order to appreciate what might be useful at CANSOFCOM from the

perspective of someone never having worked there, an assessment was conducted to

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[2] MSL did not coin the term "systemic design"; it is used in several publications that cover both design and systems thinking. Dr Alex Ryan, in the draft of an untitled book he's presently writing on systemic design, gives original credit for the term to design and systems expert Harold Nelson: https://medium.com/the-overlap/what-is-systemic-design-f1cb07d3d837

[3] A wicked problem is a social or cultural problem that is difficult or impossible to solve for as many as four reasons: incomplete or contradictory knowledge, the number of people and opinions involved, the large economic burden, and the interconnected nature of these problems with other problems; https://www.wickedproblems.com/1_wicked_problems.php

better understand the working environment and people. In line with operational security requirements, specific numbers and programs in CANSOFCOM are not the focus for this analysis. However, an overview of traits, stakeholders, initiatives, and challenges within CANSOFCOM will offer the context required to align with the internship experience and lessons learned in the remaining chapters of the paper. CANSOFCOM is already heavily invested in being the most agile and innovative enterprise in the CAF, therefore one consideration in the research was to identify the factors and constructs that enable those qualities. The key to CANSOFCOM agility and innovation is the type of thinking applied to address the important issues.

Systems thinking and design have been around for many decades; however, there has been a recent surge in their applications beyond products and infrastructure, shifting more into social and human constructs. Systems thinking and design are mental models to approach problems and if not previously considered, constitute a new means of approaching situations or challenges so that innovative solutions and new processes can be unlocked. A contemporary design focus on intangibles like social systems, human interactions, public services, policies, and doctrine has emerged with myriad labels and countless approaches to resolve challenges. One of the biggest challenges in the design paradigm is how to translate great ideas and theories into actionable results. Many design vignettes in these realms seem to be realizations in hindsight as opposed to products of intentional design theory application; thus an inherent challenge in the process is that without awareness, some actors may not always recognize a design process until it is complete. Another phenomenon is the recent proliferation of design or innovation labs around the world postured to assist those in need of navigating a quest for new solutions.

An exploration of systems thinking and contemporary design is presented in Chapter 2 including an assessment of what is feasible and appropriate for defence and more specifically CANSOFCOM. Additionally, some examples of modern day design thinkers and their applications are presented to provide realistic context and credibility to the ideas.

The key enabler in the research process was the internship at the MSL which provided immersion into systemic design and solutions emergence, mainly in the public sector space. The MSL identifies itself as a "public and social innovation lab."[4] The Program Director, Dr. Alex Ryan, has an extensive background in systems thinking, design and their applications, and he is instrumental in the developing research on systemic design. Of notable mention in his resume, before coming to MaRS he worked with Australian SOF, USSOCOM, and the US ARMY as well as the Government of Alberta on successful projects leading to the design and overhaul of policies, doctrines, systems and relationships within these government services.[5] The MSL maintains a number of ongoing projects at any given time that partner with municipal, provincial and federal governments across Canada, and include private, public and NFP organizations as stakeholders in co-creating solutions. The team at the MSL brings together a wealth of knowledge, as well as a diverse set of tools and practices to assist others in the optimization of the systemic design process to unlock innovative solutions to challenges. The internship provides the mutual benefit of injecting a set of diverse (military) perspectives into the MSL team, as well as provides exposure to the processes and tools

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[4] MaRS Solutions Lab, MaRS, accessed February 20, 2018, https://www.marsdd.com/systems-change/mars-solutions-lab/

[5] University of Toronto, "Alex Ryan", *Rotman*, n.d., accessed May 01, 2018, http://www.rotman.utoronto.ca/FacultyAndResearch/Faculty/ExecutivesInResidence/Ryan

of systemic design being leveraged to assist the public service and others in challenges. The goal was to provide enough experience to take new perspectives, processes and tools back to CANSOFCOM and propose new paths of optimization for an already forward-thinking and agile enterprise.

**Methodology**

The conduct of the research for the entire Defense Research Paper (DRP) was broken down into three separate (but overlapping) phases due to the nature of the internship. Phase one of the methodology entailed research into the theories behind contemporary design, systems thinking and systemic design which included secondary research in existing publications, as well as explorations into design conferences and workshops. This research into what design and systems thinking are and the theories behind them continued into the internship period where the greatest amount of exposure to the practical application of the theories was observed.

The second phase of the research focused on learning about CANSOFCOM as an organization. As the author had never worked directly in the CANSOFCOM environment before, it was important to learn more about the environment and the people within. A series of interviews were conducted with various senior leaders throughout CANSOFCOM. Furthermore, secondary research was conducted through existing publications, media events and presentations to best understand the projected image and environment in CANSOFCOM. Lastly, a collection of CANSOFCOM challenges was consolidated through existing research papers, as well as directly from conversations and open source interviews from members within the organization. The intention was to gather adequate awareness of challenge themes and solution approaches that may be

found in parallel through working in the MSL that are focused on helping organizations find solutions and innovate for organizational changes that better position themselves for future operations.

The final phase of the research entailed participating in the internship. The MSL was generous enough to allow the author to begin embedding in bi-weekly team coordination meetings as early as December 2017. The context gained during the early engagements then allowed work to begin in April 2018 and included joining 4 project teams immediately. The Director of MSL helped select projects that were in various phases of development in order to provide the best spread of opportunities to learn MSL processes in the short window of the internship. Most projects span 1-3 year periods, with the shortest being around 2 months in duration. Therefore, the opportunity to participate in four different projects over differing phases, as well as have access to all previous projects and results, provided the author with a wide-ranging view of systemic design and innovation processes, tools and methodologies.

**Assumptions**

The first and foremost assumption being made at the beginning of this process was that a synergy would be discovered between CANSOFCOM challenges and the MaRS Discovery District organization and processes. From this start point, many other sub-assumptions were made to help enable the exploration of the internship and discovery part of the process.

From the CANSOFCOM standpoint, it was assumed that unclassified challenges could be unearthed from someone who has not worked inside the organization in order to identify the potential for innovation and solutions. Through a process of conversations

with CANSOFCOM internal stakeholders, the assumption continued that challenges would present themselves both directly and indirectly. Another assumption was that the existing database of Solo Flight and Defense Research projects from previous classes of JCSP on SOF themes would present a consortium of unresolved challenges identified by former CANSOFCOM leadership prior to their appointments. Additionally, it was assumed that a collective of these challenges would be useful for present day analysis. An assumption that was presented from the Innovation section of CANSOFCOM was that an intern placement at MaRS would garnish valuable contacts and networking opportunities in the greater innovation environment in Toronto that would complement parallel efforts being established in the geographic area.

The internship at MaRS came with an additional set of assumptions leading into the placement. The initial assumption is that the skills and experience of a Major with 19 years' experience would be appealing and useful to the team at MaRS. Another assumption was that there would be a plenitude of opportunities to network with innovative new venture companies and proponents to new technologies and processes while working at the MSL. A third and important assumption was that the MSL would be working on projects or initiatives that have relevant applications to CANSOFCOM challenges. From there, it was also assumed that the author would be able to learn some of the tools and methodologies that the MSL uses to help public and private organizations solve problems and report them back to CANSOFCOM in a practical way for application.

Further assumptions were made that the author would be exposed to extended innovation stakeholder networks outside MaRS to explore. The original connection between the CAF and MaRS came about through a CFC facilitated introduction to Dr.

Ryan, who is well known as a major international proponent to design and systems thinking. As noted previously, Dr. Ryan has an extensive background prior to his time at MaRS working with the US and Australian militaries, including their SOF organizations. Lastly, it was assumed that exposure to Dr. Ryan would provide opportunity to learn directly about his experience in helping military/SOF organizations in their application of design and systems thinking methodologies, including re-writing strategic and future-oriented doctrine.

## CHAPTER 1 – CANADIAN SOF ENVIRONMENT AND CHALLENGES

*"We cannot solve our problems with the same thinking that created them."*

*– Albert Einstein*

CANSOFCOM is comparable to many other international Special Operations Forces (SOF) in terms of its principles and qualities; however it is also relatively unique in the world as it is a joint force sourced from across the other pre-existing CAF elements.[6] Both the unique as well as the generic qualities that CANSOFCOM possesses similarly present unique and generic challenges and opportunities for the organization moving forward. Chapter one will outline the principles and qualities of CANSOFCOM as they are pertinent to assessing the organization's internal ability to adopt new ideas. Similarly, the people, environment and stakeholder networks within which CANSOFCOM operates will be outlined to provide context to the internal and external relationship factors that affect the organization. Next, a presentation of the various initiatives that are ongoing within CANSOFCOM to prepare for the Future Operating

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[6] A joint force is comprised of multiple elements from the Army, Navy and/or Air Force, as well as special forces elements from a broader operational perspective. US SOF organizations are typically element specific (Army, Seals, Marines, etc.), except for USSOCOM which is their joint Special Forces strategic command.

Environment (FOE) will be introduced to appreciate what is already being pursued. Numerous previous military studies have been conducted at the Canadian Forces College (CFC) on topics related to CANSOFCOM, and as such a review of this literature will be presented to outline formerly perceived challenges and potential solutions. Finally, a presentation of recent explicit and implicit observations of current SOF challenges from CANSOFCOM leaders and environment will offer some additional problem frames and opportunities to consider in the greater context of the paper.

**CANSOFCOM: The Organization/Traits**

Canadian Special Operations Forces (SOF) was officially born with the stand-up of Joint Task Force 2 (JTF2) in 1993 to relieve the Royal Canadian Mounted Police (RCMP) as Canada's force dedicated to two critical and growing national capability demands: hostage rescue (HR) and domestic counter-terrorism (CT).[7] During General Rick Hillier's Transformation implementation, the organization expanded to a structured command under CANSOFCOM in 2006 including the stand-up of the Canadian Special Operations Regiment (CSOR), and the acquisitions of 427 Special Operations Aviation Squadron (SOAS) and the Canadian Joint Incident Response Unit (CJIRU) joining CANSOFCOM alongside the pre-existing JTF2. The growing internal Force Generation (FG) needs brought together the requirement for the stand-up of the Canadian Special Operations Training Centre (CSOTC) in 2012 completing the compliment of today's current structure of 5 CANSOFCOM units under one command (see Fig. 1).

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[7] Government of Canada, *Joint Task Force 2 (JTF2),* March 14, 2018, https://www.canada.ca/en/special-operations-forces-command/corporate/organizational-structure/joint-task-force-2.html
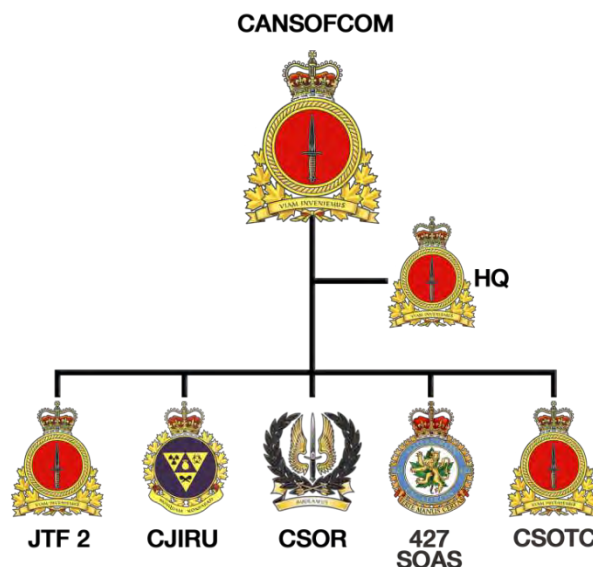
Fig. 1- CANSOFCOM organizational structure; source: https://www.canada.ca/content/dam/cansofcom-comfoscan/images/cansofcom-org-chart-en.png

To gain a full appreciation of the creation, growth and future potential of CANSOFCOM, it is worth taking an look at the special operations capability development and expansion over time. As noted above, the beginnings of Canadian Special Operations began with the stand-up of a HR and CT force, JTF2, born out of the former RCMP Special Emergency Response Team (SERT). JTF2's role widened significantly into Direct Action (DA) tasks where they deployed to Afghanistan alongside allied forces in the immediate aftermath of 9/11 and then again in 2005 continuing to focus on DA missions against Taliban and Al Qaeda command and control (C2) and Improvised Explosive Device (IED) networks.[8] Between the stand-up of the unit and Afghanistan, JTF2 also found itself on smaller missions abroad conducting close protection (CP) for VIPs in locations including the Balkans and Rwanda; however the demand for higher threshold tasks led to the out-sourcing of the CP task through the

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[8] Bruce Campion-Smith, "JTF2 is "jewel in the crown" of Canada's special forces," *The Star*, June 26, 2016, https://www.thestar.com/news/canada/2016/06/26/jtf2-is-jewel-in-the-crown-of-canadas-special-forces.html.

creation of a dedicated specialty trade managed by the Military Police beginning in 2007.

As Afghanistan drew down, and global terrorist threats began to multiply and spread

across the globe, the demand for new capabilities and approaches to counter-terrorism

and the defence of Canada and our allies emerged. Similarly, the close networking of

allied SOF with CANSOFCOM enabled a proactive consideration of the capabilities

required for CANSOFCOM to continue to be ready to take on emerging threats. The

latest compliment of core tasks are listed as follows: "hostage rescue; direct action;

chemical, biological, radiological or nuclear [CBRN] crisis response; combating

Weapons of Mass Destruction; maritime special operations; support to non-combatant

evacuation operations; and special protection operations."[9] According to USSOCOM

doctrine, their latest catalogue of SOF capabilities includes a similar list, with the

additions of "special reconnaissance… Unconventional warfare... Foreign Internal

Defense, Security Force Assistance… Counterinsurgency… Foreign Humanitarian

Assistance… Military Information Support Operations… [and] Civil Affairs

Operations."[10] In reality, CANSOFCOM could take on any of the above listed tasks, or

others as that is the very nature of their posture is to be able to do what the government

requires in the national interest. The mandate for increasing capabilities and specific tasks

continues to expand over time, as well as the employment of an expanding variety of

skillsets, therefore it behoves CANSOFCOM to continue to look forward with the agility

to develop new ways to address emerging problems.

In light of the ever-expanding list of tasks and expectations on CANSOFCOM, it

is pertinent to reflect on the underlying first principle that "the key factor to SOF success

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[9] Government of Canada, *Mandate of the Special Operations Forces,* January 03, 2018, accessed April 15, 2018, https://www.canada.ca/en/special-operations-forces-command/corporate/mandate.html
[10] Department of Defense, "Joint Publication 3-05 Special Operations," July 16, 2014, II-3.

is its people."[11] Throughout various publications on CANSOFCOM, the key human traits for CANSOFCOM members are outlined repeatedly and include being adaptive, creative, agile thinkers, culturally attuned and willing to take risks and be comfortable with the unknown.[12] The importance of this intellectual agility cannot be overstated along with emphasizing that every position in the command from Corporal to General must have intellectual agility within their domain of responsibility. The Korn/Ferry International research firm uses the term 'Learning Agility' to represent intellectual agility, which encompasses the five dimensions: mental agility, people agility, change agility, results agility and self-awareness.[13] "Learning agility is knowing what to do when you don't (sic) know what to do"[14] and as defined by Korn/Ferry, is the key to unlocking the human potential in members of CANSOFCOM.

**CANSOFCOM: The Environment and the People**

CANSOFCOM has a lean headquarters that is unique in its structure compared to its Level 1 counterparts in the CAF, largely due to its broader responsibilities of managing all five Force Functions internally: Force Generation (FG), Force Employment (FE), Force Sustainment (FS), Force Management (FM) and Force Development (FD). With approximately 100 people in the headquarters, the direct reports to the Commander are numerous, particularly in an organization that prides itself in being flat and agile. Each of the broad responsibilities that must jockey for the Commander's guidance and decision-making capacity must then compete for the Commander's time, while

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[11] CANSOFCOM, "CANSOFCOM Capstone Concept for Special Operations 2009," Ottawa: National Defence, 2009, 4.

[12] *Ibid*, 4-5.

[13] Kevin Cashman, "The Five dimensions of Learning-Agile Leaders," *Forbes*, April 3, 2013, https://www.forbes.com/sites/kevincashman/2013/04/03/the-five-dimensions-of-learning-agile-leaders/#4e4eab8d7457

[14] *Ibid.*

simultaneously the Commander must maintain a strong adherence to his priorities and overall vision. CANSOFCOM had its most recent change of command in April 2018, handing over responsibility from MGen Mike Rouleau to MGen Peter Dawe.[15] The Chief of Defence Staff, General Jonathan Vance, when addressing the ceremony noted the qualities of both members being "leadership, agility, bold action, and professional excellence."[16] As noted above, these very same qualities are expected of every member within CANSOFCOM as an organization, above and beyond what is expected from conventional members of the CAF and as such, an additional level of rigorous screening is performed for any individual applying to join the organization. The screening is managed separately for each of the five units and the headquarters, and dependent on the balance of physical versus intellectual demands of the positions being filled, the processes vary anywhere from interview processes up to months long rigorous assessment phases.[17] The common denominator that must remain in all of the recruitment processes for operators, specialists and supporters (that include staff officers) alike is the list of core attributes of SOF individual: risk acceptance, creativity, agile thinkers, adaptive, self-reliant, eager for challenge, relentless in their pursuit of mission success and culturally attuned.[18] Screening and selecting for, as well as continuous investment in the traits of learning agility mean that responsibilities can be actively delegated to the lowest levels for independent action. Similarly, risk is trusted to be calculated and acted on at lower levels that conventional forces, further highlighting the requirement for

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[15] National Defence, "New Commander for Canadian Special Operations Forces Command", *Government of Canada*, April 25, 2018, https://www.canada.ca/en/department-national-defence/news/2018/04/new-commander-for-canadian-special-operations-forces-command.html

[16] *Ibid*.

[17] CANSOFCOM, "CANSOFCOM Capstone Concept for Special Operations 2009," (Ottawa: National Defence, 2009), 4.

[18] *Ibid*, 4-5.

intelligent actors with comprehensive problem solving tool-sets irrespective of rank, age or other false-limiting factor. Dr. Alan Okros, in his monograph *Leadership in the Canadian Military Context*, describes this delegation of responsibility and risk calculation in his description of the unique qualities of SOF leadership compared to other elements. "Although this does not involve passing command authority, part of creativity is allowing those with the most relevant expertise, best on-site appreciation of the conditions, and greatest capacity to set the conditions for team success, to exert the greatest amount of influence."[19] Okros's research highlights the operational differences between the Army, Navy, Air Force and SOF personnel through which SOF continuously stand out for qualities that include flexibility and adaptability in small team capacities. In dealing with the fog of war, Okros notes that SOF welcome the ambiguities as opportunities to innovate and exploit confusing situations. The value of the intellectual agility from small team members through to that of the Commander is demonstrative of why people are the key factor to SOF success.

The physical environment of CANSOFCOM headquarters is surprisingly not much different from that of other strategic headquarters located in the National Capital Region (NCR). The command team and senior executive members have individual offices, while the remaining staff members reside in high-walled, padded cubicle spaces that permeate an air of visual privacy at each desk and a surprisingly un-collaborative feel. Not without its own drawbacks, CANSOFCOM's external partner agencies the Canadian Security and Intelligence Service (CSIS) and the Communications Security Establishment (CSE) have both undergone recent major renovations to create modern

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[19] Alan Okros, "Leadership in the Canadian Military Context", *Monograph Series Leadership*, (Kingston: Canadian Forces Leadership Institute: 2010), 31.

workspace environments that foster more open air and collaborative teamwork in balance with their high level security infrastructure requirements. Most of the CANSOFCOM infrastructure budget for capital expansions, upgrades and renovations has been appropriately designated for the five growing units in accordance with the Department of National Defence's (DND's) latest defence policy document, *Strong, Secure, Engaged* (*SSE*), leaving the headquarters as is in its aged, but functional space. American Architect Louis Sullivan coined the phrase 'form follows function' as he thought that "form ought to come from the function of a building, not historical precedent".[20] CANSOFCOM operates differently than other strategic headquarters due to its lean numbers, flat hierarchy, expanse responsibilities of all five force functions, agile team approach, and therefore it would benefit greatly from a physical infrastructure form that fostered its intellectually agile functions.

**The Future of CANSOFCOM**

> *"The best way to predict the future is to create it."*
>
> *– Peter Drucker*

In dealing with an unpredictable, complex and wicked world, the FOE has been a front and center consideration for CANSOFCOM, who recently published a CANSOFCOM FOE Handbook.[21] The handbook is phase one of the SOF-Next Capability Analysis that is being succeeded by the development of phase two, the Future Operating Concepts (FOC). The FOC will in turn lead into phase three, developing the Future Integrating Concept (FIC) that will inform command decision makers on the ways

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[20] Steven Bradley, "Form Follows Function?", *Smashing Magazine*, March 23, 2010, https://www.smashingmagazine.com/2010/03/does-form-follow-function/.
[21] CANSOFCOM, "Future Operating Environment Handbook," Ottawa: National Defence, 2017.

for investing in, maintaining or divesting of military capabilities.[22] A consideration of Military Capabilities Implications (MCI) for the FOE, FOC and FIC should not be distracted by concepts of equipment, technology and material only. As noted above, the primary factor for SOF is its people, and as such much thought has gone into the MCIs around people: SOF Recruitment and Selection MCI, SOF Training and FG MCI, SOF COMMAND MCI, SOF Retention and After-Service Care MCI. In all four of these MCIs, as well as overlapping in others, the requirement for "creative, ethical, resilient, and agile-minded personnel" is extant. The current thinking on how to continue to invest in personnel through programs is being managed mainly through the FM directorate of the HQ, and in the training cells of each of the five units. Arguably with the emphasis on people and their impacts in every Force Function, the investments in them must remain part of a common vision and culture through the entire chain of command beyond the scope of individual programs.

## CANSOFCOM: Current Change Initiatives

> *"It's not that I'm so smart, it's just that I stay with problems longer."*
>
> *- Albert Einstein*

CANSOFCOM, under its FD directorate, created an Innovation sub-directorate to help funnel and foster change initiatives. Although not structured like an 'Innovation Lab', the concept of having a small team dedicated to innovation has become increasingly popular in both the private and public sector.[23] The innovation team is less

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[22] *Ibid*, 3.

[23] Innovation Labs are being created by many companies and include dedicated physical 'innovation space' to showcase prototypes of new products and ideas, conduct design thinking activities with white boards and sticky notes, and host collaborative meetings and events for the organization; https://www.forbes.com/sites/robertbtucker/2017/11/20/starting-an-innovation-lab-avoid-these-pitfalls/#a91aa057a2b3

than a year old, but is already actively leaning out into Canadian industry and academia to start opening more doors for competitive advantages with new ideas, networks and technologies.

One approach falls directly in step with *SSE,* by leveraging the recently established federal government Build in Canada Innovation Program (BCIP) that provides grant funding for Canadian companies to make proposals to resolve Defence defined challenges. CANSOFCOM's opportunity in the program exists in being able to succinctly define challenges that can be submitted to the program, and have them compete against other commands and challenges in the program for the grant support.

Another initiative entails partnering with major Canadian universities to similarly present challenges, or simply to observe senior project teams conduct new product and service development research. CANSOFCOM presented its first student-aimed innovation initiative at Hack the North, a Canadian student hackathon, in September 2017 and garnished much interest from student teams motivated to solve CANSOFCOM challenges as well as seek future employment. If an innovative student idea arises that could potentially marry up with a CANSOFCOM challenge or need, funding mechanisms will be explored in terms of additional grants or investments to help foster the development in the interest of CANSOFCOM. The CANSOFCOM challenges being collected for proposals are being consolidated in the form of a dedicated database that is being populated from the units and command. As a backbone for challenge proposals that could feed the federal government sponsored grant programs such as BCIP (noted above) student challenges, or even entrepreneurial venture based challenges, the database will

help consolidate and prioritise the areas in which CANSOFCOM wants to focus its innovation resources.

A third, related prong for innovation into the future comes from the establishment of storefronts inside innovation hubs that are focused on fostering new Canadian ventures. There are 17 Regional Innovation Centers (RICs) across Ontario, including Toronto-based MaRS, as well as Ottawa-based Invest Ottawa.[24] Over 150 Innovation Centres are operating across Canada.[25] Invest Ottawa sits in Canada's national capital, near the center of federal government as well as CANSOFCOM headquarters. Proximity should not be a primary driver for seeking out innovation; however there is merit in the facility of a taking a first step toward this new approach within Ottawa. CANSOFCOM has created an office space at Invest Ottawa in order to immerse itself in the entrepreneurial environment and start increasing the amount of network contacts it has in the commercial and NFP innovation space. CANSOFCOM is looking to expand the approach as results are realised and the value proposition increases, which includes garnishing more interest from Canadian ventures with solutions that are given access to the aforementioned database of challenges.

A final initiative is the development of the SOF-Next Capability Analysis, and more specifically the creation of an Outcome Based Planning model. There is much criticism in the public sector of organizations that spend a lot of time building strategic plans that fail to put steps in place that bring measurable action. The Outcome Based Planning Model's goal is to develop a "capability development framework that

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[24] Ontario Centres of Excellence, "List of Regional Innovation Centres," *Ontario Centres of Excellence*, n.d., accessed May 15, 2018, http://www.oce-ontario.org/docs/default-source/default-document-library/list-of-rics.pdf?sfvrsn=8

[25] Cemre Calendar, "150 Accelerators and Incubators in Canada," *Medium* (blog), October 11, 2017, https://medium.com/mentornity-blog/150-accelerators-and-incubators-in-canada-6111e89e2fd8.

recognizes that there is no static end-state – or Final Operating Capability (FOC) – for CANSOFCOM in the traditional military sense."[26] The development of a modern procurement approach tailored to the needs of CANSOFCOM will enable the goals of capability based planning. Many CAF-wide initiatives are already in place to assist, including the Project Approval Process Renewal (PAPR) aimed at reducing project approval times, however the delay tolerance for project approvals weighed against developing threats to Canada and Canadians is still much shorter than the projected 6.3 year goal for even low complexity projects.[27] CANSOFCOM must continue to lean out and push the envelope to drive focus in updating Defence procurement processes and maximise the opportunity costs in the limited resources (both people and money) that are accessible for innovation.

**CANSOFCOM: Challenges**

In marketing, a timeless principle is to ask a client explicitly what they want. However, a more adept way of approaching the problem would be to find out implicitly what a client needs, which is often not the same thing. Innovation comes from discovery of what was not known before, much like the discovery of client needs. Successful disruptive companies like Apple, Proctor and Gamble and Tesla looked out and have discovered and addressed implicit customer needs that customers did not know they had. Similarly, a practice of asking an organization what its problems or challenges are only scratches the surface of what is interfering with their productivity and success. Through narratives and tangential commentary, an outside observer is in a position to identify

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[26] CANSOFCOM, "Strategic Context Document (SCD) Outcome Based Program (SOF)," (Ottawa: National Defence, 2018), iv.

[27] Government of Canada, "2017 Defence Renewal Annual Report : Realizing the Opportunity," *National Defence and the Canadian Armed Forces*, June 21, 2018, http://www.forces.gc.ca/en/about-reports-pubs-drar/2017/drar-2017-3-initiatives.page.

some of the underlying frictions and challenges beneath the surface of an organization.

CANSOFCOM identifies as a lean, agile, flat, and innovative command, particularly in

comparison to its peer commands in the CAF. However it would be short-sighted to think

that any organization is not without challenges. The following section provides an open

look at both explicit and implicit challenges that have been identified for CANSOFCOM

over the course of the research period.

A Review of Previous CANSOFCOM Research

A review of previous CFC research papers written by current leadership and staff

within the CANSOFCOM organization provided a baseline for existing challenges in the

organization. Several themes emerged. It is important to acknowledge the issues that

stood out explicitly to members of CANSOFCOM, as well as some of the potential

solutions presented with them. Emergent themes of the research will be discussed

following the data provided in Table 1.

| Author | Year / Program | Topic/Challenge |
|--------|----------------|-----------------|
| **Papers written by current CANSOFCOM leadership** | | |
| Dawe | 2005 / JCSP | Adopting a MEUF Expeditionary model |
| VanDahl | 2007 / JCSP | Joint Interagency Multinational Partnerships – JIMP |
| Rouleau | 2010 / NSP | Contemporary Terrorism, National Security Architecture and Paradigm Change |
| Conley | 2010 / JCSP | Institutional analysis on barriers to change initiatives in Canadian Government |
| Lachine | 2012 / JCSP | CANSOFCOM Organizational Innovation |
| Luft | 2012 / JCSP | CANSOFCOM Whole of Government (WoG) Collaboration |
| Chorley | 2014 / JCSP | CANSOFCOM Competitive Advantage and a Culture of Reflexivity |
| Schmidt | 2015 / JCSP | CANSOFCOM Officer Professional Development |

| McCloskey | 2016 / JCSP | SOF prep for Phase Zero Operations |
|---|---|---|
| McMichael | 2017 / JCSP | Emotional Intelligence development for the CAF |
| **Papers written specifically on an Air platform theme** | | |
| Cournoyer | 2002 / JCSP | Creation of a CANSOFCOM CC-130 Flight |
| Derry | 2008 / JCSP | Aerospace Power for SOF |
| Roy | 2009 / JCSP | Fixed-Wing Capability for SOF |
| Morehen | 2009 /JCSP | Selection process for SOF aviation in Canada |
| Morris | 2010 / JCSP | CANSOFCOM Aviation Strategic Relevance |
| Streek | 2013 / JCSP | Air Power Support to Special Operations |
| West | 2015 / JCSP | Future of CANSOFCOM Aviation |
| Fountain | 2016 / JCSP | Special Air Warfare Force Employment |
| Snow | 2017 / JCSP | RCAF Fixed-Wing Support to Special Operations |

Table 1- Previous research papers written by CANSOFCOM and other CAF members, sourced from https://www.cfc.forces.gc.ca/303/171/171-eng.html

The first theme that stands out in the existing CFC research is CANSOFCOM's relationships with its external stakeholder network is sub-optimal. This is a strategic theme weighing out the balance of power, command, interaction and ultimately cooperation between the various stakeholders involved in Canada's defence and security architecture.[28] CANSOFCOM's mandate covers operations in any part of the world, at the Canadian government's behest, on a moment's notice and in so doing it needs information and support from various other organizations. Similarly it may need to

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[28] Canada's National Security Architecture is considered to include the federal departments that all work in some degree on Canada's safety and security and include Public Safety which oversees CSIS, the RCMP, CSC, PBC and CBSA; the Directorate of Fisheries and Oceans which includes the Canadian Coast Guard; as well as Defence which includes the CAF, CSE and DND; and lastly GAC which carries out Canada's foreign affairs, trade and development mandate abroad.

provide support to many of these other organizations in their own synergistic mandates. Relationships are hard (to establish and maintain) because of the complexities of human nature and like plants, they require persistent care and attention to grow and blossom. As such, the quality of relationships in CANSOFCOM's external stakeholder network resides as a responsibility and by-product of the quality of interpersonal skills of the people within CANSOFCOM. The complex challenges that need be addressed by the government of Canada's national security architecture cannot be solved by a single department, and so the varied options of bringing the human stakeholders together via either a Joint Interagency Multinational Partnership (JIMP), Whole of Government (WoG) or Systems Approach have all been explored. The common denominator is that a better method is required to engage and work with external stakeholders, unearth the challenges, test solutions and bring them to action through interagency cooperation for the future of the defence and security of our country.

The second theme from CFC research focuses around internal reflections on the quality of the people within the organization. From the over-arching recommendations for a culture of reflexivity, and the adoption of investment in more emotional intelligence, it is evident that the inner-workings of the minds of the people within an organization are critical assets. Further detailing this theme is a concentration on Officer professional development, which highlights that earlier exposure to broader challenges and broader external networks means that CANSOFCOM Officers gain more strategic experiences earlier in their careers than their CAF peers. The advanced expectations put on these junior leaders within CANSOFCOM demands earlier and more robust investment in exposure and learning opportunities. Although the aforementioned research

focuses on the Officers within CANSOFCOM, the quality and intellect of the non-commissioned members (NCMs) within CANSOFCOM is equally as valuable, and similarly screened to be of higher potential than of similarly ranked CAF members. From helicopter maintenance teams to CBRN teams, to small DA detachments, to the core of Special Operations Task Forces (SOTFs), the NCMs of CANSOFCOM will benefit as much or more as Officers from consistent investment in their learning agility, education, professional development and training.

The third theme that arose from previous research was an abundance of focus on providing various dedicated air assets to CANSOFCOM. The assets range from tactical tools to strategic airlift, and are force enablers for any component that wants independence and global movement. The topic is worth noting due to the sheer quantity of research being done on the theme, and many subjects are even being addressed in future capital investments for CANSOFCOM through *SSE*. However, further amplifications of the challenges around not having dedicate air assets will not be addressed in the remainder of this paper as they are outside the scope of the MaRS internship.

Observations from CANSOFCOM Leadership Interviews

*"Culture eats everything for breakfast."*

- *MGen Mike Rouleau*

A series of face-to-face interviews were conducted to gain first-hand awareness of the opinions and impressions on the internal environment of CANSOFCOM. Once again, several common themes emerged at the macro level that are not unique to growing organizations, but are worthy of discussion for such a unique enterprise.

The most often cited challenge from the leadership of CANSOFCOM was pointed with the single word: culture. Culture is an element of people and their beliefs and analysing all its components and sources can quickly turn into a complex problem in an open system. Edgar Schein's iceberg model offers a simplified picture of the elements that contribute to organizational culture ordered from the tip of what can be seen, down to the base of what is more ingrained and implied as depicted in Fig. 2.



Fig. 2 - Source: https://orgcultureblog.files.wordpress.com/2016/12/iceberg-11ukh3k.jpg
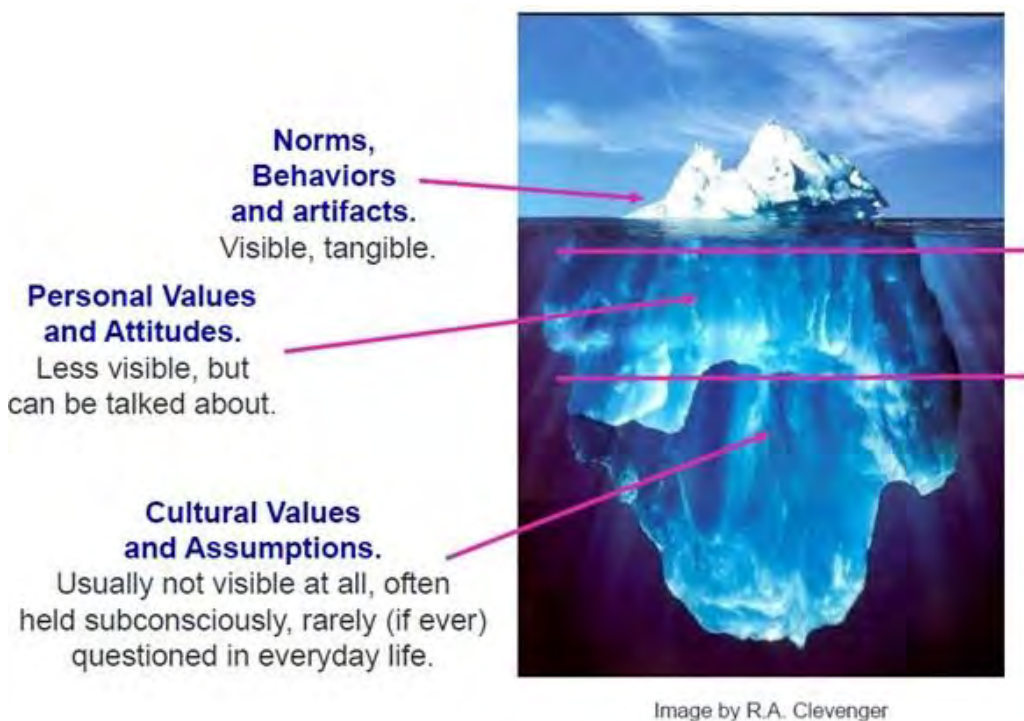
CANSOFCOM, due to the incremental growth of its composition and structure of five units under one single headquarters, sees cultural challenges in the form of respecting the individual and unit identities of its members, while at the same time wanting to espouse a one-team attitude throughout the command. The difference between ages, selection processes and rites of passage for each unit, paired with the different task mandates, experiences and the self-perceptions of the inherent risks with the different roles, fosters

competitive cultures between units. This can be seen as both healthy for team spirit and unhealthy from a place of condescension. A common source for cultural tensions can be single lens perspectives and a lack of empathy for those with different experiences. Similarly the headquarters is staffed from a diverse selection of members from across the CAF, many of who have not been employed at the tactical or operational levels in SOF units. Although diversity in teams is openly seen as a good thing, internal challenges exist in building trust and common understanding between units and headquarters staff that have dissimilar backgrounds and experiences, particularly if efforts are not made for team building and experiential learning between them. Major efforts to combat the cultural challenge include the creation of a 10-day long CANSOFCOM indoctrination course, Special Operations Common Element Training (SOCET), which non-operators must attend upon joining the command (as operators get the same training embedded in their longer selection processes). SOCET provides an excellent platform to establish explicit cultural norms throughout the command, however without operators embedded alongside supporters in the learning process, another separation of identities still remains.

Another challenge with culture, particularly in a lean organization filled with forward-leaning, risk-taking, confident and competent personnel, is the concept of truth to power. It is easy to say it is welcome and wanted, but when delivered it can be misinterpreted as a form of confrontation, complaint or criticism if not practiced often or explicitly invited from leadership.

A third observation on CANSOFCOM culture as an inhibitor to innovation is the attitude of 'this is the way things are done around here', where the core capabilities or existing processes of an organization incipiently become an inflexible belief system. The

intention of the SOF-Next Strategic Capability Analysis is to assist decision makers in

both implementing new capabilities as well as divesting of others, potentially into the

conventional forces. People get comfortable when they find an effective method, process

or capability and struggle to challenge themselves to continue to seek out better ways,

like the common adage 'if it's not broke, don't fix it'. The commander of CSOR, LCol

Andrew Vivian aptly noted that the self-identity of SOF personnel can sometimes come

from a misplaced nostalgia, and a capabilities list in SOF "is a history, not a forecast."[29]

Commander of CSOTC, LCol Brian Power further emphasizes cultural risks noting the

CAF's unfortunate history in Somalia and a tendency for the commando mentality of

loyalty to a warrior identity above all else becoming a potential problem.[30] As strategic

planners put the FOE in focus, the instructors delivering indoctrination and tactical level

training for future teams and operations must also be a part of the conversation, as the

actions of both levels affect the beliefs (culture) and capabilities that are being shaped for

tomorrow's conflicts. Vivian further elaborates that the CAF as a whole puts too much

cultural emphasis on posting our 'best people' into manoeuvre units at the expense of less

physical fields like computer programming and information management. However,

watching the FOE and globalisation, major innovations will be unleashed in the technical

domains of cyber and space and the CAF needs a greater shift in culture to accept and

make changes to the investment in people to keep a competitive advantage.[31]

An extension of attachment to the past is the dichotomy of beliefs between those

who are in process-oriented positions and those who are taking on roles for future

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[29] Andrew Vivian, interview by Jodi-Jane Longley, *Comd CSOR Reflections on Innovation in CANSOFCOM*, February 14, 2018.

[30] Brian Power, interviews by Jodi-Jane Longley, *Comd CSOTC Reflections on Innovation in CANSOFCOM*, February 15, 2018.

[31] Andrew Vivian… February 14, 2018.

planning and innovation. The Force Functions of management and sustainment rely heavily on following structured financial and logistic planning processes, many of which are inherited from other CAF departments and come tied to existing software platforms and rigid fiscal timelines. The very same software platforms, timelines and processes can be traced to the barriers and limitations of implementing changes or innovations for numerous conceived initiatives within the command. The existing structures are undeniable variables in CANSOFCOM complex problems in that trying to isolate and change one creates new challenges with the others. The simplest way to deal with the challenges is to refuse to change anything and defend what already exists, and this is where culture enters[32]. Innovation and change are not easy, and as such the challenge is to convince both those who are structured, process oriented gatekeepers as well as those with boundless creative ideas and less appreciation for order, to both support a culture of openness to adopting a systemic design mindset towards complex problems and trying new things.

Procurement was another challenge theme that emerged from conversations with CANSOFCOM leadership. There are several new initiatives from the federal government to help bring innovative products and services to Defence as a first customer that are further outlined in Chapter 4. However, the top CANSOFCOM procurement challenge is not believed to be how to find new ideas, products and services. The challenge is in navigating the procurement requirements for fair and competitive processes and for months and years long bureaucratic spending authority access for large purchases. There is a reluctance to be able to accept the financial risk and mass procure something that is new and not already proven in the commercial or military marketplace. A further

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[32] John P. Kotter, *Leading Change*, (Boston: Harvard Business Review Press, 2012), 11.

challenge is in being able to find and exploit piggy-back clauses to procure something that another partner or allied force is using effectively, or inversely to procure with appropriate piggy-back clauses in contracts so other CAF departments can eventually take advantage of CANSOFCOM procurements without having to re-enter new procurement processes.

This chapter has presented the CANSOFCOM environment, structure and challenges. A key recurring theme pertains to the need for agility and innovation which are enabled through the ways in which individuals frame problems and develop solutions. The next chapter will present an organization that is focused on leading edge methods to do so.

## CHAPTER 2 – MARS SOLUTIONS LAB

The MSL was conceived in 2012 and founded in the Spring of 2013 with a $10 million endowment from the one of the founders and Chair Emeritus of MaRS, Dr. John Evans.[33] The parent company, MaRS, founded in 2005, was already considered to be a successful enterprise that specialised in seed stage investments for Canadian companies, providing the convergence of tools, customers, capital, talent and beyond. The creation of the MSL was to bring one more component to the innovation architecture of MaRS. The MSL provides an environment that convenes cross-sector expertise to address persistent and complex problems at the systems level in order to inspire the prototyping and modeling of alternative solutions through systemic design thinking, co-creation and collaborative approaches. MSL considers itself a "public and social innovation lab [that] brings together governments, foundations, corporations, non-governmental organizations,

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[33] Chris Stevenson, "Honouring Dr. John Evans: Evans family donates $10 million to MaRS Discovery District," *MaRS*, February 24, 2012, https://www.marsdd.com/media-centre/honouring-dr-john-evans-evans-family-donates-10-million-mars-discovery-district/

academia and the greater community to help unravel complex problems from the citizen's perspective."[34] Although the greater MaRS ecosystem focuses heavily on ventures that either are starting up, or ready for national or global scaling, the MSL provides the majority of its services to large, established organizations that often include the public sector. MSL's *modus operandi* assists these organizations in the identification of complex challenges and provides mechanisms for discovering innovative solutions to include leveraging new ventures and technologies. As an enterprise embedded at the forefront of modernizing Canadian institutions including the public service, NFPs, and developed and developing ventures alike, the MSL has a lot to offer public institutions that are open and willing to break old habits and explore and grow with new mindsets, processes and tools.

**MSL Projects**

MSL's core team of 9 people is actively engaged in multiple projects at a time, some of which will be described in more detail in the next section. The project durations range anywhere from a couple months long to several years depending on the type of engagement requested and the scope of the request. This is important to note for design expectation management because the paradigm of workshops and conferences and "design jams"[35] can give the impression that a challenge or problem can be solved in a day or two with the right people around the table. In the larger landscape of the MSL, multiple systemic design tools and processes are used over realistic timelines to help organizations find new perspectives and solution ideas for their complex problems.

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[34] MaRS Solutions Lab. *MaRS Solutions Lab: Our Approach*, April 2018, accessed April 30, 2018, https://www.marsdd.com/systems-change/mars-solutions-lab/

[35] A 'design jam' is often referenced as a one off event where a diverse group get together to ideate on a particular challenge to initiate creative group thinking, https://participedia.net/en/methods/idea-jam

One of the major components of MSL's approach to design thinking is their human-centered design focus realised through systemic design. Each MSL project is structured uniquely to accommodate the range in scope and variety of stakeholders, but the principles remain common to the focus on people and allocating the appropriate amount of time for each phase. As the MSL is never the problem owner in its systemic design processes, it is common for many projects to focus more on the scanning and framing, and experimentation phases whereas the clients will take on the prototyping and implementation phases on their own.

Every project is treated uniquely, as the scope and stakeholders are different in each instance. In a business sense, the lead in to taking on a project has to come with a feasibility check which realistically must tie in with financing and the limitations of other resources. The development of a work plan or business plan is one of the early steps for project leads to ensure the setup of conditions for success. But even with the intended structure of a business plan the team is constantly seeking out innovative business models. One such example used by the MSL includes that of the innovative company Strategyzer, who has done work to challenge old business models and developed more agile methods.[36]

During the course of the internship, exposure and access to all of the past, ongoing and developing projects was made available. More specifically though, the author was embedded into four project teams that were at various stages of implementation in order to garnish the widest breadth of experience from the placement and exposure to the different steps in the MSL systemic design process. Two projects

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[36] Strategyzer, *Strategizer*, 2018, accessed May 20, 2018, https://strategyzer.com/; Strategyzer is a company that offers online courses and seminars on innovative practices for business and design. Many of the MSL team members regularly update their skills and knowledge with the offerings at Strategyzer.

focused heavily on procurement by co-design, one was focused on breaking barriers for

youth employment, and the fourth was a short-term design work-shop facilitation. The

lessons learned from each follow in sequence.

<u>Innovation Procurement Partnership by Co-Design (IPPCD)</u>

Innovation Procurement has emerged as a new concept that has been developed,

trialed and implemented in Europe, and more recently in Canada.[37] Its Canadian

application has been concentrated specifically within the Health Services domain in

Ontario. Procurement timelines are too slow in health services when the calculated risks

of waiting through a standard multi-year procurement process is measured against

potential losses to human lives or increased suffering. A higher risk tolerance to try new

things that have not been commercially proven yet has allowed Health Services to jump

into the lead in finding faster procurement options that allow new or soon-to-market

products and testing within the confines of existing policy. At the same time, the process

is making policy makers take a closer look at any unrealistic barriers that have been

created against innovation, developing technologies, and Canadian entrepreneurs writ

large. The IPPCD project is presently running its second iteration after finding success in

its initial trial. Initiated by the Ontario Ministry for of Government and Consumer

Services (MGCS) and in collaboration with MaRS, health service providers were asked

to share their key challenges and then vendors were invited to propose developing

commitments to finding solutions through a design process. Health service providers

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[37] Public Procurement of Innovation, "Guidance for Public Authorities on Public Procurement of Innovation," *European Commission*, January, 2015, http://s3platform.jrc.ec.europa.eu/documents/20182/84453/PPI-Platform_Guide_new-final_download.pdf/afd52c30-1da0-4e92-b443-4bc3074005a6

were matched with suitable vendors to provide access to their environments and co-

develop procurable, scalable and sharable solutions.[38]

Municipal Innovation Exchange (MIX)

*"I've always said the six worst words in government are 'we've always done it this way'."*

*-Jeff Lehman, Mayor, City of Barrie*

The MIX is an initiative driven by municipal governments' desires to innovate

and proactively enhance citizen services through the co-creation process specifically

aimed at public procurement. Several differences exist from the standard model of

identifying public service requirements. One difference is that the service-need

identification process proactively includes local citizens, business owners, and NFPs

along with the municipal staff through multiple stakeholder engagements in the initial

phase. A second key difference is the focus on innovating the procurement process of

potential new products or services that will be provided by or through the municipality.

An overhaul to public procurement processes is a complex endeavour since it digs into

the municipality's strategic plan, business model, policies and financial processes. The

municipalities, in a grant-style framework, have earmarked initial funding in order to

inspire vendors to come forward with their ideas and to prototype services and products

to meet community needs with lower initial financial risks. Early stakeholder

engagements allow for the identification and prioritization of municipal service

challenges and needs from multiple perspectives. Once challenges are identified, the co-

creation/design process for potential solutions will ideally bring forward competitive

service and product solutions from vendors for development. Solution options will be

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[38] Shelley White, "Made to Order: Hospitals co-design solutions with entrepreneurs," *The Star*, April 20, 2017, https://www.thestar.com/news/innovation/2017/04/20/made-to-order-hospitals-co-design-solutions-with-entrepreneurs.html

matched with challenges, and development funding will be granted to prototype and trial the product or service, as well as lay the groundwork for sustainable procurement when the offering is mature. The entire process falls outside a standard government Request For Proposal (RFP) process (see Appendix A) which typically is based on the consumer, in this case the municipality, coming up with their requirements in isolation so as not to tip off the competitive market. At the same time, the prospective business is expected to make proposals with a commercially proven, ready for market product or service. The concept of co-creating in an innovation exchange of ideas between multiple stakeholders presents more open discussion on requirements and a greater long-term value proposition of getting the solution right in the sense that it meets the approval and needs of many. The product or service also has a chance to be developed iteratively with financial backing, minimizing the risk to small businesses as they establish more useful outputs with live market feedback.

The author was embedded in the early phases of MIX, and therefore was able to participate in the discovery and ideation phases. These phases more specifically included the work plan development over its three-year projection involving the three Ontario municipalities (Guelph, Barrie and London), multiple site visits to the municipalities and stakeholder mapping, interviews and engagements. Additionally, the author was able to participate in the design for the later ideation phase workshops and discussions to bring the teams together.

Another stakeholder in the MIX is the Brookfield Institute for Innovation and Entrepreneurship.[39] They were brought in specifically to assist with government policy

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[39] Brookfield Institute for Innovation + Entrepreneurship, *Brookfield Institute for Innovation and Entrepreneurship,* 2018, accessed April 5, 2018, http://brookfieldinstitute.ca/.

research in order to facilitate navigation of existing policies in each municipality, as well as at the provincial and federal levels. Furthermore, Brookfield takes a longer look at potential policy amendment proposals to help organizations and government unlock outdated bureaucratic policies that do not serve today's purpose.

Opportunities For All Youth

The Opportunities for All Youth (O4AY) initiative is a project focused on getting Not Employed, Educating or Training (NEET) youth (aged 18-35) into the workforce. In partnership with several large employers in the Greater Toronto Area (GTA) and across Canada, O4AY is aimed at discovering and removing the barriers that are contributing to an extremely large demographic of youth that are not able to access entry level jobs, training, or education. The unique quality of the project as it pertains to the MSL, is the breadth and depth of stakeholder engagement and cooperation that is being employed as a tool to map out the key influencers in the employment ecosystem. The team participated in regular observations at job fairs and engagements with existing municipal, provincial and NFP organizations that are focused on employment initiatives and programs. Similarly they collated research and market scans being done by the same groups on the NEET youth themselves to understand their perspectives and needs, and most importantly the barriers as to why they are not in education, training or getting jobs. Many employers were able identify their own barriers to hiring policies and processes that were contributing to the problem. They have since sought ways to cooperate amongst what would normally be considered competitive stakeholders in the hiring market to establish better approaches to opening doors for hiring. The most interesting collaboration in the project is the concept of laddering, where multiple employers were able to identify the

basic skills for progressive employment within their organizations and work together to see where an entry level job in one company might help develop skills and experience for a mid-level job in another. This cooperative skills mapping horizontally and vertically across employers allowed a much larger ecosystem of career progression options to be conceived for employees that may be disenfranchised with the idea of working for one company for the rest of their lives.

MSL Design workshops

One short-term project was the two-month long development of a two-day design workshop to assist a national level NFP come together to ideate on its major barriers and challenges with a diverse swath of stakeholders. Although not the ideal model for systemic design as the timeframe was very short, the acceptance for the project came within the acknowledgement that the sponsoring organization was bearing the burden of the up-front discovery phase of stakeholder engagement/selection, and also intended to take on the final phases of prototyping and implementation themselves. The requirement for MSL was to facilitate the ideation phase through a two-day workshop with an embedded inner loop of a design process. The first day was focused on identifying all the stakeholders' potential challenges, sources for challenges, barriers to progress, etc. using a variety of teamwork divergence and convergence tools. The second day allowed participants to select a most preferred/agreed upon challenge from the day before and then brainstorm and ideate on a divergent list of solution options using creative design tools involving analogies, external inspirations, first principles as well as the diverse experience of participants. The result was the convergence of 15 different challenge frames matched with new solution options. Each solution option was presented to all

participants at the closing, and support and volunteers were solicited to be involved in potential initiatives for implementation going forward, promising action.

**MaRS Internal Tools**

For a team of only 9 people, it is extremely impressive to see the number of tools MSL uses to keep their multiple project agendas, schedules and internal and external processes on track. A quick table summary of their digital tools is provided in Appendix B, including a few that are soon to be implemented as announced at an organization wide town hall.

In addition to the digital tools being used, it was also enlightening to see some differing approaches to time management, namely, with such a small team and so many ongoing projects, how to not get bogged down in meetings. The MSL has a battle rhythm set such that every other Monday the team meets (or dials in from their mobile phone) for a 'Sprint' meeting to provide updates on projects, raise items that need broader collaboration or affect the team, and get feedback from their peers on any issues they've discovered. Mid-way through the internship the team decided that the Sprints were getting too long, and so a format for digital chat based updates was created to reduce meeting inputs. Each Friday, every team member shares an entry on the digital platform, Slack, that lists in bullet form: What they have completed that week, what they are working on next, shout-outs to co-workers that have done something great, anything they need help on and any upcoming travel. It is an extremely efficient way of passing information that saves them a lot of time in other battle rhythm meetings. The idea was adopted from the CEO of MaRS and how he manages his weekly executive team updates, demonstrating a cultural desire to maintain a leadership tool that works. The effort has

reduced the bi-weekly sprint meetings to no longer than 30 minutes and keeps the team synchronized. As a bonus, it provides a written record of team accomplishments and shout-outs for personnel development and evaluations.

Tuesdays and Thursdays from 1150-1200 the team physically stands-up in the office space and each person has an opportunity to ask for help on something they are working on. Updates to projects, and long term-challenges are not welcome, and if those issues emerge they are referred for another meeting. Examples of what is discussed include requests for reviews of work, requests for labour to set-up/attend/brainstorm an event, requests to cover-off or hand-off workloads that have increased, or raising a need for a dedicated secondary duty. One such meeting led to the creation of a list of 15 secondary duties for members of the team to sign up for, and the list will be reviewed and updated quarterly or as needed. These ten minute check-ins contribute well to the overall rhythm of chat-based updates and bi-weekly sprints. The combination of sprints, stand-ups, weekly Slack updates and the occasional social outing for team building keeps the team well synchronized and informed without taking excessive time for coordination.

**CHAPTER 3 – A CONTEMPORARY MENTAL MODEL: SYSTEMIC DESIGN**

A review of their histories shows that systems theory, National Defence, design thinking, and the quest for greater intellectual agility are inextricably linked. Systems thinking evolved from engineering problems that presented themselves in the aerospace and defence procurement industries in the 1950s.[40] Beginning with the need to build complex mechanical systems that interact with their environment, the agility and creative thinking for research, development and procurement models were critical during WWII and following into the Cold War, fueling the global arms race. Design thinking as a

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[40] Peter Checkland, *Systems Thinking, Systems Practice*, (Great Britain: Wiley, 2005), 141.

practice can be traced and applied throughout history, however the concentration of research on the method only began in the 1960s, arguably with a man named Herbert Simon who wrote about design as a process, with the result being systems or artifacts that are created.[41] As of 2018 the models have evolved as their relevancies have expanded to more varied uses including for business models and societal challenges. The full circle of bringing systems thinking and design thinking back into modern defence challenges from the business and societal realms in their most mature form is overdue. The merger of design and systems thinking to exploit the best of both models has culminated in what Dr. Alex Ryan and many of his colleagues are coining systemic design.

Systemic design is therefore a very recent evolution for problem solving from a combination of systems thinking and design theory and thinking. In the words of Dr. Ryan,

> Systemics (a broad family of systems practices and systems thinking approaches) is an interdisciplinary field for seeing the world in terms of connections and interactions. Design (a wide range of design practices and design thinking approaches) is an interdisciplinary tradition of situated learning through action. Together, they open up a field of possibility for making sense of and making progress in [complex] situations.[42]

To better understand systemic design, it requires a deeper appreciation for both systems thinking and design. The following two sections will elaborate on both and follow with a summary of systemic design to explain the merits of a combination approach for today's complex world.

**What is Systems Thinking?**

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[41] Stefanie Di Russo, "A Brief History of Design Thinking: The Theory [P1]", *I think I design* (blog), January 18, 2012, https://ithinkidesign.wordpress.com/2012/01/18/a-brief-history-of-design-thinking-the-theory-p1/.

[42] Alex Ryan, "What is Systemic Design?" *Medium* (blog), February 3, 2016, https://medium.com/the-overlap/what-is-systemic-design-f1cb07d3d837

Many accounts of the history suggest that systems thinking (from General

Systems Theory) originated with Ludwig von Bertalanffy, an Austrian-born biologist,

who believed that you must look at a problem or situation from a broad and whole point

of view rather than trying to reduce it down to isolated parts to simplify it.[43] His ideas

continued to say that open systems (vice closed systems) continually interact with their

environment and rather than erode or descend into chaos, will tend towards order. The

distinction between an open and closed system is important, as the connection to what we

can call 'complex problems' or what Horst Rittel coined 'wicked problems' come from

open systems with many unknown or unpredictable variables.[44] Systems thinking is thus

a method to open ones' perspective and consider the multiple systems and interactions at

play that have influence over outcomes in complex situations.

Peter Checkland, author of *Systems Thinking, Systems Practice*, (originally

published in 1981) is renowned for his contributions to systems theory, namely for his

efforts to bridge systems thinking away from technical engineering problems and instead

apply them to everyday situations like the "messy problems of 'management'".[45] He

expanded the field dramatically by focusing on human interactions in business and

management situations where stakeholders may have competing interests. An example

that Checkland gives in *Systems Thinking, Systems Practice* is a policy written in the

Treaty of Rome that states the Common Agriculture Policy (CAP) has three objectives of

equal importance: increasing productivity, protecting industry jobs and delivering the

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[43] Jorge Taborga, "The Evolution of Systems Thinking," *Saybrook University*, June 22, 2011, https://www.saybrook.edu/blog/2011/06/22/evolution-systems-thinking/

[44] Stefanie Di Russo… https://ithinkidesign.wordpress.com/2012/01/18/a-brief-history-of-design-thinking-the-theory-p1/

[45] Peter Checkland, *Systems Thinking, Systems Practice*, (New York: John Wiley & Sons Ltd., 2005), A3.

best customer service possible.[46] The competing objectives and teams working on them contributed to the CAP encountering many unresolved issues each time a single objective was prioritized and pursued, as its success would come at the expense of the others. This acknowledgement can thus allow an organization to step back and look at the objectives from a broader point of view, appreciating the multiple variables that affect the outcomes for each objective differently. As Checkland's research into human-centric systems thinking matured, the term 'soft systems methodology' (SSM) was defined. The SSM is a systems approach to problem solving outside the technical realm of engineering problems. SSM considers the people involved in the systems and their differing perspectives and opinions due to their dissimilar mental models. Shane Parrish of Farnam Street Media has provided a useful blog summary of 113 different mental models he has come across to date for all the different ways human brains can process information.[47] The consideration of how many different mental models can exist in the world further amplifies the potential for different points of view and thus the importance of applying SSM to solve a problem. In his autobiography, Checkland comments on the outcome of exposing people to the SSM as an approach to problem solving as follows: "Intellectual progress emerges from the shifts of mental furniture which deliberate reflection before, during, and after researching can produce. Such shifts are not uncommon, but are rarely described".[48] His observation highlights the potential in using a systems approach, and the impact on the intellectual (i.e. learning) agility of the people involved. Systems thinking enables those involved, whether conscious or not, to step back and consider

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[46] *Ibid*, A6.

[47] Shane Parrish, "Mental Models: The Best Way to Make Intelligent Decisions (113 Models Explained)," *Farnam Street* (blog), n.d., accessed May 15, 2018, https://www.fs.blog/mental-models/.

[48] Peter Checkland, "Systems Movement - Autobiographical Retrospectives," *International Journal of General Systems*, 40, no.5, (2011), 488.

other perspectives, mental models and the bigger picture, and ultimately can expand their minds to irreversible new dimensions. Some useful examples of systems thinking approaches can be seen in analyses models like the widely known business model, PESTLE (political, economic, social, technical, legal, environmental) that force a researcher to focus on a situation from six different themes. Nelson and Stolterman expanded on a similar model based on the works of Harold Linstone that drives analysis through seven expanded perspectives coined TOPPEES for technical, organizational, personal, political, economic, ethical and social.[49] The combined effect of having one individual consider many perspectives, and having many individuals using a diversity of mental models can be highly prolific and is beneficial to lower the risk that new ideas get overlooked. Systems thinking is a method to step-back and open the mind to see and appreciate the larger forces and various interactions at play in a given situation, and to avoid reductionist, over-simplification of a problem risking blindness to what is really important.

**What is Design?**

> *"If I had an hour to solve a problem I'd spend 55 minutes thinking about the problem and 5 minutes thinking about solutions."*
> - Albert Einstein

When first introduced to design thinking, it is a natural impulse to think of actual designers like clothing designers, or perhaps Einstein and Da Vinci as great inventors or creators. The reality is that most people already have a definition for the word design in their vocabularies. If you ask a child to design you something, they will inherently know what you are asking of them. However, the concepts of design theory and design thinking are more all-encompassing in their principles and action-oriented processes. Design is an

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[49] Harold G. Nelson and Erik Stolterman, *the design way*, (The MIT Press: Cambridge, 2014), 67-68.

approach that anyone can learn and benefit from, but few people have been exposed to through standard education and experiences. The following section offers an introductory understanding of design. It will cover both the academic view as well as some tangible examples in order to help draw connections between CANSOFCOM challenges and design-based MaRS solutions discussed in the remainder of the paper.

The most fascinating aspect of design in this context is that practitioners do not view design as a practice of science nor a practice of the arts; instead it is considered a third culture or approach to the world that stands out on its own. "Design is inclusive of things found in science such as reason, and in the arts such as creativity. But just as science is inclusive of creativity it does not follow that science is the same as art or that art is subsumed under science."[50] Design balances creativity and the imagination of what could be, with processes and prototyping that allow ideas to be put into action. Design, in context, is the human capacity to create things that meet human needs. That creation can be in the form of an object, but as the concept broadens, it is important to consider all forms of creation to include ideas, processes, services, etc. that have not existed before. To claim that there is one way to employ design thinking would be inaccurate. This is where there is room for varied judgements as to what design thinking is, and more importantly how it is done. There are many ways to execute a design approach, but a few well-known examples will be provided to demonstrate some of the heuristics being used today.

One popular design method comes from the international design firm, IDEO, which has a very successful history in teaching and implementing design theory. The

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[50] *Ibid…*12.

basic 5-step design thinking process used by IDEO is Discovery, Interpretation, Ideation,
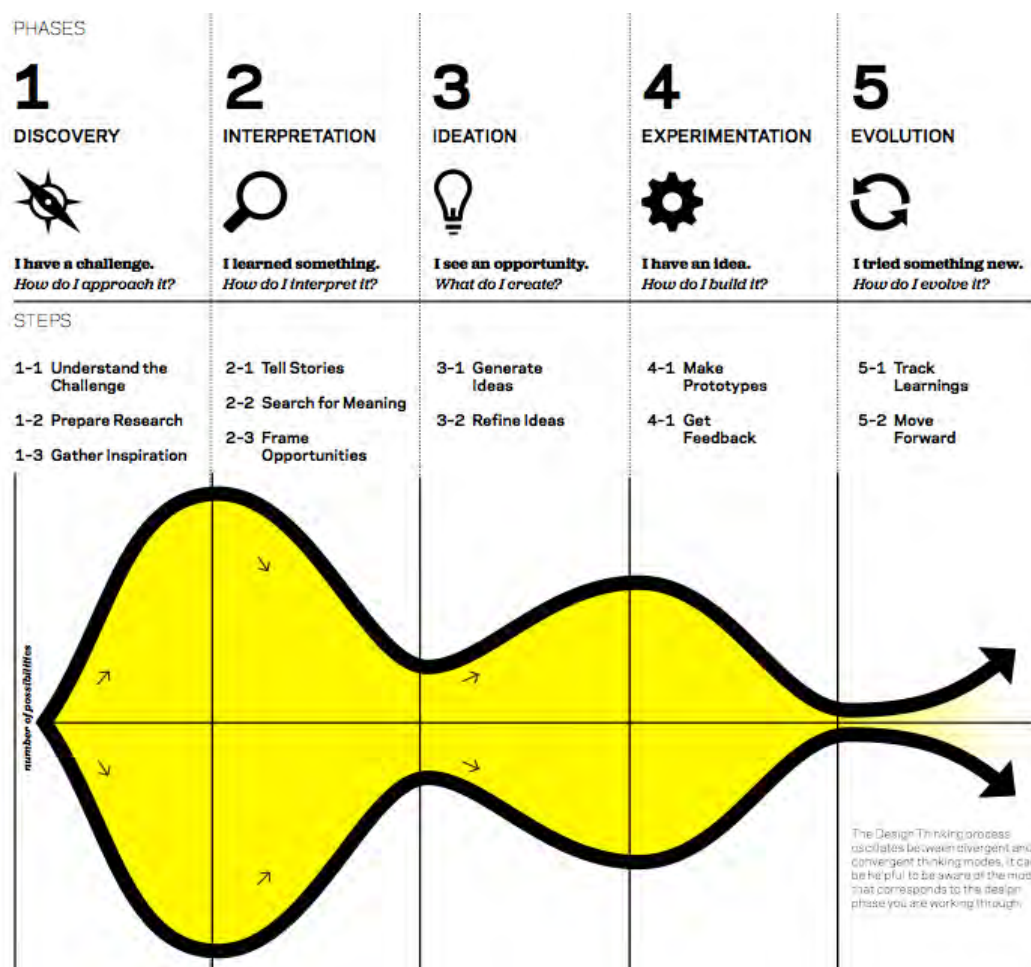
Experimentation and Evolution (see Fig. 3).



Fig. 3 - IDEO Design Thinking Process as shared in Medium Blog
https://medium.com/@mariamolfino/apply-design-thinking-to-your-new-years-resolutions-edb560c6e23

The IDEO approach involves a series of divergent and convergent thought and action

phases that progress design participants through the process. What is not depicted with

the simple diagram above is how long each step or phase should take, and who should be

involved. It can be seen in this five-step process the balance of how design is neither an

art, nor a science, but includes some of the qualities of both disciplines. The discovery

and ideation phases that require divergent thought are more anchored in creative thinking

and an openness to big or new ideas, whereas the interpretation and experimentation phases require structure for framing and prototyping and taking action.

An example of an IDEO implemented design process comes from work that was done with the American Refugee Committee (ARC) to address child health, water and agriculture challenges in the Democratic Republic of the Congo (DRC).[51] IDEO and ARC worked together through discovery and interpretation (which IDEO together calls inspiration) to immerse into communities and interview and observe the stakeholders involved in all parts of child health, water management, and agricultural development. Their ideation phase included identifying themes that emerged from inspiration, and identifying stakeholders from the community to engage with in workshops to further map out challenges and solution options. Finally, in the experimentation phase, ARC actually developed a sustainable business model with IDEO and the community to be implemented called Asili. It launched with strong initial success and is being evolved further for scaling and to continuously address new concerns or challenges as they arise in the community. Although it may seem like a model that many not-for-profit companies have followed, the root of the success in IDEO's design process is credited to the quantity and quality of human engagement from the outset. The stakeholder involvement in the inspiration and ideation phases maximised the diversity of ideas and the buy-in for implementation ensuring the outcome was supported and sustainable.

Harold Nelson and Erik Stolterman, in their book *the design way*, espouse that design is a service relationship; in other words it is principled around the connection between the designer and the intended recipient of the design in order to meet the

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[51] IDEO.org, "The Field Guide to Human-Centered Design," *The Design Kit brought to you by IDEO.org,* 2015, accessed June 11, 2018, 129-131, http://www.designkit.org/resources/1

recipient's needs and desires.[52] *The design way* has been written to make a case for organizations to adopt a design culture and describes many angles and approaches to design, which are summarized in the authors' collective design process that acts as a guide from conception to innovation (see Fig. 4):
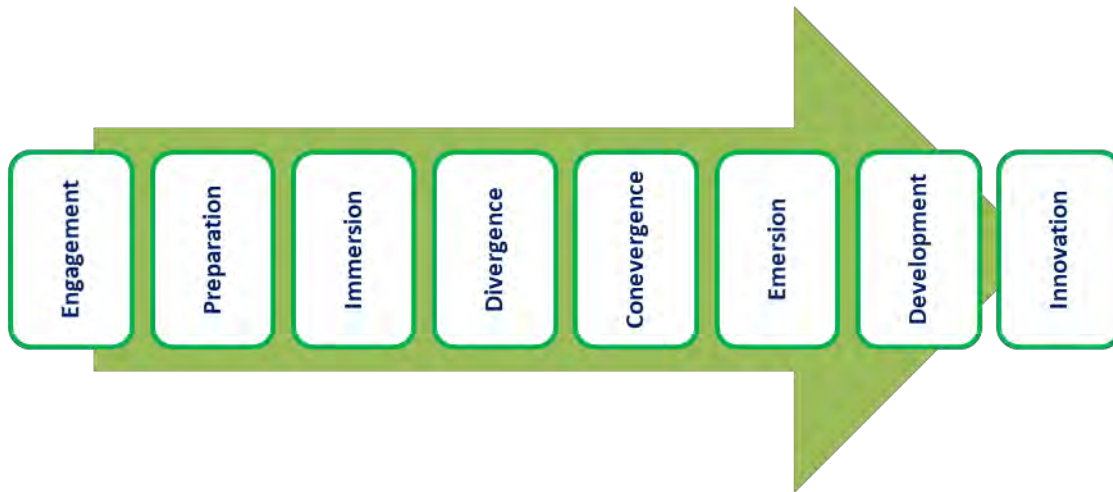


Fig. 4 - Design Stages and Phases from *The Design Way*, p. 255

Nelson and Stolterman put a lot more time into emphasizing the social aspect of the process with the initial step being engagement. The importance of involving multiple stakeholders early on to gather diverse perspectives and many facts in order to try and fully understand a challenge (or at least the environment in which a challenge is resolved) cannot be understated.

A third design example comes as an Interaction Design Foundation interpretation of a Stanford Design School model which further emphasizes the common pattern for design thinking practices (see Fig. 5).[53] The Stanford Design School is one of the longest established academic institutions specialised in the study and teachings of design, and their portfolio of design practice applications is vast.

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[52] *Ibid,* 41.

[53] Rikke Dam & Teo Siang, "5 Stages of Design Thinking," *Interaction Design Foundation*, May 2018, https://www.interaction-design.org/literature/article/5-stages-in-the-design-thinking-process.
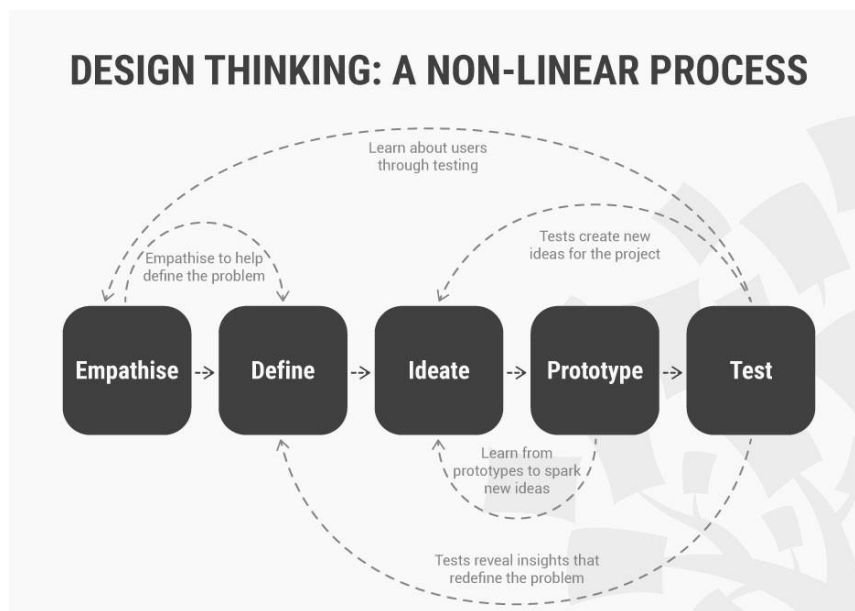
Fig. 5 – Stanford design school (d.school) process as presented by the Interaction Design Foundation 5 Stage Design Thinking process, https://www.interaction-design.org/literature/article/5-stages-in-the-design-thinking-process

The choice for their first step to emphasize empathy (a major component of emotional intelligence) is important to note, as that phase overlaps with the 'explore' and 'discovery' phase approaches of other design templates. Furthermore, the Stanford Design school model also shows feedback loops in each step highlighting the iterative non-linear nature of the process.

Another renowned form of design comes from the Israeli Defense Force (IDF) and is known as Systemic Operational Design (SOD). Developed by IDF Brigadier General (ret'd) Shimon Naveh, it was conceived as an alternative to standard military planning processes with their rigid structures based on rational, linear thinking models, and time-consuming multi-step requirements.[54] The SOD process is based on systems thinking where the initial steps, often coined as 'framed discussions', entail breaking out facts and information from varied themes or perspectives starting with looking through

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[54] Matthew Lauder, "Systemic Operational Design: Freeing Operational Planning from the Shackles of Linearity", *Canadian Military Journal 9*, no.4 (2009 ), http://www.journal.forces.gc.ca/vo9/no4/08-lauder-eng.asp

the rival lens, the command lens, and the logistics lens before moving into operational

framing (see Fig. 6). SOD is worthy of noting as many militaries, including the Canadian

military, are looking into adopting SOD in their planning processes. However, further

breakdown of SOD is beyond the scope of this paper as it is not used at MaRS or being

proposed for further exploitation with CANSOFCOM at this time.
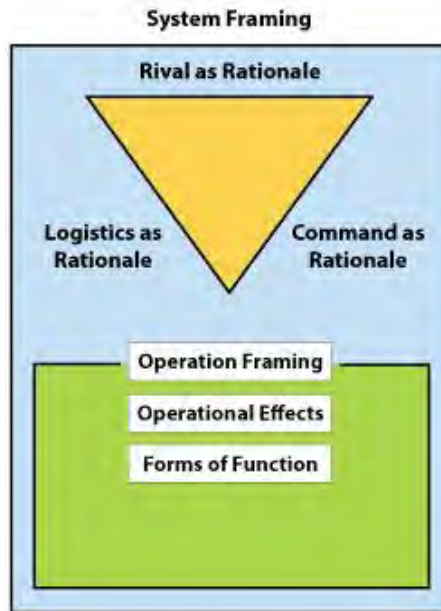


Fig. 6 - Systemic Operational Design, as depicted by DRDC Toronto. Source:
http://www.journal.forces.gc.ca/vo9/no4/08-lauder-eng.asp

In discussion with team members at the MSL, there is no one specific design

process or number of steps that are prescribed as a guide for their various projects.

Instead, the focus is on systemic design through the human-centered design principle and

the reality that most if not all projects are initiated from interested (i.e. motivated) parties,

sometimes referred to as clients. The design process is then mapped out collaboratively

(co-design) with the clients and other major stakeholders as it evolves based on time

available, expectations, familiarity with design, etc. One example of the MSL co-design

process (see Fig. 6) was developed for the initial Innovation Procurement Partnership by

Co-Design (IPPCD) project launched in 2016. It is similar to the IDEO process, where the discovery for MaRS mirrors the IDEO interpretation phase, and the prototyping phase for MaRS compares to the experimentation phase for IDEO. The overall process looks similar, and it is up to each project team to decide how long is spent on each phase, who is involved in it, what ideal outcomes might look like, and dependent on the main project client and realistic funding support, if and when the cycle will start again.

## The co-design process

[------------------------12 weeks------------------------]------------------------20 weeks----------------------

| DISCOVERY 〉 | IDEATION 〉 | PROTOTYPING 〉 | EVALUATION |
|---|---|---|---|
| Team charter | Generate alternatives | Live prototype | Launch project |
| Map current state | Evaluate alternatives | Iterate | Execute pilot |
| Immerse + Validate | Prototype concepts | Plan final evaluation | Collect data |
| Reframe | Generate business models | | Evaluate results |
| | Define outcomes | | |

Fig. 5 - MaRS Co-Design Process used for IPPCD Cohort #1 in 2016
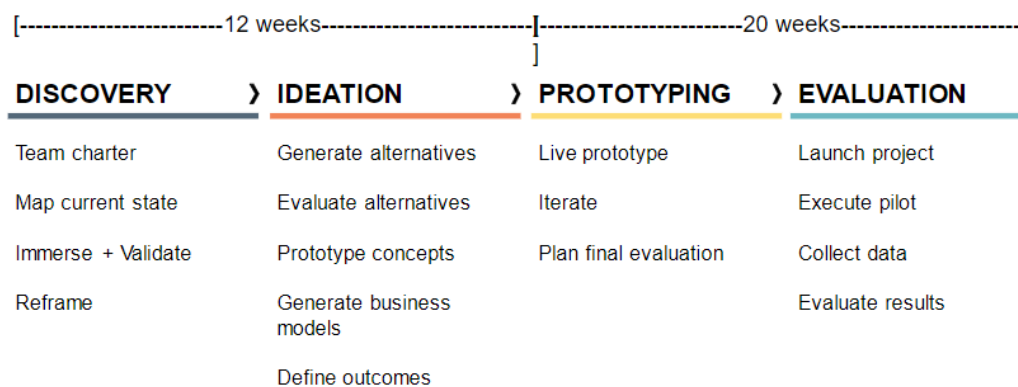
    A more detailed interpretation of the MSL design process comes from Vanessa Toye, a Senior Associate with the MSL. It includes more sub-phases and is drawn from a close comparison to Nelson and Stolterman's *the design way* model as shown in Fig. 7.[55]

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[55] Vanessa Toye, interviewed by Jodi-Jane Longley, *MaRS Design Processes and Tools*, June 7, 2018.

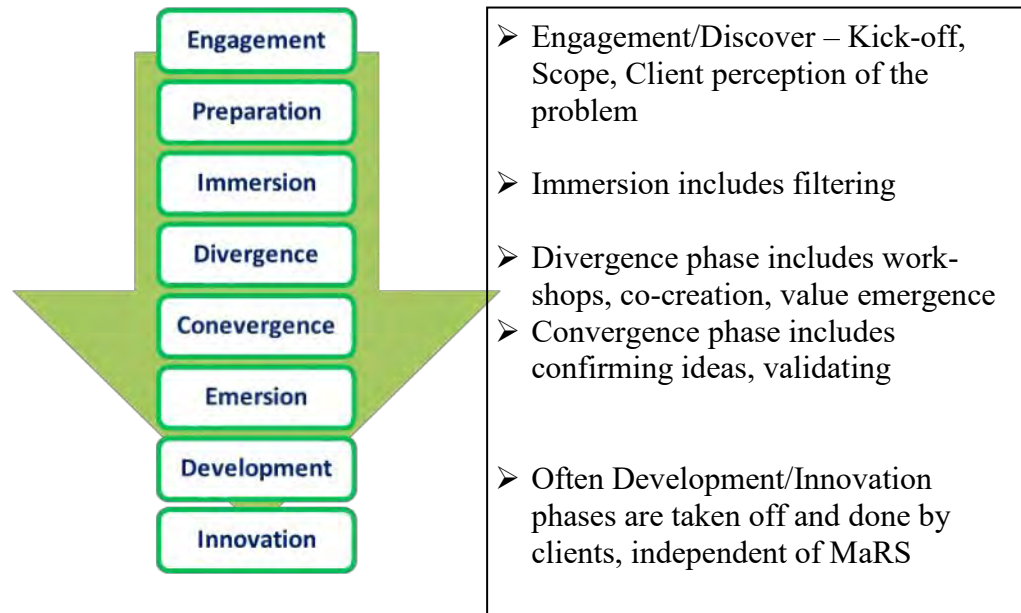| Engagement | ➤ Engagement/Discover – Kick-off, Scope, Client perception of the problem |
| Preparation | |
| Immersion | ➤ Immersion includes filtering |
| Divergence | ➤ Divergence phase includes work-shops, co-creation, value emergence |
| Conevergence | ➤ Convergence phase includes confirming ideas, validating |
| Emersion | |
| Development | ➤ Often Development/Innovation phases are taken off and done by clients, independent of MaRS |
| Innovation | |

Fig. 7 - MaRS design process elaboration based on *the design way* process as described by Vanessa Toye

Toye describes the process of design in its most direct practitioner sense, which is where the theory needs to start marrying up with action. The resonating point from the MSL staff is that the particular process model that a project lead wants to use is not that important. The success in the design process is how the various steps are put into action. What length of time is required to gain a useful amount of insights and observations in discovery before deciding to bring stakeholders together to consciously map out challenges? What tools will be most effective based on the experience of those involved? Who are the stakeholders? How many stakeholders are there? How much time can be coordinated for conversations between them? These questions have different answers for each project and, as exposure and experience with design grows, those facilitating the process become increasingly attuned to finding answers as they plot their work plans and expectations for clients.

What all the models presented above have in common is the need to get to know the people involved via their perspectives, their motivations, their perceived limitations

and their experiences. This approach helps unlock the actual human needs and ideas in the system, providing a map or collection of the intertwined challenges. Once the human side is better understood, the paths to potential human satisfaction in a solution can be pursued. When paralleled with the CANSOFCOM pursuit of intellectual agility, and more specifically, the personal agility aspect that encompasses empathy, the relevance for this paper becomes even more evident in terms of the value of learning the design process.

**Systems Thinking + Design = Systemic Design**

Both systems thinking and design have evolved over time to help address wicked problems and the complex, human-centered environments in which they exist. The combination of the two fields mutually strengthens the benefits of their individual merits. Dr. Alex Ryan gives credit to Dr. Harold Nelson for the conceptualization of systemic design as a necessary blend of design processes and approaches into systems thinking.[56] Nelson explains "every design is either an element of a system or a system itself and is part of ensuing causal entanglements. No design exists in a vacuum."[57] The power of using design thinking and processes within a holistic view of the different systems that interact around a problem allows those involved to multiply ideas and perspectives even further to find innovative solutions. Dr. Ryan is currently in the process of writing a book on systemic design, and co-founded the Systemic Design Research Network (SDRN) alongside Dr. Nelson and four other design proponents in 2012.[58] The four-phase process

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[56] Alex Ryan, "What is Systemic Design?"…
http://www.rotman.utoronto.ca/FacultyAndResearch/Faculty/ExecutivesInResidence/Ryan
[57] Harold Nelson and Erik Stolterman… 57.
[58] Alex Ryan, "What is… https://medium.com/the-overlap/what-is-systemic-design-f1cb07d3d837; Systemic Design Research Network, "Systemic Design Research Network," *Systemic Design*, 2018, accessed June 11, 2018, https://systemic-design.net/

that Dr. Ryan has outlined for systemic design as it was applied on a community health initiative will look very familiar to the design processes outlined above (see Fig. 8).[59]
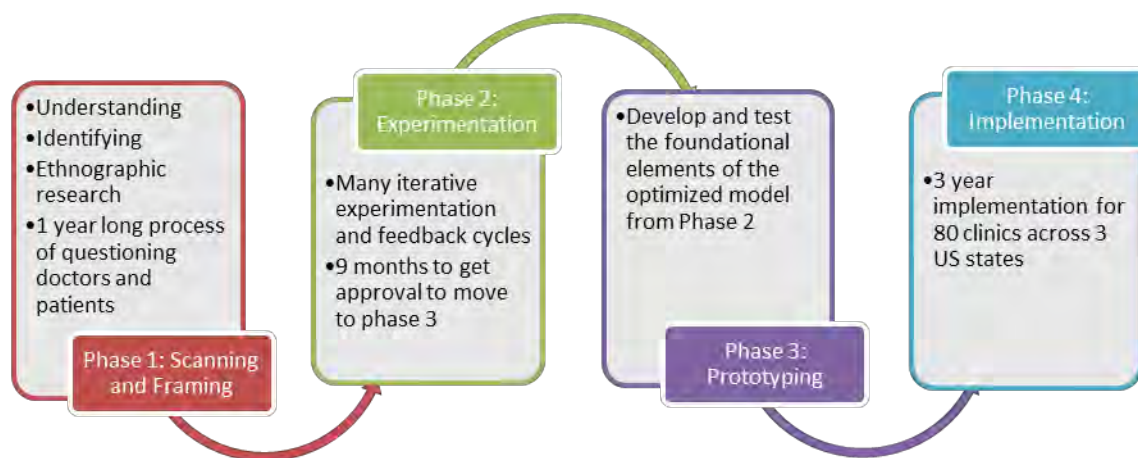


Fig. 8 - Four phases of systemic design as implemented in community health care initiative overseen by Dr. Alex Ryan in 2010

The progression to a concept of systemic design born from systems thinking and design was a natural synergy identified by researchers and practitioners over the last 10 years. The practitioners of systems thinking and designers have traditionally been two different groups of people. The increasing need for systems thinkers to address social problems, and designers seeking wider views of complex problems has brought the two demographics together to develop systemic design as its own practice.[60] The common goal of solving wicked problems using diverse, open-minded, agile and holistic intellectual processes focused on the social or human elements in our complex world makes systemic design an ideal tool to bring together the two approaches together and add the result to innovators' toolboxes.

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[59] Alex Ryan, "Transforming Community Health through Systemic Design", *Medium* (blog), March 21, 2016, https://medium.com/the-overlap/transforming-community-health-through-systemic-design-5b22b9d5bf.

[60] Alex Ryan & Mark Leung, "Systemic Design: Two Canadian Case Studies," *Design Methods & Systems Thinking*, (Oslo: Form Akademisk, 2013), 1, http://www.formakademisk.org/.

What also remains important in Systemic Design is the need to shift away from sequential processes, and to shifting the types of questions being asked that the considerations that enable the generation of unique ideas. The CAF is known for its Operational Planning Process (OPP), which is very much a linear process followed by a flow-chart and check-list. It can be easy of the OPP enthusiasts to just see the diagrams above as different ways of packaging the phases of OPP rather than recognizing these are about seeing issues thru multiple lenses and asking different types of questions. In order to adopt a more systemic-design based method, CAF members need to avoid getting distracted by the flow-chart examples as comparisons to the OPP and open their minds further to the principles involved. The first key being the stakeholder engagement as opposed to locking a planning cell in a room with no phones and asking them to come up with a mission brief based on static inputs. Building on this shift, the next chapter explores how CANSOFCOM, as a CAF enterprise, can leverage some of the systemic design principles into its repertoire.

## CHAPTER 4 – VALUE PROPOSITION FOR CANSOFCOM

CANSOFCOM must pursue a limitless number of avenues to continue to be the lead-turn in the realm of innovation. There are already a handful of innovation initiatives ongoing in the Department of Defence that are available to CANSOFCOM. Raising the awareness of these programs both inside and outside the CAF can lead to exponential returns as start-ups and industry alike learn how to navigate new processes. The existing initiatives are described below, followed by the internship experience, lessons learned and recommendations.

**Innovation Solutions Canada**

The federal budget released in 2017 included an Innovation and Skills plan that included $100 million towards an Innovation Solutions Canada (ISC) program intended to help incentivise Canadian companies to consider the government as a first customer for procurement of products and services.[61] Under the ISC umbrella exist a further four challenge based programs, two of which are specifically aimed at innovations for defence. Innovation for Defence Excellence and Security (IDEaS) is an initiative spawned from *SSE*.[62] The program is very similar to many of the co-design projects that MSL has been and continues to be involved with as discussed in Chapter 3. IDEaS comes with a $1.6 billion investment over the next 20 years to be injected into the Canadian economy by matching Defence challenges with proposals from Canadian companies to bring their products and services forward.[63] The previously noted BCIP is another initiative that promises up to $1,000,000 in investment to help develop pre-commercial products towards military challenges that are proposed from DND and the CAF.[64] Both IDEaS and BCIP come with their own pre-requisites and 'technical readiness levels' for innovators to meet, and each program is considered a challenge based endeavour such that applicants must compete for funding. The government based focus on what is considered 'research and development' accompanied with earmarked investment money is a tangible step towards driving change and innovation in bureaucratic and traditional government departments. The opportunities are now forming for both DND as well as Canadian innovators to seize, therefore time and initiative is of the essence for

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[61] Government of Canada, "Innovative Solutions Canada," April 23, 2018, accessed May 16, 2018, https://www.ic.gc.ca/eic/site/101.nsf/eng/home.

[62] Government of Canada, "Understanding IDEaS", April 09, 2018, https://www.canada.ca/en/department-national-defence/programs/defence-ideas/understanding-ideas.html

[63] *Ibid.*

[64] *Ibid*.

organizations within DND, the CAF, and in particular CANSOFCOM, to take advantage of new capital, products and processes to maintain a competitive advantage.

**Innovation Methodologies for Defence Challenges**

The Innovation Methodologies for Defence Challenges (IMDC): Towards Practical Strategies conference was held in Ottawa, ON in January of 2018. It brought together scholars, military practitioners and innovation experts from multiple NATO countries and partners to bring together ideas and practices for the betterment of defence innovation. Organized by Dr. Phillipe Beaulieu-Brassard and Dr. Phillipe Dufort for the fourth consecutive year, the attendance and scope of the conference has only expanded over time. Many design experts were brought in, including cited author Harold Nelson, to provide insights and practical examples of successful design implementations in defence. CANSOFCOM was both a presenter and attendant at the conference, along with multiple other CAF departments. One of the key goals of the conference was to establish a more permanent network of defence innovators through development of a common vision and platform to continue to broaden access to the diversity of experiences and ideas in the design for defence ecosystem. The world's defence challenges are not unique to individual nations, and therefore adapting a broader allied approach to problem solving can only help unlock positive relationships and initiatives to keep the world more safe and secure.

**CANSOFCOM Internship at MaRS**

> Historically, too much emphasis has been placed on new technologies and on different doctrines in defence. Yet, for many Western nations, their military personnel have been their most enduring advantage over potential adversaries. However, our primary adversaries now have the advantage of speed, because they are not constrained by international norms or democratic processes. To maintain this personnel advantage, Canadian defence leaders need to expand their way of

thinking in a rapidly evolving security environment about whom they recruit, the manner in which they are trained as recruits, and how their skills sets need to evolve throughout their careers – all of which have cost implications.[65]

The insights gained during 2 semesters of investigation into CANSOFCOM challenges paired with 8 weeks of placement at MSL are numerous and enabled the inspired pairing of CANSOFCOM challenges to potential practical ways and means to address them. As a broad theme across the exposure to the MSL, systemic design practices are the guiding principles to address myriad challenges that are presented to the MSL team. A recent blog post on the internship experience outlines some of the insights gained, one of which includes the scale of application of systemic design from the individual level to the inter-agency applications with inter-agency being the ultimate goal for exposure and adoption of the practice.[66] The application of systemic design is aimed at expanding the minds of those exposed to it. In this sense, the application to CANSOFCOM at the macro level requires the organization to find ways to expose individuals, teams, the organization, and eventually inter-agency partners to the practice of enhancing the intellectual agility of everyone involved in carrying forward CANSOFCOM's innovations into the FOE. A closer analysis of each category of CANSOFCOM challenges paired with potential systemic design related solutions follows below.

**Lessons and Recommendations from MSL Projects**

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[65] Ross Fetterley, "The Importance of People in Defence," *Canadian Global Affairs Institute,* May 2018, 1, https://d3n8a8pro7vhmx.cloudfront.net/cdfai/pages/3737/attachments/original/1526337824/The_Importance_of_People_in_Defence.pdf?1526337824

[66] Jodi-Jane Longley, "Reflection on my internship with the MaRS Solutions Lab," *MaRS* (blog), June 04, 2018, https://www.marsdd.com/systems-change/mars-solutions-lab/news/internship-reflection/.

The exposure to MSL projects outlined in Chapter 2 offered many insights and best practices that can be leveraged for CANSOFCOM. The specific lessons from each project and process are individually broken down in the following sections.

Lessons from Innovation Procurement Partnership by Co-Design

The major observation from IPPCD as it pertains to CANSOFCOM was the innovation procurement initiatives creating more comfort in the risk space of allowing companies to propose solution options to challenges. A critical parallel was discovered when discussing the risk of not trying new things contrasted against the potential expense of losing more lives when current solutions were not enough. Often in the military, time-costs for new equipment and processes are measured against the risk of potential loss of life or limb if a solution is not found fast enough. This argument is sometimes effective for procurement in times of war, like getting tanks or new protective gear in Afghanistan, however it is less likely to be accepted in times of peace and training despite the long-term horizon argument being the same (i.e. saving lives tomorrow is as important as saving lives today). Irrespective of the fact that CANSOFCOM has the highest operational tempo in the CAF, the justification to expedite procurement of CANSOFCOM capabilities due to the risk of losing lives through obsolescence should be extant.

Another insight gathered from the IPPCD was the overall process itself spanned over 6 months with timelines and milestones for both the consumer (health services) and vendors (businesses) to check-in and provide updates. Additionally they received coaching and steering on ideas, the design process, as well as the requisite more structured business planning required upon completion of the projects to ensure

sustainable procurements were feasible in the long run. CANSOFCOM should invest in learning the systemic design process, or be prepared to solicit systemic design assistance with projects. In the same vein, Dr. Alex Ryan suggested specifically that CANSOFCOM should set a minimum six-month timeline to immerse in and address a given challenge with a project team.[67]

As multiple teams are competing in the IPPCD challenge, one surprising element was that one of the competing teams that had not been selected for the initial grants decided to remain in the competition at their own cost. They believed so strongly in their product and cause that they remained committed for the opportunity to compete for the final round of funding and the opportunity to learn from the experience for their own development. For companies that are not mature enough for market, there is a tangible risk for them to stay temporarily afloat with grant funding and still ultimately fail. However, both consumers and vendors can still learn in the process and a greater tolerance for failure must come along with the drive to innovate.

Lessons from the Municipal Innovation Exchange

The key take-away from the MIX project in the interests of CANSOFCOM is that new innovative approaches are being adopted across the public service including Innovation Procurement within the existing policy frameworks that bring a more agile and interactive approach to R&D and procurement. One of the main steps in the MSL Innovation Procurement approach is the up-front engagements with as many people involved in the process as possible to learn about, as well as sensitise, the enthusiasm to a new approach. The so what to early engagement is that more ideas from multiple perspectives are brought in early, obstacles can be identified early, and most of all a

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[67] Alex Ryan, interview… May 29, 2018.

broader buy-in for support to change and new ideas is established. Another transferrable lesson is in the tools and techniques used for stakeholder engagements, including weekly maximum 30-minute phone or video teleconference (VTC) meetings as well as a handful of half-day face-to-face site visits. They are certainly not new concepts, but were simple yet powerful steps in keeping engaged and informed on developments with external stakeholders while at the same time building rapports. A final takeaway from the MIX is the work that Brookfield does in terms of policy research. Perhaps their approach would be valuable for anyone looking to deep-dive and unlock the complex federal procurement policies that have hindered the government in its vocal desire to be more agile and provide more opportunities to our growing Canadian economy.

One surprise discovery was the strong requirement to assist or facilitate in the communicating of the benefits of the program to the main stakeholder organizations that had already decided to get involved yet still had unconvinced internal resistance in leadership as well as support functions within their organization. A balance to the surprise was the number of people who were familiar (but still novice) with design and extremely enthusiastic about trying new innovative approaches, but they saw existing policy and 'the way things are' external to their organization as major barriers to development or using design. CANSOFCOM leadership should include the intent and ways and means of innovation being adopted in the command in its regularly messaging to ensure the buy-in is understood and widespread.

Lessons from Opportunities For All Youth

The critical parallel for CANSOFCOM and the broader CAF lies in the career ladder concept. The active acknowledgement that someone might not remain in a single

trade for their entire career is a millennial employment reality. The attention to stakeholder buy-in and partnerships is having a major impact in O4AY, as well as the collaboration between what could be seen as competitors in a recruiting environment. The ladder approach to skill sets is particularly interesting as national defence puts little pro-active planning into career and trade ladders outside of single occupation progressions in spite of the growing reality that today's workforce wants to change career paths two to three times in a lifetime. Millennials and the generation behind them do not want to do the same thing forever, so conceiving ladders and lateral moves through the CAF occupational framework up front can help unlock employment agility and be framed as win-win as opposed to win-lose or worse. There is already a voluntary occupational transfer (VOT) process in the CAF, but it is cumbersome and only run once per year and rigidly locked into the fiscal calendar. The complex ecosystem of occupation position numbers and training capacity bottlenecks is overdue for review. Flaws in the system can be observed from outside the CAF, which hinders potential recruits from wanting to join such a rigid system that already comes with a relatively long-term commitment. It would behove the CAF, with or without a nudge from CANSOFCOM, to invest in accelerating or increasing the frequency of the VOT process. The other alternative here is to shift to a competency approach, so instead of reclassifying to a new occupation and starting from the bottom up; allow members to branch into new areas of employment based on competencies. Similarly, the CANSOFCOM and the wider CAF should take a systemic design driven look at applying a career laddering approach to both enticing recruits, as well as providing serving members with more career flexibility in their journeys.

Lessons from Design Workshops

The application for CANSOFCOM and the broader CAF from design workshops is the value in a results-themed organizational event as opposed to conferences filled with hours of PowerPoint presentations and lecturers. Dr. Ryan believes that most classroom style 'training' in design has no impact, and the best way to learn design and foster action is through experiential application.[68] It is then through a combination of exposure to design, experiential applications, and theoretical review that one can mature through the levels of mastery of design through a spiral learning model. As noted above, the CAF already hosts an annual conference, the IMDC, which brings together both external and internal stakeholders to the CAF to discuss and learn about defence. A more concentrated event for CANSOFCOM that is themed toward a more specific challenge has greater relevance and promise of actionable results. The design of such an event could be facilitated internally leveraging the handful of CAF members with a basis of experience in systemic design or one of its precursors, or similarly an external agency such as MaRS could assist. The larger consideration is noted above though that a design process takes time, and should not be rushed into a short-term event; rather it should be planned out over a longer time frame with milestones that can include workshops as micro-tools to help evolve the ideation and experimentation phases.

**Recommendations for Specific CANSOFCOM Challenges**

Overall, the broad recommendation for CANSOFCOM is to maintain a strategic vision and plans to invest in the intellectual agility of the members of CANSOFCOM. This theme will emerge repeatedly in the following more specific recommendations for the challenges that surfaced over the course of the research period.

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[68] Alex Ryan, interview by Jodi-Jane Longley, *Thoughts on Systemic Design Applications*, May 29, 2018.

More Effective External Stakeholder Engagement

The security and defence of Canada is not just a CANSOFCOM responsibility. In the context of supported and supporting Commanders, CANSOFCOM needs to work both with and for multiple external stakeholders in the wider CAF, as well as across the federal and provincial governments depending on the task. CANSOFCOM members down to the rank of Corporal are trusted as experts in their fields, and may find themselves engaging with external stakeholders. The training, education and working environments of CANSOFCOM should include early investment in both networking and interpersonal skills for every member, both NCMs and Officers, with the goal of increasing interactions with other CAF stakeholders and other governmental departments (OGDs). Additionally, the establishment or increase of placements of interns, liaisons or secondment exchanges into OGDs will increase CANSOFCOM's external footprint.

The initiative to establish storefronts in innovation hubs is gaining traction. It is recommended that this effort continues in all major innovation hubs across Canada as they have been broken down by their specialties either on a permanent or visiting basis. A storefront at MaRS, either virtual or physical, would embed CANSOFCOM interests in one of the largest innovation hubs of the world increasing the speed of exposure to developing products and services that give other ventures competitive edges.

Investing in the Primary SOF Factor: People

The importance of the investment in people is overlapped throughout the recommendations of this paper; notwithstanding, a plan of action for such an investment is worthy of an independent recommendation. A lot of time already goes into screening prospective CANSOFCOM members prior to their employment, but the significance of

the merits of intellectual agility including the constant drive to improve it must be made

explicit. The recruitment and selection process must uphold high standards for all five

tenants of Learning Agility and its potential for further development just to get in the

door. Once employed, every individual in the command should have a personal

development plan that speaks directly to how they are continuously working at

intellectual self-improvement, and each supervisor should be proponent to the plan, as

well as setting a strong example themselves. LCol Vivian highlighted the power of

having a diverse team that includes both people with experience in methodical structured

processes, as well as creative, boundless minds in an environment that allows them to

work together towards common goals.[69] He also notes the power of cross-domain

creativity, giving the example of highly successful individuals that possess the intrinsic

drive to expose themselves to domains and topics that are unfamiliar to them. The CAF

personnel assessment system (CFPAS) rewards members with 20 broad skillsets, but

does not align career progression planning in individual occupations with the same value.

The Army, Navy and Air Force manage their trades by succession planning members to

stay in narrow trajectories within their domains in order to reach strategic ranks.

Members of CANSOFCOM work in a completely joint environment, and their previous

domain experience does bring a component of diversity into the command; however once

a members is employed with CANSOFCOM, the importance of exposing them to new,

broader perspectives, multiple domains and learning models increases dramatically. The

entire chain of command must support and be involved in opportunities to enhance the

learning agility of its members through spiral learning: the best approach is to cycle back

and forth: structured learning (courses, workshops, education upgrades); application on

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[69] Andrew Vivian… February 14, 2018.

the job (experience in design project teams, etc.) then back to structured learning to deepen and broaden understanding. One cannot assume that a one-shot course is going to produce and sustain results for a long time. An explicit culture of 'wanting to know what you do not know,' and constantly growing as an individual and organization is paramount to the success of CANSOFCOM people.

Taming the Wicked Beast of Culture

Systemic design is not directly aimed at changing organizational culture, but with its focus on social change and human-centered design processes, it still emphasizes the effort required to invest in the perspectives of the people involved in any challenge. The main action that can be taken against negative trends in culture is identifying and drawing explicit attention to the underlying beliefs and values that are perceived to be causing frictions. General Vance is setting the example with his constant emphasis on Operation Honour, the CAF's effort to rid the organization of "harmful and inappropriate sexual behaviour."[70] Some of the CANSOFCOM leadership has already acknowledged culture as a challenge to balance, which is the first step. To continue from this awareness, a range of internal stakeholders within CANSOFCOM should be involved in a culture-themed systemic design process that allows the identification of the many symptoms and variables associated with sub-optimal culture.[71]

Where trust between units and the HQ emerge as a challenge, a look at the first principles of building trust is required. The high standards set out for selection of members for CANSOFCOM must be adhered to, and between SOCET and operator

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[70] Government of Canada, "Operationa Honour," *National Defence and the Canadian Armed Forces*, April 23, 2018, accessed June 18, 2018, http://www.forces.gc.ca/en/caf-community-support-services/sexual-misconduct.page.
[71] For additional discussion of approaches to culture change, see Schamuhn, K. (2018) Leading Organizational Change: A Quest For Knowledge and Understanding.

indoctrination and training models, the courage to fail or turn away members that do not meet the intellectual agility standards must be upheld. Similarly, the content of SOCET should include site visits to all the units and experiential exchanges with members from each unit in order to build better understanding and empathy that cannot be gained from PowerPoint presentations.

Truth to power is explicitly spoken about regularly from CANSOFCOM leadership, however examples of it being employed are less common and some members of CANSOFCOM do not believe it is being practiced effectively or completely. One related initiative being trialed at the unit level includes a 360-degree feedback survey that allows anonymous feedback up and down the chain of command, which is an encouraging first step. It is recommended that a more transparent and regular approach to welcoming constructive feedback be employed at every level, including supervisors asking subordinates several levels beneath them, or in other departments, for opinions or feedback on ideas or initiatives. A culture of truth to power comes hand-in-hand with a culture of humility: those who are prepared to admit mistakes, failures, or acknowledge that someone in a lower position has a better idea. When truth to power is effective in getting a message through, it should be briefed openly as a command success to set the example for others to speak up, increasing the awareness of the intellectual agility at every level of the team.

A final cultural recommendation is to address the reticence of some CANSOFCOM members of the team to support innovation, due to their core tasks being dependent on established structures and processes that are mired in history, policy and the greater CAF bureaucracy. As it is yet another belief aspect, explicit efforts to gain trust

and re-shape beliefs are key, as opposed to forcing innovation onto team members who are not prepared or supportive of change. The shaping and framing phase of systemic design includes those discovery elements for stakeholders' motivations and perspectives. It is imperative that any attempt to change the attitudes and beliefs of members first begins with the greater team making efforts to empathise with their position on any particular challenge, and allowing them the opportunity to hear from multiple stakeholders invested in the issue and to help ideate on solution options. Exposure to the systemic design process can help build the experience necessary to open minds to alternative ways, increasing the intellectual agility of the team.

Defence Procurement: Decades Old Challenge Seeking New Solutions

Health Services in Ontario are trialing Innovation Procurement as this paper is being written. The Brookfield Institute is concurrently conducting deep dive research into municipal, provincial and federal government procurement policies to identify barriers to agile procurement, as well as opportunities to amend outdated policies. Defence Procurement is not a CANSOFCOM specific challenge; however CANSOFCOM is matched against the world's most dangerous and agile adversaries ahead of any other organization within Defence and therefore the consequences of broken defence procurement are more acute. CANSOFCOM should be the lead-turn for the CAF's defence procurement renewal by embedding staff in organizations and projects that are successfully innovating in government procurement, such as the MSL and the Brookfield Institute. Similarly, CANSOFCOM should continue to leverage alternative sources of funding for procurement initiatives, like co-design that include federal and provincial government grants for innovation, and venture capitalists and angel investors willing and

interested to contribute to defence industry developments. Lastly, CANSOFCOM business planners should look at finding ways to adopt more innovative business models that allow for more open capability-based spending authorities.

## CONCLUSION

CANSOFCOM is the CAF's apex organization for risk-taking, innovation, creativity and agility, but with a broad mandate and lean team, is not immune to wicked problems. MaRS is the among the world's largest innovation hubs with open doors to facilitating public service transformations amongst its many ventures. An eight-week JCSP student internship was conducted in order to explore the opportunities between CANSOFCOM complex challenges and MaRS tools, techniques and procedures to unlock innovative solutions.

Many challenges emerged from a study of CANSOFCOM that included reviewing previous research papers, interviewing CANSOFCOM leaders and staff, as well as reviewing extensive secondary research. Major themes that emerged were: maintaining the primacy of focus and regular investment in the intellectual agility of people employed in CANSOFCOM; expanding and improving external stakeholder engagement; managing culture; and, optimizing defence procurement.

An eight-week internship at the MSL was concentrated on an exposure to the systemic design process that is being employed to help clients navigate organizational challenges. The main client base for the MSL is the public sector and large private and NFP organizations that interact with government. Processes, tools and techniques for stakeholder engagement and project work plan flows based on systemic design were demonstrated on a number of ongoing initiatives. The Director of the MSL, Dr. Ryan,

provided relevant insights into applying systemic design to the realm of Defence based on his extensive experience as a former defence scientist, and advisor to American and Australian strategic defence teams for their own innovation initiatives.

Systemic design has emerged from the convergence of the communities of systems thinkers and designers and presents a holistic approach to complex challenges without over-simplifying them or neglecting secondary or tertiary variables that can have large impacts. It requires time, and moving from theory to action has a loose but guided process approach that can be learned by anyone, and improved iteratively with experience. Ultimately, with a bit of guidance, this process has shown itself as an extremely powerful, modern tool to help solve human-centered challenges. Through the systemic design lens, most complex challenges are due to the intertwined social, political and cultural interactions around frictions and failings. Systemic design is not the panacea solution to wicked problems as their very nature interferes with perfectly resolving their evolving challenges. However systemic design is a powerful approach that takes maximal stakeholders into account to bring forward the most acceptable and supported courses of action based on open minds, multiple perspectives and a willingness to break away from the way things have always been done.

A review of all the CANSOFCOM challenges alongside a listing of insights gained from an internship at MaRS has produced a varied assortment of recommendations to help the organization take steps forward into the innovation space. The list has been abridged and provided below.

CANSOFCOM should:

- Maintain CANSOFCOM sponsored internships in innovation through DP3 program offerings where available;

- Leverage CANSOFCOM's higher operational tempo and the ever-present risk of losing lives for procurement justifications;

- Realistically set six (or more) month project timelines, and trial a systemic design process for the next challenge to be addressed;

- Be willing to support the investment in ventures that might fail;

- Be the first to introduce Innovation Procurement into Defence;

- Invest short but regular time windows for engagement with external stakeholders working on related initiatives (e.g. foreign tasks, HR initiatives, medical services);

- Invest in procurement policy research with other CAF stakeholders, and consider enlisting experienced firms like the Brookfield Institute for assistance.;

- Make innovation culture something everyone knows about, understands and supports by demonstrating commitment and actions taken towards innovation initiatives;

- Invest time in developing a career ladder map both within the command personnel structure, as well as for trades and ranks from the remainder of the CAF;

- Lobby for change to the VOT process in the CAF;

- Consider hosting theme-based workshops as part of a broader design process timeline to enhance focused solution finding for challenges;

- Ensure updates to the screening, teaching and rewarding for interpersonal skills and intellectual agility throughout command;

- Establish a physical or virtual storefront at MaRS;

- Implement personal development plans that include the aspects of intellectual agility and cross-domain learning;

- Conduct a command-wide systemic design analysis on CANSOFCOM culture;

- Expand SOCET to include site visits to the internal CANSOFCOM units and the HQ to increase understanding and strengthen relationships between them;

- Explicitly solicit more truth to power to gain familiarity, comfort and wider adoption of the practice, simultaneously enhancing humility throughout the chain of command;

- Include the most skeptical process-oriented team members at the outset of innovative initiatives to broaden support and diversity of ideas;

- Ensure CANSOFCOM stakeholder involvement in any defence procurement renewal initiatives;

- Investigate new business models that allow for outcome-based investments and agile years-long spending forecasts for capability procurement;

CANSOFCOM is not an organization immune to challenges, and the MSL does not claim to have all the answers to the world's challenges using systemic design. However a new perspective on solving CANSOFCOM challenges using ideas from MaRS garnished from an eight-week student internship is one example of taking the risk to trying something that has never been done before, and comprehensively analysing outcomes. CANSOFCOM, as an innovation organization, will not stop when milestones are achieved, as an evergreen (always growing) innovation mandate will allow it to take the insights and recommendations from an internship at MaRS along with other

innovation initiatives, and carry them forward to the next new idea for competitive advantage.

**Further Exploration**

Presently the Canadian Forces College Joint Command and Staff Program does not allow internship students to seek out opportunities within the broader public sector. The broader public sector is where all of our major inter-agency and security and defence partners sit, hindered by or creating the same policies that intimately affect the day-to-day operations of the Canadian Forces. An 8-11 week placement of a JCSP student into any one of many federal public departments would vastly increase the exposure of the internship program and expand the inter-agency network desired by so many at the Staff Officer level. Additionally it would provide easier facilitation of security clearance relevance and expectations of confidentiality in work placement, as well as fostering interest for members of other departments to enroll and participate in the JCSP and National Security Program (NSP).

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Appendix A

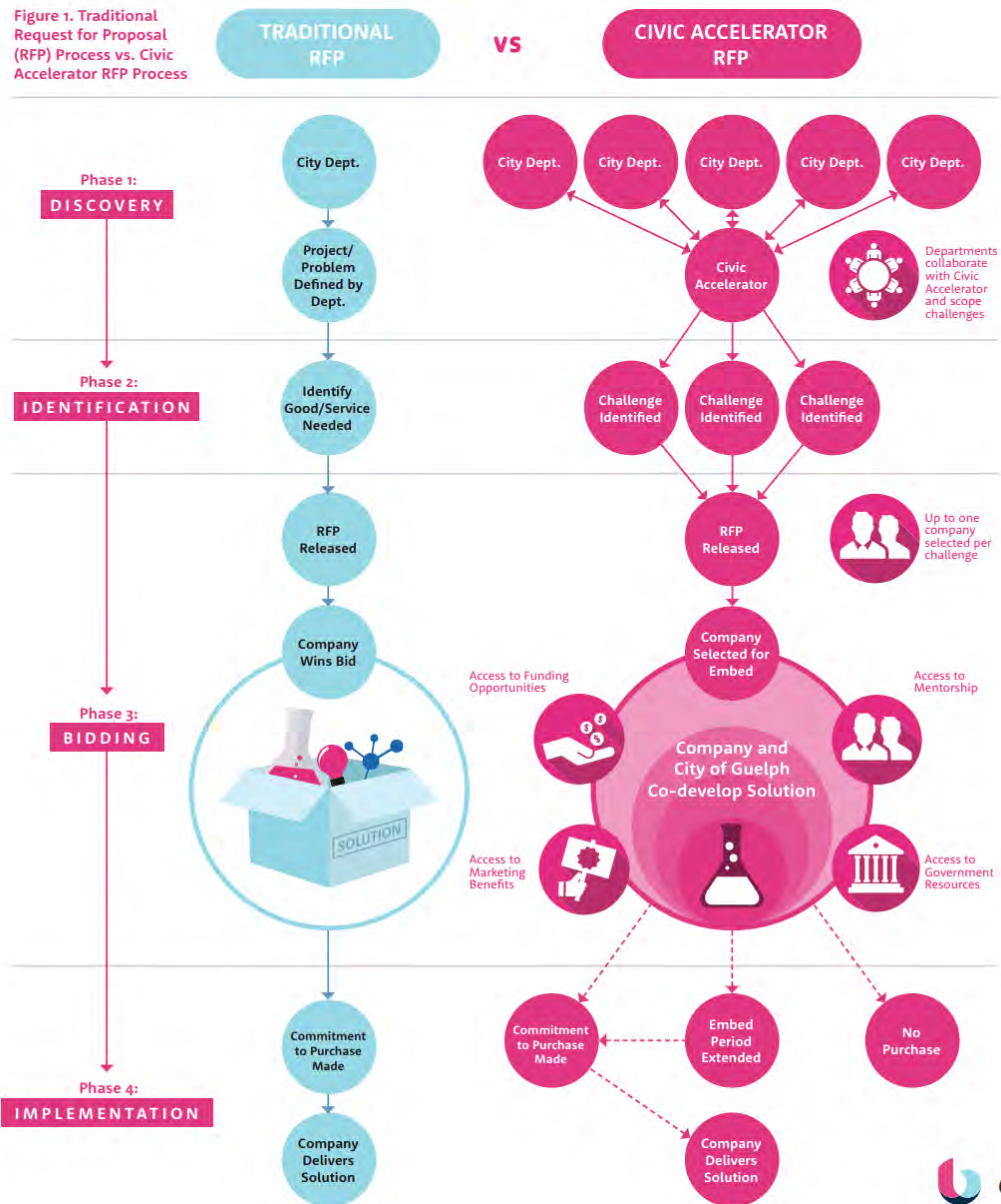Comparison of Traditional RFP vs Civic Accelerator RFP Process



Fig. 1 - https://brookfieldinstitute.ca/wp-content/uploads/2017/06/GuelphCivicAccelerator_CasesStudyReport_BrookfieldInstitute.pdf

Appendix B

MaRS Digital Tools inventory

| Tool | What it's For | How it's Used |
|---|---|---|
| Slack | Team Chat, collaboration, file sharing, link sharing, weekly updates, requests for assistance, cloud based record keeping. | Desktop and Mobile based platform. All MaRS uses Slack, and individual 'channels' are created for any directorate or team that is formed, including for individual projects. Collaborative forum that interacts with many other digital tools like Google Docs, team survey functions, etc. |
| Box | Master repository for electronic files | MaRS central file management cloud. Desktop and Mobile based platform. Individuals can have free box accounts, and corporations (MaRS) can create linked accounts with permissions management. |
| Google Docs/Sheets | Document creation, sharing and management | Individuals create files, have their own repositories from which the update Box |
| Evernote | Document Management | Individuals chose to track some files through their personal Evernote accounts, and then update into Box. |
| Webex | Web based VTC | Desktop based VTC, being phased out in favour of Fuze |
| Fuze | Web based VTC | Allows anyone with a computer or mobile phone to dial in for audio/video collaboration. Allows live presentation and document share and management. Offers a transcription service and a record function. |
| Zoom | Web based VTC | Subscription based VTC service, combines Polycom, Cisco, desktop and mobile collaboration. Slide and whiteboard sharing |
| Asana | Business Management, Task management, Work Plans, | Alternative to Microsoft products, created by co-founder of FaceBook. Free for teams of under 15 people. |
| Harvest | Time and Expense tracking | Allows team to accurately allocate time with project budgets based on hourly rates of labour. |
| Greenhouse | Recruiting Software | Brand new HR software being rolled out to assist in candidate selection, interviews, hiring decisions, etc. |
| PIVOTAL | Payroll Management system | Brand new HR implemented payroll |

| | | |
|---|---|---|
| | | management system, key highlight is modernizing T4 access |
| Culture Amp | Survey tool to gather and analyze employee feedback | Modern digital tool to collect, understand and act on employee feedback |
| Concur | Expense Claim and Reimbursement software | Global digital cloud-based finance tool to help organizations with their financial management needs. |
| StormBoard | Online collaborative whiteboard app | Allows for simultaneous whiteboard usage for team collaboration, and cloud based storage of whiteboard ideas. Connects with Google accounts, Slack |