



The IDF Innovation Strategy



International Military Innovation Conference

September 13-15, 2022

Shaping the
Future of Defense

Greetings by the Head of the IDF J8

Dear guests, commanders, and partners –

Welcome to Israel and to the first International Military Innovation Conference. The fact that you have made the effort to be here with us is not taken for granted and is genuinely appreciated. We have gone to great lengths to produce relevant content, as a basis for conversation as well as future collaborations, providing us all with an opportunity to get to know, experience and experiment at the forefront of our work in the field of innovation, while striving to create bridges for joint projects from which we could all benefit.

The Force Build-Up Directorate (J8), under my leadership constantly adapts to the changes required by the IDF. While the Planning Division, focuses on force design processes with a multi-year and broad vision, including strategy, performance research, designation, policy, and resources; the Shiloh Division concentrates on the development, promotion, and adoption of innovation with a multi-agency vision. The two divisions take a synergetic in-depth professional look at the "here and now" with the long-term vision and patience required to implement extended strategic processes; embracing and encouraging innovation while striving to implement and integrate existing projects along with the new.

Furthermore, the J5 operates based on deep concepts of connection and integration, where the multi-agency and multi-dimensional spheres constitute the core of the value we bring as an initiative-taking meta-technical headquarters. One of key elements to successful innovation - breaking down the walls that are at the foundations of classical military organizations, and to creating new models of internal cooperation, which lead to greater effectiveness. In both force design and employment.

The "IDF Innovation Strategy" serves as a compass. It is based on in-depth research, a series of comments and discussions aimed to produce a concrete road map for implementation out of a personal sense of duty carried by IDF commanders in all tiers that comprise the IDF as a whole, as well as the belief in the necessity of systematic innovation, determined to transform our DNA. Our main responsibility is to continue promoting the concepts of innovation, and no less importantly - the integration and implementation that lead to change internally.



I do believe that this conference constitutes the practical leading principle of the idea - a direct, peer-to-peer expert gathering creating grounds mutual growth. I am convinced that the shared experiences will create a foundation for collaborations, where my teams and I will be happy to get to know you personally and think about ways we could lead innovation moves together.

Best of luck to us all!

Major General Dr. Yaccov Bengo

J8 – Head of Force Build-Up Directorate

Israel Defense Forces



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"The IDF Innovation Strategy" Executive Summary

Designed as a roadmap for a methodical transformation, the IDF's Innovation Strategy lays both the theoretical and the practical foundations for achieving long-term dominance over our adversaries through implementing concepts, mechanisms and methods that would help shape current and future campaigns and arenas.

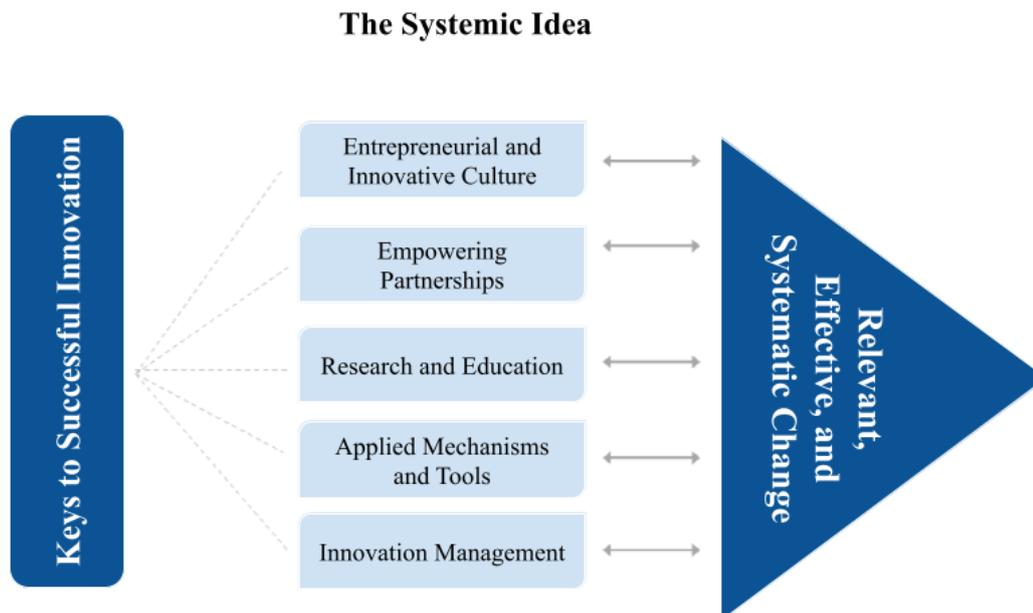
This four-part document provides its readers with a better understanding of the IDF's vision leading its structural and conceptual transformation over the next few years.

The first section serves as an introduction and a summary of the strategy. The second focuses on IDF innovation, providing the current situation awareness backdrop, strategy, and the proposed implementation. The third elaborates on the strategy's theoretical foundations and covers academic and theoretical aspects, through examples from various domains. Finally, the fourth section contains the appendices that expand on other ideas, and an extensive glossary and bibliography.

The strategy derives from an accumulation of knowledge, experience, and insight curated by the IDF's 'Shiloah' – Combat Methods & Innovation Division (CMI) which spearheads the idea of innovation as a way of life and organizational culture.

The strategy's five pillars identified as the keys to the organization's successful transformation would be measured by three organizational and operational criteria: relevance, methodical implementation (correlating with the IDF's current and future apparatus), and an effective final product.





The Systemic Idea – Explained

Entrepreneurial and Innovative Culture is the ‘version upgrade’ we aim to achieve. The challenge requires management attention, resources, and mindedness on all tiers, creating innovation traditions within the General Staff while decentralizing mechanism inside field units, and more.

Partnerships helping break down barriers and identifying ‘Blue Oceans,’ within the IDF, other defense agencies and with friendly foreign militaries in Israel and abroad, thus creating the disruption required to propel transformation.

Research, training, and Learning deepening our research in the unique domain of corporate and military innovation as a critical intellectual foundation for creating practical and theoretical infrastructure, ongoing training and learning in various settings, for further personal and professional growth.

Applied Mechanisms and Tools for Practical Innovation shared infrastructure, such as a research institute, college, innovation accelerators to empower branches and units creating an ad-hoc, customized innovation portfolio as a relevant response to the main challenges they face.

Innovation Management employing “classic” management tools to manage and lead a healthy, effective, and relevant innovation system in the IDF as a whole and tailored to specific



units while defining clear objectives, resources, performance indicators and data transparency for better-informed decision-making.

From the Systemic Idea and main building blocks, we then move on to review reorganization required to provide adequate solutions to the challenges described. The ‘Shiloah’ Combat Methods & Innovation Division (CMI) as the IDF integrator in close collaboration with MAFAT (Weapons Development and Technology Infrastructure Administration) with respect to industry and the academia, the International Cooperation Division in relation to international counterparts, and naturally, engaging with all of the service branches and units through empowerment, dialog, and a mutual learning of applicable and effective innovation.

Since innovation should be managed and connected to the main backbone of IDF’s activities, we have developed concepts for quantitative and qualitative success indicators, to create an "IDF Innovation Dashboard" tailored to the actual requirements of the unit. Management is based on setting objectives, measurement, and feedback for improvement. The approach to innovation is no different in this respect; it requires us to professional, methodical, thorough, and lateral leadership.

We end the second section by rolling out a roadmap for implementing the strategy, identifying 2022 as an important year for innovation throughout the IDF. Two years after the establishment of the CMI Division and despite the impressive achievements at the General Staff tier as well as in various units, we must work together toward a quantum leap, by expanding existing mechanisms, establishing new platforms, and ensuring the military is thoroughly prepared for the next IDF five-year plan (2023-2027). We are gearing toward service branches and joint IDF work plans, and integrative application of the various facets of transformation within the elements of force design and our readiness for future campaigns.

Looking forward, some of the questions we at ‘Shiloah’, the The Combat Methods & Innovation (CMI) have grappled with while formulating strategy remain open. We must continue to examine them at all times, with the utmost humility in the face of threats and challenges of this magnitude. These questions revolve around the ability of mega-corporations, and military organizations such as the IDF, to lead transformation processes from the ground up. The strategy itself must be agile and able to adapt to ever-changing conditions in order to stay relevant and allow us to overcome our challenges triumphantly.



IDF Vision for Innovation	Creating long-term, continuous superiority over our enemies through the establishment of more rapid, more accurate and more methodical transformation and learning mechanisms.				
The Systemic idea	Relevant, effective, and methodical transformation				
Elements of the innovation system	1. Entrepreneurial and innovative culture	2. Empowering partnerships	3. Research, training, and learning	4. Applicative tools and mechanisms	5. Management of an innovation system
Main activities (Only top 3-4)	<ul style="list-style-type: none"> • Traditions of innovation • Training and learning • (All activities in the other elements of innovation) 	<ul style="list-style-type: none"> • Throughout the IDF, and the general staff • The defense community • International colleagues • The industry and academia ecosystem 	<ul style="list-style-type: none"> • Research institute for military innovation • Defense College for Innovation • Intrapreneurship and transformation 	<ul style="list-style-type: none"> • "Challenge" incubator • Management of innovation communities • Reserve Center of Excellence • Experimentation center 	<ul style="list-style-type: none"> • Management of IDF and service branch innovation programs, collaboration with innovation sections • Running disruptive force design • IDF Innovation Dashboard
Qualitative & Quantitative Success Metrics	IDF human capital with respect to innovation and transformation, the presence of innovation traditions and how they take root	Orientation toward breaking down barriers and inputs/outputs of various collaborations	The impact of training on the sense of capability and the ability and willingness to lead transformation	The impact of mechanisms personal and organizational transformation measures, and the mechanisms' inputs and outputs	Inputs/outputs of the synergy between the portfolio of efforts, effect on decision-makers

Maj. Dr. David Alksher

Lt.C Michal Frenkel

Col. Yuval Reis

Dr. Dan Maron

Shay Victor Levy

Dor Marshal



Part I

Innovation in the IDF

Innovation is not about ideas. Innovation is always tied to the ability to perform, execute, and deploy.

The IDF must create systematic tracks (methods and mechanisms) allowing for the development of new knowledge leading to innovation, and this is done by stretching the imagination. This must be studied, and this must be done.

IDF Chief of the General Staff - LTG Aviv Kohavi, 2021



1.1. Prologue - on military change, transformation, innovation, and flexibility in the emerging reality

"No man ever steps in the same river twice. Everything changes.

Since its waters flow, it is no longer the same river and he's not the same man."

Heraclitus

Today's reality is one of constant transformation. It occurs in many dimensions, and could be attributed to the environment, technology, the enemy, and even the military organization itself. Often, transformation occurs independently (i.e., between each of the dimensions), or even non-linearly. Transformation in one domain will affect other dimensions. There are areas in which transformation will progress gradually, and others where change would be exponential. Some of the changes require the military organization to take a proactive approach, putting in motion processes designed to provide appropriate retorts. The need to respond to the changes forces the military organization to excel at both flexibility and rapid adaptation processes¹ in the battlefield, and calculated transformation processes based on a paradigmatic forecast of the enemy's transformation. Such may manifest in the revision of the organization's doctrine and concepts of operation, training, technology, and weapons systems; its wight and structure.

Research has shown that militaries that were able to successfully handle technological or doctrinal surprises in the battlefield did so by recuperating quickly. The components of that recovery can be associated with the four tiers of 'flexibility': Concepts and warfighting doctrine, force organization as well as flexible, balanced, diverse, and multi-disciplinary leveraging of technology, adopting flexible command and control methods, and integrating an efficient and effective mechanism for implementing lessons learned. The main factor supporting a military organization's aptitude to respond to change is its ability to integrate learning processes as a key element of its culture. Only a proactive learning contest in the space between the pace of transformation and that of the organization's responsiveness can allow

¹ "Adaptation: changes in strategy, force design, and/or operational plans and operations, adopted in response to operational challenges and systemic constraints". Theo Farrell, *Military Adaptation in Afghanistan*, 2003. "Simultaneous innovation in Technology, Doctrine, and Organizational Structure", Theo Farrell, *The Dynamics of British Military Transformation*, 2008.



effective changes to take place. The quality of the learning process can range from the most basic level of survivability to the ability to achieve a decisive victory.²

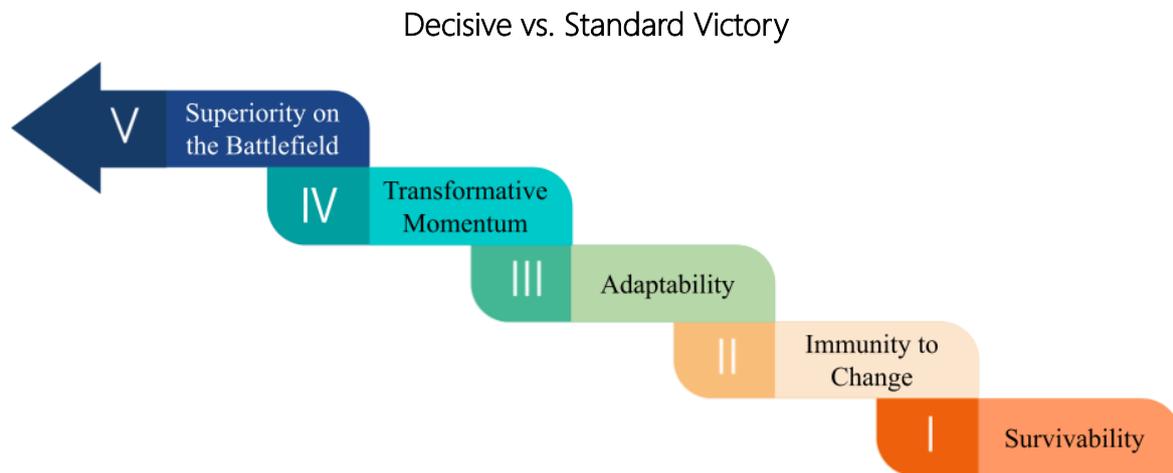


Figure 1 – The levels of impact of the learning process on military organizations

Another complexity is the dimension of victory and decisive defeat. The modern battlefield that the IDF is preparing itself for and is fighting in currently, typically asymmetric campaigns, does not align with the paradigmatic models of the zero-sum fallacy. Differences of culture and world view have given the enemy the ability to perceive the concept and picture of ordinary and decisive victory in a unique way. In other words, the picture of ordinary and decisive victory in the mind of one of the belligerent sides does not necessarily mean defeat and deterrence for the other. Military campaigns that are not consistent with zero-sum games, may end with the perception that both sides have won, or that both sides have lost. This dimension complicates the learning contest, particularly when the definition of ordinary and decisive victory must exist in both the physical and the perceptual domains.

Therefore, we may conclude that the paradigms, methods, plans, theories, and force design are fluid and mechanisms should be premeditated to keep up and enable the IDF to win in the learning contest as it engages with the enemy.

² Adamsky (2019). Israeli Culture of Innovation Between Anticipation and Adaption Bein Haktavim, Issues 20-21

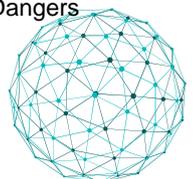


"The mission we are all tasked with is getting more complicated day by day, and in this state of affairs, innovation and originality place a decisive role. Therefore, do not suffice with what currently exists, and do not take anything for granted. Keep your eyes set on the goal, but cast doubt on the method, and cast doubt on the path, as well. Do not accept all existing norms. Propose an alternative, instead. Do not adhere to best practice. Instead, take the lead. Do not say "see and sanctify". Rather, say "see and innovate". Only a bold, ambitious approach could bring about the solutions that future challenges require".

Excerpted from a speech delivered before IDF Officers' School graduates in October 2018 by then Deputy Chief of the General Staff MG Aviv Kohavi

Studies on adaptive leadership³ show that in adaptive challenges, an organization's learning stems from the need to cope with changes that create uncertainties. Naturally, uncertainty forces the organization out of its comfort zone. It is only when the organization manages to overcome it that learning processes can happen. In such a situation, new knowledge is produced, and the organization is able to further develop.

³ Ronald A. Heifetz, Marty Linsky, "Leadership on the Line, with a New Preface Staying Alive Through the Dangers of Change," 2017.



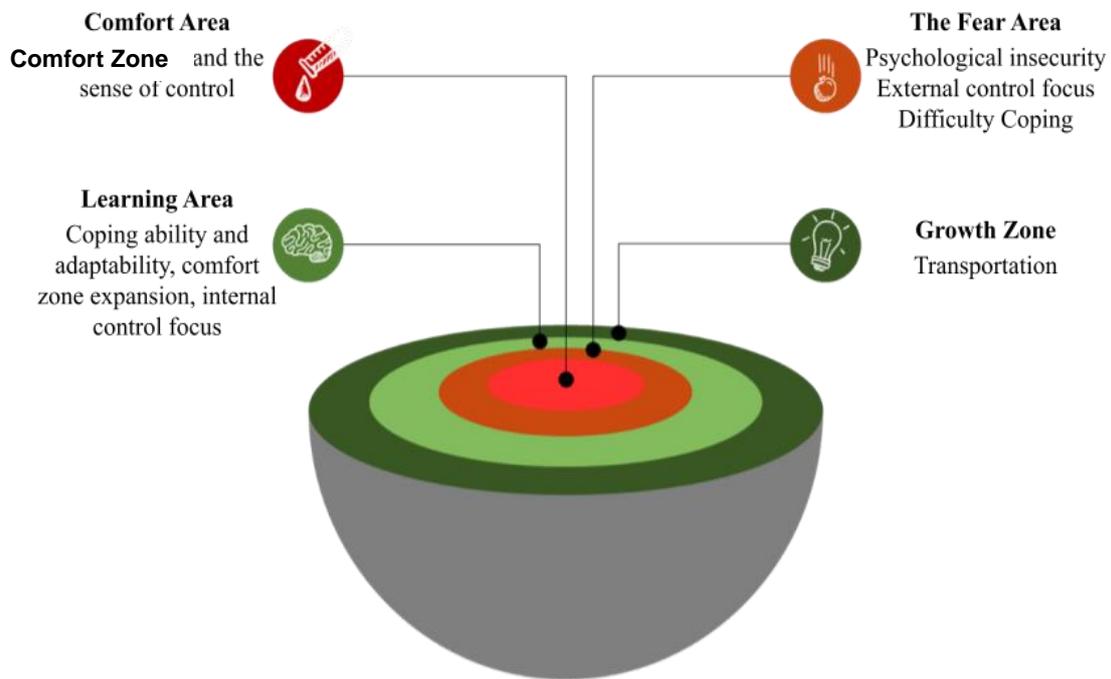


Figure 2 – The learning process in an environment of uncertainty
(Inspired by Heifetz & Linsky, 2017)

One of the approaches appearing in the literature regarding the ability to create learning processes in a state of uncertainty deals with the need to create organizational routines and a cultural legitimization of learning. This, in turn, would increase the organization's comfort zones. By adopting such an approach, the organization is able to skip over the stage of fear instantly and create continuity in its learning and adaptation processes, further producing to a culture of learning as there is psychological safety in the organization.

Psychological safety is a belief that one will not be punished or humiliated for speaking up with ideas, questions, concerns, or mistakes.

– Amy Edmondson⁴

⁴ Amy C. Edmondson, "Failing to Learn and Learning to Fail (Intelligently): How Great Organizations Put Failure to Work to Innovate and Improve," 2004.



In recent years, the IDF has been driving a momentum of innovation⁵ and entrepreneurship⁶ meant to enable the space to handle changes and improve its competency in the face of operational challenges. In an organization like the IDF, integrating innovation is a complicated process tied to deep cultural strata, and it includes embedding the values of entrepreneurship, imbuing tools, and skills to promote independent thinking, casting doubt on that which exists, and breaking through conservative thought patterns⁷.

In context of the IDF, innovation has been positioned as a profession, and entrepreneurship, as the skill that enables it. These disciplines are acquired. They can be taught and trained and related competencies can be maintained.

Thus, entrepreneurship, innovation and transformation training form an inseparable part of the personal development course of commander in the IDF. Holistically speaking, every IDF commander is expected to know how to initiate and drive value-creating changes, from a raw idea to implementation on the ground.

Educating for initiative (innovation and entrepreneurship) in the military does not take the place of discipline and is not meant to weaken it... every officer and soldier must take initiative... in order to achieve the desired goal, that is, to win.

- David Ben Gurion, *Yichud Veyi'ud*, 1971

Implementing innovation and having a culture of innovation as part of the organization's practices are not things that can be fashioned randomly or spontaneously. Rather, they are the

⁵Innovation: "Ideas (ventures) that materialize (projects) and generate value (impact). The innovation process is designed to manage the uncertainties inherent in accelerating ventures that are expected to generate value" ISO 56000

⁶ "Entrepreneurship is the tendency to innovate, be productive and take risks when developing (and deploying) products or technology". Economist Danny Miller defined entrepreneurship as a value containing a system of skills and abilities that can be learned through a guided process involving training and experimentation.

⁷ Abulafia (2010), the courage to express your own opinion. *Maarchot*, 433.



product of built-in organizational processes and entrepreneurship courses integrated into the organization's routines.

Innovation is not about 'ideas'. Innovation is always tied to the ability to perform, execute, and deploy. The IDF must create systematic tracks that enable the development of new knowledge that leads to innovation. This is done by stretching the imagination. This must be taught, and this must be done. Innovation based on methodical processes. Integration into the IDF necessitates deploying acceleration and improvement mechanisms. These are expected to make the IDF more effective, an organization that changes at a pace adjusted to the dynamic circumstances in our complex and hostile environment.

- Excerpt from a speech delivered by LTG Aviv Kohavi, IDF Chief of the General Staff, at the inauguration of the Defense College for Innovation, Intrapreneurship and Transformation, October 2021

In an article titled “Ambush from the Future: On Transformative Force Design,” published in *Bein Haktavim* journal in October 2020, the Head of the IDF Combat Methods & Innovation Division, Brigadier General Eran Niv, presented a number of challenges encountered when integrating innovation in the IDF, namely the prevalence conservative organizational culture.

The IDF, like any large organization, is in danger of relying too much on existing solutions and developing a conservative organizational culture. The problem is that when an organization treads water, it may be taken by surprise by a turning point that it should have prepared for in advance.

This work outlined approaches to applying and integrating a culture of innovation within the IDF methodically and effectively. Innovation must produce value in its context, otherwise it would be worthless. Tasks and challenges that the organization wishes to achieve should be defined, and innovation accelerators should be recruited and brought into these domains. Without the involvement of senior commanders and the energy needed for this change process, it would be extremely difficult to put it in motion. Moreover, the IDF must be connected to an



external ecosystem, and the existence of "semi-managed" markets should be encouraged, connecting operational stakeholders with the knowledge in and outside of the organization, in a way that helps resolve current problems.

Furthermore, an infrastructure for innovation should be created; spaces that invite participants to depart from ordinary ways of thinking and allow anti-disciplinary convergence (of spatial and C4I senses) as well as broad experimentation. Resources must be allocated to spark innovation, reward warfighters, and most importantly, promote the main initiatives that could prompt a transformation in the IDF. Finally, mechanisms that can foster the needed initiatives should be created (by prioritizing resources or through a top-down directive), along with control systems that can shut down projects that are infeasible or have no value.

In light of this, the IDF's innovation vision, formulated in this paper conceptualizes creating long-term, continuous, and progressive superiority over our enemies with rapid, accurate and methodical learning mechanisms. The IDF's innovation strategy, as described in this document, will deal with the establishment of a managed organizational innovation system designed to sustain and promote a culture of entrepreneurial freedom, to build joint mechanisms that will allow us to make these initiatives standard projects, and, to succeed in creating a

concrete operational impact affecting the IDF's superiority and robustness, and its ability to achieve standard and unequivocal victory in the enemy's perception, as well as its own.



1.2 Innovative Situational Awareness in the IDF - Net Assessment

Since it was first established and dating back to pre-state paramilitary organizations the preceded it, the IDF has demonstrated adaptability and an ability that has guaranteed its superiority and robustness throughout all of Israel's wars. The organization was able to integrate remarkable innovation in both force design and use in practice. However, it was only in 2014 that the surge in institutionalized innovation began in the IDF⁸, with the establishment of the first innovation section in the Israeli Air Force General Staff.

Beginning in 2017, a growing number of ad-hoc groups had formed enabling and accelerating innovation, thus creating "islands" of innovation through two central apparatuses: as a directive from unit or service branch commanders, or as spontaneous local groups of innovation-driving entrepreneurs. The rationale was to conform a local culture of innovation, in hopes to set an example for others to follow suit and pervade into the rest of the organization, instilling values of innovation and entrepreneurship which would then lead to methodical, applicable, and effective transformation.

Subsequently, more innovation sections gradually coalesced in the IDF (e.g., the IAF's Base 108 and *Ofeq* 324, the combat laboratory in the IDF Ground Forces Technology and Logistics Division, the Technology and Maintenance Corps HQ, the Medical Corps HQ, the C4I and Cyber Defense Directorate, the Military Advocate General's Corps, the Home Front Command, the Yahalom unit, and more). Their goal was to inculcate a culture of innovation in various ways, such as: promoting internal innovation efforts by launching innovation events and technological happenings, in collaboration with the innovation ecosystem in the defense establishment and elsewhere in Israel (*Machanet*^{9 10}, Innovation Week¹¹, unconferences¹²,

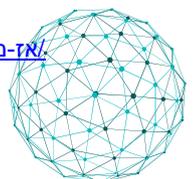
⁸ <https://www.globes.co.il/news/article.aspx?did=1001185981>

⁹ <https://www.iaf.org.il/4460-49263-HE/IAF.aspx>

¹⁰ https://www.mako.co.il/tv-ilana_dayan/articles/Article-5a4f0ccb0736f21006.htm

¹¹ <https://www.iaf.org.il/4412-43069-he/IAF.aspx>

¹² <https://www.michnaf.co.il/https-www-michnaf-co-il-single-post-2017-09-08-כנס-הרחפנים-הראש-אז-מה-היה-ב-אי-כנס-הרחפנים-הראש-08-09-2017>



hackathons^{13 14}, and more), thus creating acceleration tracks and boosting grassroots projects (e.g. the IAF accelerator, the IAF's technology incubator¹⁵, the technology incubator in the J2's target analysis units¹⁶, the *Porzim Gvulot* accelerator¹⁷, and more); the establishment of content-based communities as a platform for accelerating changes¹⁸; nurturing relationships with veterans of units specializing in entrepreneurship and innovation (the establishment of the reserve innovation recon units¹⁹ and connecting with the innovation spaces of military unit associations²⁰).

Today, we can discern the differences between the sections in terms of their ability to create a broad and systemic impact on the organization and the environment in which they operate. This is evident in their ability to find their way into major decision-making junctions and create long and short-term innovation-enabling mechanisms, as well as the extent to which they are exposed to core operational or organizational challenges, and their capacity to create professional partnerships within and outside of the organization. Therefore, we see that some of the innovation sections are dwindling or shutting down. This corresponds with the impact magnitude these sections had on their organization, and how committed their commanders were with respect to espousing a culture of innovation and innovation mechanisms in the organization.

Nonetheless, we shall note several sections, entities and groups that have managed to create broad ripples of change and produce local and joint outcomes, such as the Ground Forces Innovation Laboratory, the IAF Accelerator and Incubator, Innovation Month at the Home Front Command, and so on.

¹³ <https://www.idf.il/2020/האקתון-מילואים-וירטואלי-2020/אתרים/אגף-כוח-האדם/2020/האקתון-מילואים-וירטואלי-2020/>

¹⁴ <https://www.idf.il/2020/האקתון-ליאור-בוקר-חוסן-לאומי-לישראל/אתרים/זרוע-האוויר-והחלל/2020/האקתון-ליאור-בוקר-חוסן-לאומי-לישראל/>

¹⁵ <https://www.israeldefense.co.il/node/43446>

¹⁶ <https://www.idf.il/אתרים/אגף-המודיעין/שיטת-העבודה-החדשנית-של-היחידה-הטכנולוגית-המתקדמת-באמן/2020/אתרים/אגף-המודיעין/שיטת-העבודה-החדשנית-של-היחידה-הטכנולוגית-המתקדמת-באמן/>

¹⁷ <https://www.idf.il/אתרים/תחרות-הקמת-הסטארט-אפים-של-זרוע-היבשה/2020/אתרים/תחרות-הקמת-הסטארט-אפים-של-זרוע-היבשה/>

¹⁸ <https://www.idf.il/אתרים/אגף-כוח-האדם/קהילות-בצה-ל-מאיצות-שינוי/2020/אתרים/אגף-כוח-האדם/קהילות-בצה-ל-מאיצות-שינוי/>

¹⁹ <https://www.israeldefense.co.il/node/43801>

²⁰ <https://www.amutaiaf.org.il/מרחב-החדשנות-bispace/יזמות-וחדשנות/>



Academic studies²¹ that examined the potential of 'Islands of Innovation' to impact espousing innovation within the organization claim that these islands harbor a negative potential. These may end up hindering the proliferation of innovation, mainly in organizational systems characterized by loose internal links, and in cases of mismanaged expectations and conflicting interests among those partnering to implement innovation should they fail to operate in synergy.

With that in mind, and as local groups began forming, as described above, a white paper was drafted in 2017, led by Major General Haliva, on accelerating innovation-promoting processes and creating safe spaces that would tolerate failure.²² Some of the team's conclusions were published by Brigadier General Moti Baruch and Colonel Eran Ortal in an article titled *An Ocean of Innovation*, which appeared that year in *Maarchot* journal. This article discussed how the disruptive innovation theory could help the IDF with its force design.

"Innovation is a value that nearly does not stem from an idea that randomly emerged. It involves a methodical and conscious effort by the organization to understand the dynamic environment in which it is operating, to develop awareness regarding its current business strategy, to understand when and why it is competing in the "red ocean", and to develop, consciously and methodically, other innovative strategies" -

-- Baruch and Ortal, 2017

The article states that the IDF's service branches and directorates are naturally able to initiate and speed up local innovation processes that are restricted to their traditional areas of concern. Today, however, in the multidimensional times we are living in, joint innovation processes

²¹ https://www.achva.ac.il/sites/default/files/achvafiles/maof_book/14/5.pdf

²² Major General Haliva's team. What else can be innovated in innovation? Presentation to the deputy chief of staff, January 2018.



must happen, which will connect the existing innovation islands to form a common network as an "archipelago", operating within a broader strategic setting.

Under the innovation archipelago concept, the Chief of the General Staff established the 'Shiloah'/CMI (Combat Methods & Innovation²³) Division, in 2019. Within two years, the division has established courses designed to provide General Staff guidelines and regulation as follows:

- Introducing Innovation and Change Leader as a military profession (No. 764) – building a process for screening, recruiting, training, and assigning candidates for military service that would be posted in innovation sections throughout various service branches. This process constitutes a major building block in the IDF innovation system.
- Initiating and establishing the Chief of the General Staff's innovation award^{24 25} – a platform for recognizing individuals, entities and groups that managed to boost innovation with tangible results, in a variety of areas, making an impact on the IDF, including advanced technology, operational capabilities, ground-breaking individuals, or outstanding units that demonstrated ingenuity in their performance.
- The establishment of *Challenge*, the IDF center for innovation and entrepreneurship²⁶: The center was established pursuant to the Chief of the General Staff's vision, and was the initiative of the CMI Division, the Digital Transformation Directorate, and MAFAT (The Administration for the Development of Weapons and Technological Infrastructure); the first and only IDF joint innovation platform of its kind, which aims to empower entrepreneurs from all parts of the IDF, jumpstart groundbreaking ideas, and accelerate operational and organizational projects. It does so by using advanced methodologies, IDF and senior business mentoring, providing tools and knowledge,

²³ <https://www.globes.co.il/news/article.aspx?did=1001278547>

²⁴ <https://www.idf.il/מאמרים/פרס-הרמטכל-הראשון-לחדשנות-תוצאות-זוכים/>, <https://www.idf.il/139187/>

²⁵ <https://www.idf.il/139187/>

²⁶ <https://www.idf.il/הקמת-מרכז-היזמות-והחדשנות-הצהלי/2021-challenge-מאמרים/>



and innovative mechanisms as well as resources necessary to ensure the success of promising initiatives.

- The inauguration of the Defense College for Innovation, Intrapreneurship and Transformation ²⁷ – national infrastructure for excellence in entrepreneurship, innovation, and military transformation. The college engages in training, experimentation, and academic education in various fields of research and philosophy.

This infrastructure is primarily made available to IDF servicemembers (commanders, entrepreneurs, and innovators) however, it is also available to the IDF's natural partners within the broader defense community.

- Promotion of open defense innovation cooperation: the establishment of a community of innovation leaders in the Israeli defense agencies, and the forging of ties with innovation leaders in foreign militaries.
- The establishment of a reserve unit of experts on innovation. This project was kicked off in collaboration with the JI's reserve service branch, aiming to find experts possessing skills and experience in innovation, and assigning them to various units. This was made possible by creating a reserve unit of innovation experts, functioning under the CMI Division.

In conclusion, a strategic process must be set in place to guide innovation sections throughout the IDF, equipping them with tools, and encouraging collaborations by integrating them with other force design professionals within the joint innovation mechanisms described above.

In the long run, the right thing to do would be to actively maintain and strengthen the connection between the CMI Division and "Islands of Innovation" within field and general staff units in order to leverage local resources and abilities, to connect to the IDF General Staff directive in terms of innovation, to reduce redundancies, and to enable cross-fertilization and

²⁷ <https://www.idf.il//אתר-ל-פתח-את-המכללה-הצבאית-ליזמות-וחדשנות2021אתרים/המכללות-הצבאיות//>



mutual learning. That said, the CMI Division is not the only organization concerned with innovation, and collaboration with other transformation administrations established in the IDF.

There are always more smart people outside your company than within it. If you wish to work with others and cooperate with them, you must adopt an open innovation culture.

- Bill Joy

Military organizations must continue cementing professional partnerships with other organizations, entities and communities focused on innovation, in Israel and abroad, within foreign militaries, the academic world, and the industrial sector.



1.3 The IDF Innovation Strategy – Rational and Vision

Are organizations truly able to transform? If they so, can their transformation keep up with technology? Can they truly compete and leverage their exponential technological potential?

Martec's Law (Brinker, 2016) claims that an organization's change rate is significantly lower than the pace of technological change, and this results in a growing gap. Thus, accelerated organizational transformation, and sometimes, a "reset", are critical to the organization's ability to keep up with the pace and stay relevant and effective. Otherwise, when it comes to business, it will fail miserably, and such failure could seal the fate of a military organization.

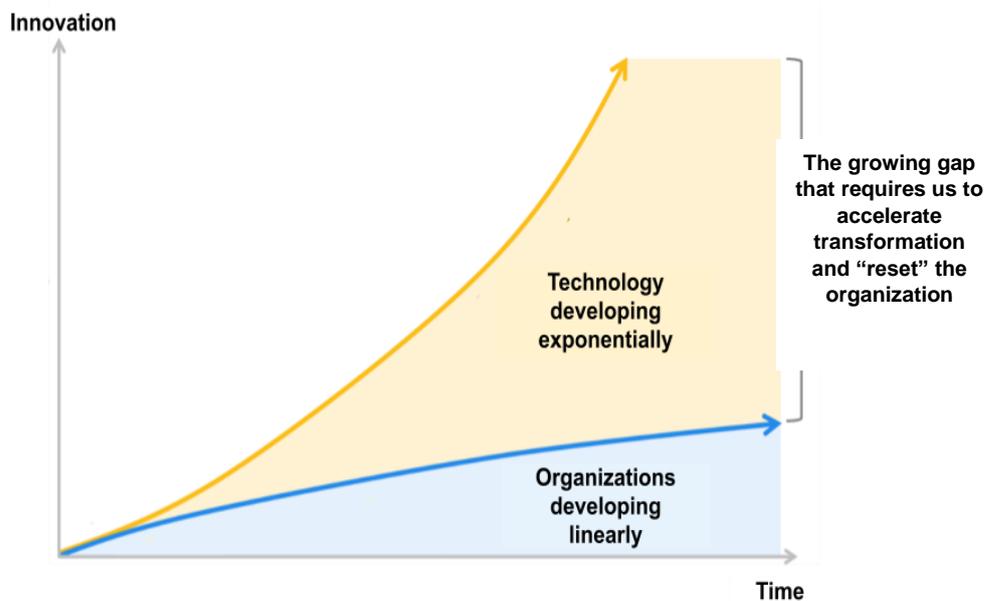


Figure 3: Martec's Law (Scott Brinker)

The strategy before you are designed to accelerate IDF transformation systematically as it is essential for the IDF to maintain its relevance and its superiority. This necessity only intensifies in light of the learning competition with its adversaries; technological, social, and economic change, and the fact that it is becoming increasingly difficult to change internally and create effective internal and external innovation mechanisms.



The purpose of this document, and this chapter in particular, is to create and regulate the built-in innovation mechanisms designed to create exponential quantum leaps in force design and force employment capabilities, while challenging existing paradigms, methods and structures and striving to fulfill the concept of victory. To that end, we have devised a strategy in this chapter based on the design of five main strata, based on the following rationale:

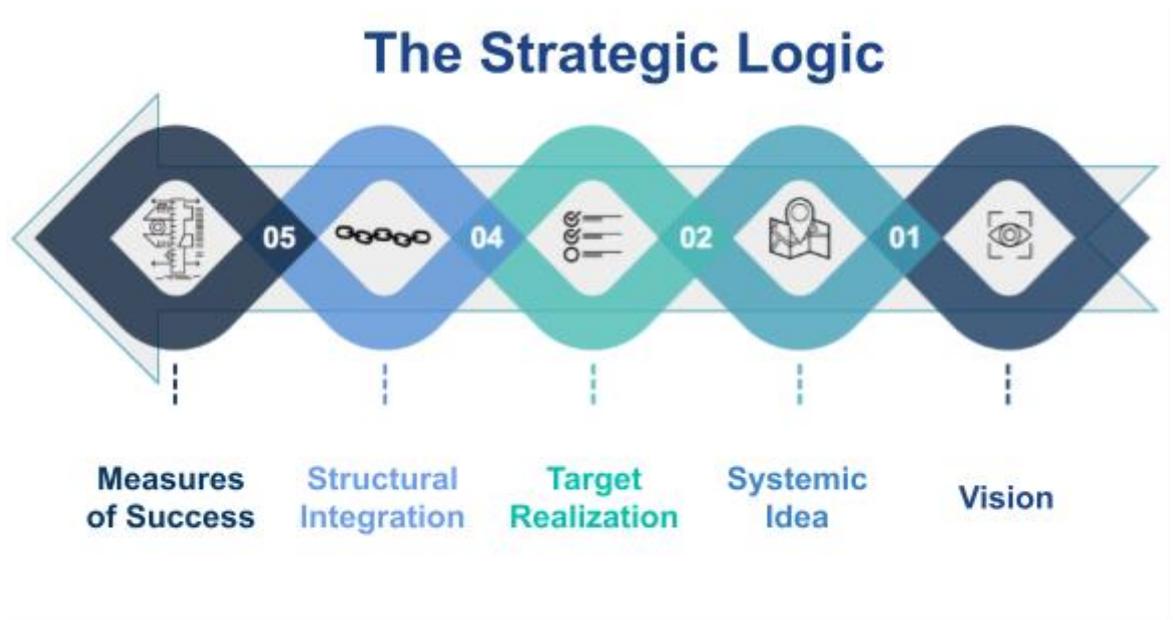


Figure 4 - The logic for the strategic chapter



First, innovation is not a goal, but rather the means to achieve the IDF's strategic goals. Therefore, we shall define the IDF innovation vision as follows:

The IDF Vision for Change

Creating continuous, evolving and long-term superiority over the enemy, through precise, rapid and systematic learning and change mechanisms



When the significance of learning and transformation is substantial transformation within the IDF, such that the rate at which the synergy between the organization, the concepts and the weapons systems changes will be greater than the rate at which our current adversaries are transforming and learning.



1.4 The operational concept

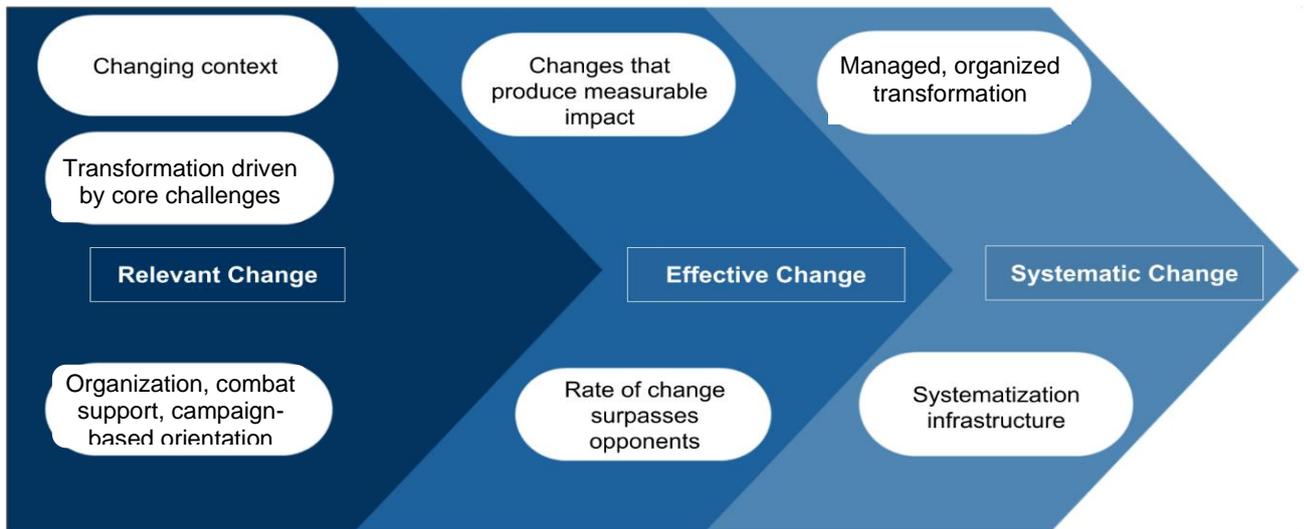
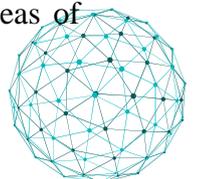


Figure 5: The operational concept's infrastructure

Our thinking is founded upon the operational idea of IDF innovation – **relevant**, **effective**, and **methodical** transformation. The meeting of these three axes represents the key to the strategy's success. What we need is a transformation that satisfies three parameters:

- **Relevance:** Transformation in context, driven by the IDF's biggest challenges, and designed mainly to tackle major operational market failures. While generating the needed transformation geared toward organizational auxiliary and campaign contexts.
- **Effectiveness:** Transformation producing a substantial and measurable impact on organizational and operational aspects, at a rate of change that exceeds that of our adversaries.
- **Methodicalness:** Transformation is not random. It is organized and controlled. This is so that we can increase significant transformation and create as many conditions as possible to allow the emergence of breakthroughs. It is performed repeatedly, without relying on chance or luck.

Moreover, transformation is methodical in the way it dovetails with the IDF's existing innovation courses in terms of the meeting points with the organization's main areas of



activity. On rare occasions, new tracks are needed, which can and must be created using the innovation mechanisms described later in this document. However, most of our activity must integrate methodically and industrially into the IDF's core activity.

Most people and organizations do not like to transform. It takes them out of their comfort zones and forces them to adopt new habits and concepts, to be prepared for failure, and to contend with activities that deviate from what they are used to. This certainly holds true for mega corporations like the IDF, where in order to succeed in driving major transformation, one would need outstanding connectivity between quite a few elements, such as the sense of urgency, a coalition that drives change, an organization that is able to tolerate failure and promote entrepreneurs despite the administrative challenge and the deviation from the norm, bold mid-level managers, and more. For that to happen, and in the context of the systemic idea, we have identified five concrete keys to success that would help us adopt a groundbreaking innovation management concept and the associated mechanisms:

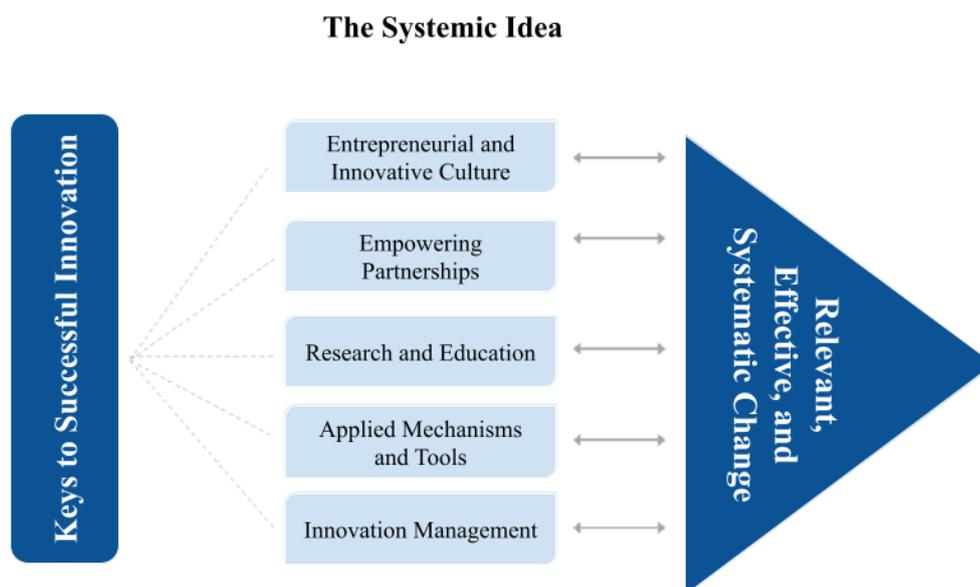


Figure 6: The Systemic Idea

- a) **Innovative and entrepreneurial culture and the ability to tolerate failure:** the foundation for any innovation system is an entrepreneurial culture that encourages risk-taking and is capable of handling failure well. Clearly, this is a challenge that is extremely hard to tackle, particularly for organizations with a deeply rooted DNA. Peter Drucker, the



guru of modern management theory, said that "Culture eats strategy for breakfast". Drucker is skeptical of any strategy's ability to create distinct change in an organization. However, and despite the strain, this also presents us with a great opportunity. The IDF is known for having young servicemembers with a high replacement rate, as well as commanders trained to act with managerial boldness and well-defined authority to drive changes. The shared security objective creates a solid ground for effective collaboration. The foundation of an innovation strategy's successful implementation and deployment is intrinsically tied to the ability to lead an innovative cultural and entrepreneurial change. This, through extensive training, which encompasses all IDF commanders, using mechanisms that will include the appropriate measurement and organizational incentives, assisted by the traditional recognition and encouragement of entrepreneurs and initiatives. This is the most basic and important key to this strategy, in order to make it a reality.

- b) **Empowering partnerships:** In large corporations, professional silos must be created, complete with their own identity, expertise, and areas of responsibility, which are usually unidimensional. Corporations nurture these silos to make their staff the best and most knowledgeable professionals in their areas of expertise. This is the only way to succeed today. Ironically, the innovation systems in those corporations must take apart those silos, both within the organization, and by removing the hurdles that prevent the organization from communicating with startups and other partners. They must dismantle these obstacles because the connections between the silos produce blue oceans of innovation, while multidimensional discourse is what gives the edge. The next big venture can often get started outside of the organization, and must find its way in, usually because opportunities "fall between the cracks" of the well-defined existing structures. Therefore, the way to go is by transformation that produces a unique and exclusive connection between the various entities, subject matter areas, and concepts. Today, healthy partnerships will be cultivated to tolerate natural tensions, ones that are geared toward the common goal of effective and relevant transformation. These partnerships are both external, working with a dynamic ecosystem with enormous potential, and internal, comprised of joint coalitions and teams working together in well-organized acceleration spaces, alongside the rest of the defense community. Managing these partnerships requires effort and conceptual adaptation, since it isn't usually a trivial matter, and, as expected would clash with entities operating as silos.

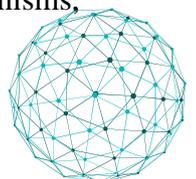


However, such partnerships are the only way to create significant transformations, both operationally and organizationally, so they must be managed and nurtured.

The CMI Division will lead innovation partnerships, assisted by the Weapons Development and Technology Infrastructure Administration, the International Cooperation Division, and other entities, to enable and jumpstart the required transformation. This includes determining the most effective ways of communicating with the academic world and industry, while minimizing red tape and maximizing our ability to lead a change that begins outside of the organization. It also includes the ability to create value-generating links with the Israeli defense community and colleagues working on innovation in other foreign militaries.

- c) **Research, training, and learning:** To win the learning competition and know how to benchmark ourselves and improve in the white-blue-red playing field, we must develop and strengthen two core "muscles" – the ability to study the world of corporate-military innovation effectively and deeply, and to have organized training. Both are critical to ensuring that our innovation efforts in the IDF are applicable, effective, and methodical. We have identified entities in the academic and industrial worlds who study innovation methods used by startups, as well as some that tackle corporate innovation. We must develop a unique capability to conduct innovation research in the corporate-military domain. This research would create insight and feedback on innovation system administration. It would define the right tools and infrastructure and serve as an intellectual "compass" for IDF innovation and the innovation strategy, which requires constant updates and improvements.

Therefore, the intellectual underpinnings of the operational idea depend on the establishment of a solid, new intellectual entity, the Institute for the Study of Military Innovation, which would be given freedom of thought and an ability to conduct research independently, including unique research in Israel and abroad on military transformation methods and mechanisms. The research institute will also measure the impact of IDF innovation efforts, on the operational and organizational levels, and on those serving in the various entities. This is so that we can help lead an effective and well-managed innovation system. The research institute will expedite change of the transformation mechanisms,



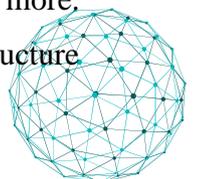
themselves, with the required research boldness for continuing to adapt the transformation strategy on the go.

In addition, the Defense College for Innovation, Intrapreneurship and Transformation, which was established in October 2021, serves as national infrastructure for excellence in entrepreneurship, innovation, and military transformation. The college engages in training, experimentation, and academic education in various fields of research and philosophy. This infrastructure is primarily made available to IDF servicemembers-commanders, entrepreneurs, and innovators, nevertheless it is also available to the IDF's natural partners within in the defense community. Innovation is a profession, and entrepreneurship is a skill. Every commander is expected to know how to initiate and drive value-generating changes, from a raw idea to implementation. The college leads and will continue spearheading education, training, and competency, as an inseparable part of the personal development course of an IDF commander.

d) **Mechanisms and tools for applicative innovation:**

"Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it's the only thing that ever has." - Margaret Meade

Usually what is needed to propel transformation, is a small group of dedicated and committed people with a passion for leading and changing. We must encourage unusual ways of thinking and to entrepreneurial action, so that we can identify the intraorganizational entrepreneurs and cultivate them. Sometimes, this runs counter to our managerial instincts as commanders. Such individuals should become the "heroes" in the General Staff and in field units. The intention is not necessarily to identify those who were obedient and carried out the mission verbatim, which is what we are used to seeing in hierarchical and military organizations, but rather those who dream, dare, and execute. We must also find and create legitimate forces of disruption using creative means, such as diverse innovation mechanisms, multidisciplinary centers of excellence staffed by expert reservists, intraorganizational accelerators that cultivate entrepreneurs and entrepreneurial teams. We must find entrepreneurial figures slated for professional promotion, and more. Methodical, applicative innovation is contingent on the creation of lateral infrastructure



following a uniform standard, while strengthening decentralized innovation in various units.

- e) **Innovation requires proactive management** that does not leave it to chance, expecting outputs and the appearance of quantum leaps. We intend to lead and integrate tools for managing the innovation system, including the clear definition of policy, purposes, organizational and operational metrics, the management of a yearly joint plan for innovation, management routines, and so on. The principles are those of classical management, and do not contradict innovation, but rather regulate it and enable it to exist in a concrete, operative domain, while connecting it to the IDF's chief activities. This is the only way we can guarantee methodical transformation that replicates successes, cultivates the next generation of entrepreneurs, and creates a fertile ground for them to develop and make an impact. This is the methodical transformation that will enable the IDF to fulfill its strategic goals and objectives, facing its adversaries wherever they may be.



1.5 Goals and Recommended actions



Figure 7: Objectives for achieving transformation

We seek to create clear guidance and a compass for implementing the systemic idea. The overall impact within the IDF based on the points of emphasis and keys to success that were identified and mentioned above, while using our experience and the most up-to-date methods for managing innovation in the academic world, in industries, and in the IDF.

The direction we have created is composed of five described above, which work together to produce fertile ground for relevant, effective, and methodical transformation.

Note, joint innovation infrastructure, that must be established uniformly because of economies of scale, is used for both managing the innovation system uniformly, and by all of the various entities and those serving in the IDF. This infrastructure, led by the CMI Division, includes the following:



- The research institute for military innovation, as described above.
- The Defense College for Innovation, Intrapreneurship and Transformation – as described above.
- "Challenge", the IDF Innovation and Entrepreneurship Center: first and only IDF joint innovation platform of its kind, which aims to empower entrepreneurs from all parts of the IDF, jumpstart groundbreaking ideas, and accelerate operational and organizational projects. This is done using the most advanced and effective methods, and while providing all of the tools and resources needed for promising initiatives to succeed. Three major programs are underway at this center, which are tailored to IDF projects at various levels of ripeness. All of the programs cater to entrepreneurs from a variety of areas, units, and professional backgrounds. They allow us to promote grassroots initiatives while democratizing innovative processes and implementing meticulous screening and filtering of these initiatives in order to assess the extent to which they are suitable and relevant to the purposes of the incubator. The work method in the incubator is based on creating multi-disciplinary action teams operating within a framework independent of their main roles in the IDF, about once a week, and focusing on removing conceptual and organizational hurdles and creating major quantum leaps. The teams will work to advance diverse concepts and projects, closely and professionally guided by the incubator's staff, including mentors and lecturers at the forefront of developments in academia and in the industry, and others currently and formerly serving in the defense community.
- The Innovation Department: An entity engaged in lateral matrix management of IDF innovation efforts, including human resource aspects of innovation, budgets and resources, activities and efforts, projects, and deliverables.
- An entity for beta testing: lateral military infrastructure to assist with deploying the innovation for quick experimentation in the various units. Experimentation involving innovative technologies, concepts, and combat methods in order to achieve an agile acceleration of innovation processes adapted to the required pace of transformation.
- Management of the innovation communities and network: Managing the IDF innovation network, to include screen and recruiting innovation NCOs and cultivating initiatives and entrepreneurs.



- Reserve Centers of Excellence: Leveraging expertise from outside of the IDF through individuals from the academic world or from the industries with substantial experience and extensive background, to create a legitimate disruption force operating both in the joint domain and within the units themselves.

Other lateral capabilities that will be required later on, with the development of innovation in the IDF: Support for joint transformation mechanisms, wherever lateral professional abilities have a competitive advantage and priority, to serve of IDF entities.

Aside from joint infrastructure, we intend to make considerable investments in decentralized innovation.

In recent years, innovation "muscles" were randomly created in various units. Understanding that innovation is a profession and a specialty requiring specialized human resources along with the focus and attention of commanders and guided by the vision that allows bottom-up innovation as well, we must empower decentralized innovation in the various units. In other words, to fulfill innovation goals, we will need to bolster and regulate decentralized innovation in the various units methodically and in a well-defined way. The CMI Division will serve as a professional and matrix-based home for innovators from various units and departments in the IDF. Hence, we have devised standardization, profiles, diverse training programs, professional development, and clear position descriptions. Of course, this was done while preserving the independence required for operating effectively within the various units.



The Space for Innovation and Internal Organizational Entrepreneurship

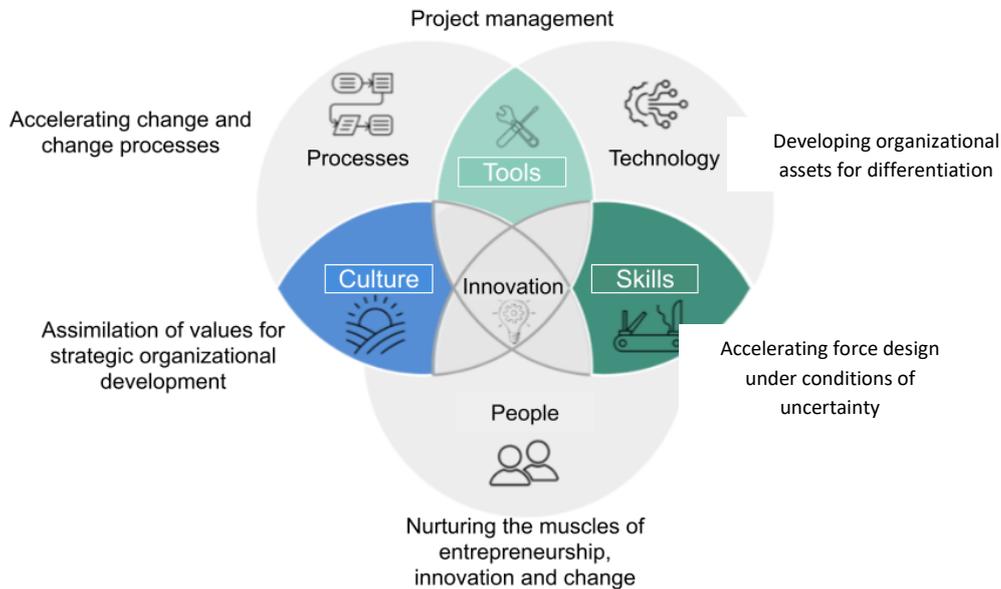


Figure 8: The innovation action domain and intraorganizational initiatives.

The innovation portfolio shown in the figure below describes the full spectrum of innovation activities available to the organization's innovation leaders, designed to help advance the organizational innovation strategy, as part of managing the organization's innovation system. The numbering of each activity category in the figure is not random: it refers to the order in which these processes are run and implemented and indicates the "maturity" of the subject that the organization seeks to promote. We find it important to build an innovation portfolio for each IDF unit, which is tailored to the purpose, spirit, and resources of the unit. This is part of the process of creating decentralized, effective, and relevant innovation mechanisms throughout the IDF.



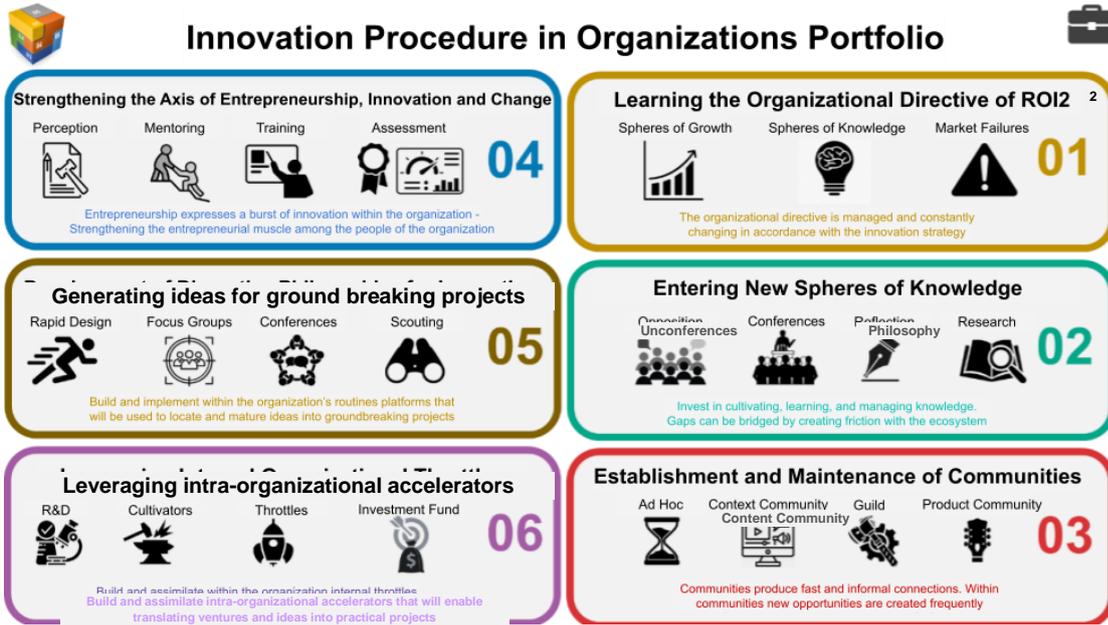


Figure 9: Innovation portfolio. A discussion can be found in the Annex.

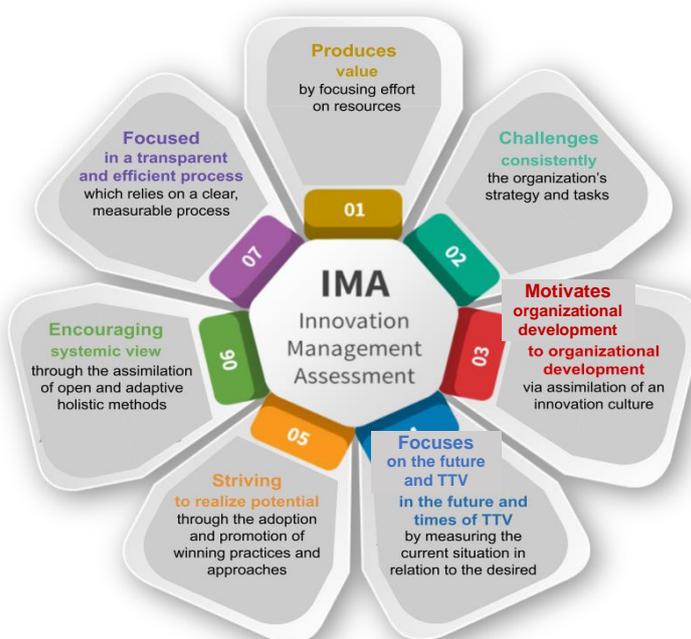
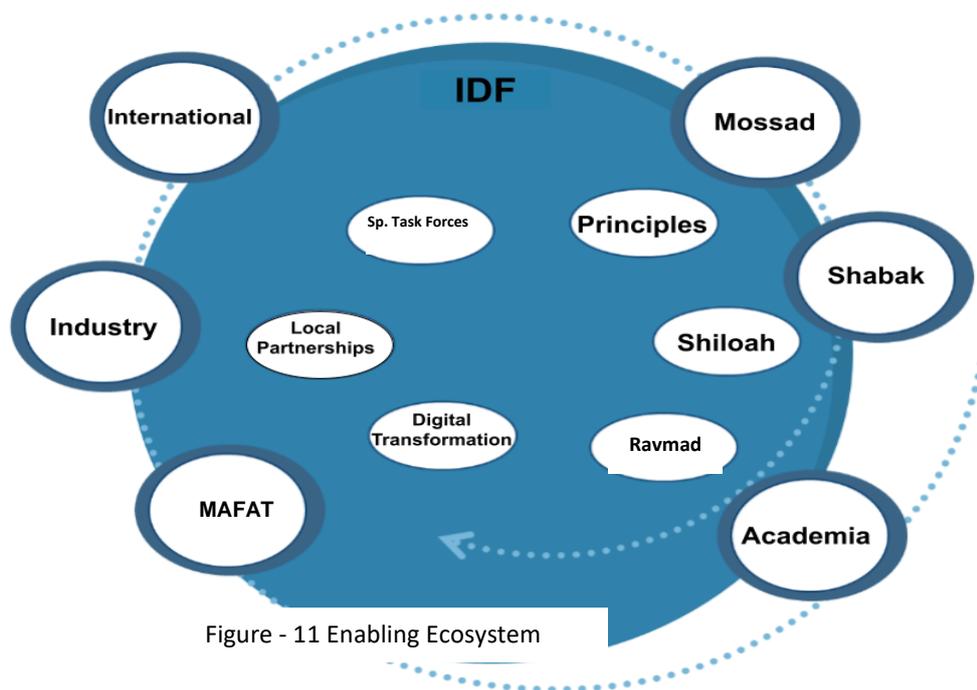


Figure 10: Principles for assessing the effectiveness of managing innovation in the organization, taken from ISO 56000



The organizations preparations for putting the principle into practice will leverage the incredible opportunities for innovative force design, which are within the IDF and in a wider ecosystem encompassing the defense community, industries, and the academic world in Israel and abroad. This occurs when all of the relevant actors work together to regulate and lead open innovation efforts, with the CMI Division coordinating and synchronizing the IDF's internal innovation efforts. This is done with policy, tools, indicators, control, and enhancement of joint as well as the decentralized efforts in various units.



To maximize the potential in IDF transformation, a common framework is needed to prepare for entering the worlds of internal and external innovation:

- A. The IDF – attention and resources for the innovation strategy, including funding for the Combat Methods & Innovation Division and the various units for innovation efforts, commander orientation, measurement and recognition of innovation, a decentralized innovation community, and more.
- B. The Combat Methods & Innovation (CMI) Division – a substantial boost to the division's human resources, infrastructure, and budget. These are needed to effectively establish and run the research institute, entrepreneurial center, the Transformation College, the Reserve Center for Excellence, the experimentation center, the innovation management department, the department employing general staff disruption forces, and more.



- C. Industry and academics in Israel and abroad (The Weapons Development and Technology Infrastructure Administration) – devising mechanisms that will allow us to break down the barriers separating us from the external ecosystem and find a solution to substantial bureaucratic issues that limit the freedom of action of open (external) innovation. The aim is to lead a significant external disruption effort, take action to leverage opportunity, and most importantly, to create the right and most effective combination of internal conceptual and organizational transformations. To that end, we would like to expand our collaboration with the Weapons Development and Technology Infrastructure Administration, to begin creating creative and enabling contracting mechanisms, and to build bridges so that innovation can be deployed in the various units with the help of the experimentation entity within the Combat Methods & Innovation Division, in support for the decentralized and joint acceleration tracks.
- D. Foreign colleagues through the International Cooperation Division (ICD) – The transformation challenges we are facing resemble those known to foreign militaries we work with in various ways, including the learning competition against terror and other rivals, the global technology and business changes, and the internal challenges involving the adoption and inculcation of innovative military concepts and culture. We would like to significantly expand our partnerships with foreign militaries in terms of learning and creating transformation methods and mechanisms, and perhaps, in creating common innovation mechanisms as well. These will allow us to boost the pace and quality of the transformation, working with colleagues with similar interests and purposes, while leveraging the advantages of each side. We would like to do so by tightening our collaboration with the IDF International Cooperation Division, creating an international innovation tradition such as the international conference planned for 2022, thus creating common mechanisms and bridges of trust; as well as activities design to bring about relevant and effective transformation.



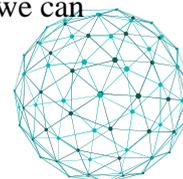
1.6 Success Metrics

No strategy is complete without defining the image of victory: What would effective and successful implementation of its principles look like? In other words, what are the success metrics for an IDF innovation management system, in terms of both uniform management and decentralized leadership within the various entities.

We intend to measure all of the elements of the organizing principle, using qualitative metrics that gauge cultural elements exhibited by IDF soldiers and commanders. That in addition to orientation, readiness, and outputs of empowering partnerships; the impact of learning and training on all participants in the various programs run by the college, and the effect on their colleagues and subordinates, and the influence of decentralized and joint innovation mechanisms, in terms of both inputs/outputs and the bearing on personal abilities, the sense of capability, and the gradual change in the IDF's DNA.

The CMI Division, shall draft a clear roadmap for lateral and decentralized innovation efforts. By doing so, we will be monitoring and measuring innovation in the IDF for the first time, understanding that this is the only way to effectively manage a system. We shall provide feedback regarding the cost-benefit of required resources – mid and long. We also intend to measure the performance of various IDF entities and units in order to incentivize commanders and create an important and uniform snapshot of how this strategy is being deployed. We intend to deploy metrics based on accepted international standards, while adopting international standards, as in the example appearing in the Annex.

The product of these measurements and indications is the IDF Innovation Dashboard, which reflects a clear map of the innovation efforts with metrics of trained human capital, maintaining the tradition of innovation and the effectiveness of mechanisms such as accelerators and partnerships, and more. This map will be published by the CMI Division's Innovation Department once every quarter as critical feedback to be used in the methodical and professional management of IDF innovation. Mapping will also be carried out in various units in order to oversee the implementation of the strategy throughout the IDF. In this way, we can



effectively integrate the top-down and bottom-up aspects when managing the IDF transformation effort.

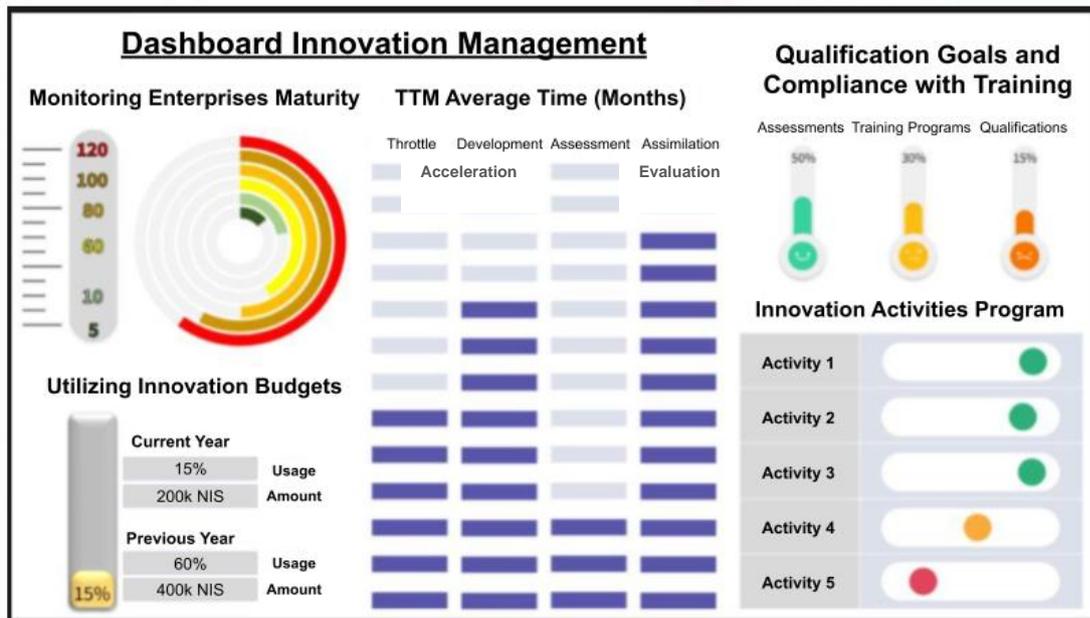


Figure 12 - Innovation Management Dashboard (illustrative/first draft)



1.7 Implementation roadmap

Success is 1% inspiration, 99% perspiration.

- Thomas Edison

Our ability to lead systematic change lies primarily in the persistent, meticulous, and dedicated application of innovation concepts and mechanisms. The required "99% perspiration" is the transformation effort's uncompromising battle against our routine work, politics and the barriers that are part of our daily lives, usually dominating attention, resources, and organizational focuses. As we prepare to lead transformations, our challenge is to produce a healthy balance between current readiness and engaging in innovation, whose products will often emerge in the medium to long term. This is also true with regard to the creation and management of the mechanisms, which are required to effectively manage an IDF innovation system. Therefore, implementation of the roadmap strives to make this strategy a practical and concrete aspect, integrated into the IDF work plans, and it includes three main efforts during 2022 and as we approach the next multi-year plan:



Figure 13 - Roadmap for Implementation



The Combat Methods and Innovation (CMI) Division will continue, at an even higher intensity, leading professionally and engaging in all the activities that have already been launched: the college, the incubator, communities, recruiting innovation specialists, strengthening innovation efforts in IDF units, and more. Deepening these activities, with appropriate budgeting, relevant staff, and attentive management, will help us lead the required change:

- A. IDF Entrepreneurship and Innovation Center (CHALLENGE): leading the joint acceleration processes of projects at the core of our operational and organizational activities.
- B. The IDF Defense College for Innovation, Intrapreneurship and Transformation: a center for the dedicated studies and training, for all IDF commanders and soldiers.
- C. The IDF Innovation Community - training, empowerment, guidance, and management of the decentralized innovation system in the various units. Matrix-based responsibility of the Combat Methods and Innovation Division, together with the commanders in charge of the various units.
- D. Promotion and legitimization of disruptive forces for joint disruptive innovation, via joint acceleration frameworks, reserve centers of excellence, acceleration tracks at the various units, and more.
- E. Innovation traditions - the Chief of the General Staff's Award for Innovation, an international conference, a semi-annual seminar and more - traditions that influence and shape the relevant entrepreneurial culture.

Staffing and budgeting the innovation mechanisms forming the strategy's foundations. In 2022 we will complete the establishment of decentralized, joint innovation mechanisms in the



various units, while closely adhering to the annual work plan processes of all relevant entities:

- A. The establishment of the Research Institute for Military Innovation – a center for developing knowledge through dedicated research on force design and transformation methods. An intellectual beacon for the IDF's extensive innovation activities, from training and learning to culture and the design and enhancement of the decentralized uniform applicative mechanisms.
- B. Quarterly snapshot - the IDF Innovation Dashboard: Starting in the first quarter of 2022, the Combat Methods and Innovation Division will publish the organizational innovation indices, in terms of inputs/outputs, while continuously monitoring the white-blue-red transformation. This is in a horizontal organizational perspective, and while providing a spotlight on the distributed innovation in the various units, after training all the units that will be measured, as well as an indicative internal pilot study. The measurement is important for the professional management of the transformation system and for the implementation of the IDF's concept and strategy for innovation.
- C. Presentation of an annual lateral work plan for IDF innovation - The Combat Methods and Innovation Division will coordinate, and, for the first time, present a lateral IDF innovation work plan, with goals, indices, key activities, required resources and prioritization. This is within the framework of the IDF Force Build-Up Directorate's (J8) work plan, which is, of course, synchronized with organizations partnering with it on innovation efforts.
- D. Empowering partnerships - designing, managing, and maximizing empowering partnerships for learning and research alongside analogous defense organizations, academia, and industries in Israel and abroad.
- E. Infrastructure and General Staff administration for solving general staff challenge at the forefront of our activities- devising and designing concepts, mechanisms, and methods for dealing with the most complex challenges.

We shall focus on all the preparations required to create a relevant and effective multi-year transformation plan, as part of integration into the IDF's long-term planning. To that end, we will present to all relevant entities, and together, we will formulate the multi-year goals,



resources and definitions required for institutionalizing and deepening transformation in the IDF. Furthermore, we aim to be fully prepared to present the multi-year IDF innovation program for effective integration into the next multi-year plan. As part of overall readiness, we will present the implementation of the latest concept, full readiness in the IDF, and management of an innovation system that includes measurement and control.

Methodical transformation is in our blood, and we must create the right environment, incentives, and attention to make a quantum leap in professionalism and in the energies devoted to innovation in the IDF. Despite the challenges inherent in adopting medium- and long-term thinking and action, and despite the various challenges in the face of transformation, we believe that this roadmap can serve as a practical plan, and the key mechanisms that will be used will help us find the right balance between continuing our current activities and focusing on the right areas when creating medium and long-term innovation mechanism and infrastructure.



1.8 Summary

The implementation of the strategy presented in this chapter is not a luxury, and it isn't "merely" meant to leverage internal and external opportunities for the IDF. We feel that it is a necessity, something that we must adopt, advance, and cultivate. The important IDF readiness activities, i.e., the critical "routine" activities forming the basis of military action, must not dominate our attention or negate our transformation capacities and mechanisms, as an organization.

We have devised a clear vision, an organizing principle at the operational level, and strategic guidance for joint or uniform implementation as well as decentralized implementation. That is also why we formulated a vivid goal for measuring and receiving the feedback necessary for any management to be effective and relevant.

We, at the Combat Methods & Innovation Division, plan to manage the IDF innovation system in a measurable, organized, and methodical way.



The following are the efforts and courses of action, in line with the organizing principle:

Success Metrics – The Impage of victory

Quantatative and qualatative measures that measure the aspects of culture, impact, inputs and the gradual change in the DNA.

	Success Metrics	Main Activities
Entrepreneurial and innovative culture	The human capital in the IDF in the context of innovatino and transformation, the very existence of innovation traditions and their rooting.	Innovation traditions and routines Training and Learning Impact on all activities in the innovation components.
Empowering Partnerships	Orientation to breaking barriers, and inputs/outputs of different partenrships.	IDF and general Staff Defense alliance Foreign Colleagues Industry and Academia ecosystem
Research, Training and Learning	The impact of training on feeling of capability, willingness and ability to lead transformation.	Defense innovation research institute and the Defense college for innovation, intrapreneurhsip and transformation.
Applied Mechanisms and Tools	Impact on personal/organizational transformation metrics, mechanism inputs/outputs.	Challenge entrepreneurship and innovation center Community management Reserves center of excellence Experimentation entity
Innovation System Management	Impact on personal/organizational transformation metrics, mechanism inputs/outputs.	Management of IDF branches innovation programs Innovation section collaboration Disruptive force design IDF innovation Dashboard



Part II

The Conceptual Foundation

If we fight - we will fight in the future, and we will not go back to the past. There is no guarantee that the enemies who stood against us in the past will behave in the future as they did in the past. On the contrary, we must assume that they have learned from their failures and will try to rectify them.

- David Ben-Gurion, Yichud Veyi'ud



2.1 Embracing Change - Why do we must lead transformations?

It is not the strongest of the species that survives, nor the most intelligent that survives. It is the one that is most adaptable to change.

- Charles Darwin

Can big, successful corporations and companies transform? Naturally, we believe that the answer to this question is yes, but, as we shall discuss in this chapter, due to inherent barriers the path to innovation in large organizations is far from easy, and there is constant tension between the need for innovation and its actual implementation and success. Professor Henry Chesbrough described this tension very well when he said that: "Most innovations fail. And companies that do not innovate die."

What is innovation?

In July 2021, the Training and Doctrine Division, in collaboration with the CMI Division, published the IDF's official definition of the term "innovation", according to which innovation is "creating value, or added value, by implementing a groundbreaking idea that breaks breaches bounds of conventional thinking in order to improve a current situation, solve a problem, or provide a response to a current need."

Corporate innovation refers to the ability to shatter existing paradigms and lead disruptive moves. It is a strategic process carried out by the corporation to examine and design the existing organizational system, product, or services, as well as options for ensuring that its business model stays competitive against anticipated and unanticipated changes in the industry.

In his article "Why Do Armies Have Difficulty Learning?", Lieutenant Colonel (Res.) Dr. Saar Raveh claims that innovation is a product of change that comes from learning and that "The change can occur with respect to beliefs, perceptions, behaviors, actions and culture" [Raveh, 2016] and that when there is no change in one of these parameters, "The military will find it difficult to adapt to the changes taking place in the environment and innovate itself" [Raveh, 2016].



It is in fact argued that in the military sense, innovation cannot simply be the product (e.g., development of weapon systems) alone. At its core, it must impact force design.

Why are corporations and large entities required to transform?

Though innovation is not a particularly new necessity, with technological development and the digital revolution, the need for companies to adapt quickly to the ever-changing environment, is clearer and even more important than ever. For example, in the 1960s, a corporation listed on the S&P 500 remained in the index for an average of 61 years. However, since the year 2000, 52% of Fortune 500 companies went bankrupt, were acquired, or ceased to exist as a result of disruptive digital innovation. Moreover, it is estimated that as much as 75% of the corporations currently listed will be replaced by 2027.

At least 40% of all businesses will die in the next 10 years... if they do not figure out how to change their entire company to accommodate new technologies

- John Chambers, former CEO, Cisco

Substantial innovation seems to be even more important to large corporations than to other companies. The acceleration of technology creates a business environment benefiting startups and small companies that are able to implement innovation quickly, change their concept, and produce disruptive technology. In contrast, large organizations are more threatened by the implementation of innovation processes. Their business model, organizational structure and leadership are geared towards continuing to succeed in the way they have operated, performing 'more of the same' and being risk averse.

It's easy to come up with new ideas; the hard part is letting go of what worked for you two years ago, but will soon be out-of-date

- Roger Von Oech

Why must the IDF transform?

Unlike a corporation, the military cannot go bankrupt, and does not engage in a competitive market, in the classical sense. Nonetheless, the consequences of its weakness, conservatism,



and inability to transform and respond to changes around it, be it in the civilian environment surrounding it or changes in its enemies, may be far greater and more dangerous.

In his document "Gaps in Force Design", the Chief of the General Staff mentioned current gaps in the IDF that are relevant to this issue: 1. Learning gaps that were the product of dealing with an organized, asymmetrical and disruptive enemy; 2. Technological, conceptual, economic and social developments in the digital age; 3. The current force design; and 4. The function of the General Staff, which, among other things, leads to difficulty identifying new military disciplines constituting "disruptive innovation" and unrealized potentials in the connection between the IDF and civilian R&D infrastructure, startups and society.

In his article, *More of the Same*, Major General Aharon Haliva described the need for a paradigm shift in the IDF. He said that huge and constant investment in combat platforms and inventory is analogous to investments in roads and interchanges. He claims that:

...an implementable conceptual vision must be created, one that will break the vicious cycle we're in... The IDF must transform conceptually. Qualitatively, not quantitatively.

- Major General Aharon Haliva, 2016



To summarize, military and corporate innovation are both based on organizational innovation that enables the infrastructure required to develop practical technological innovation and puts into practice a culture of independent and critical thinking, creativity, open communication, breaking bureaucratic barriers, and willingness to change basic assumptions to develop new concepts. Since they are large, stable, and successful entities that also suffer from a cumbersome bureaucracy and a cultural and organizational concept that does not encourage change, one may assume that the need for corporate transformation is also applicable to the IDF.

How do mega-corporations change?

While some may succeed, not every organization manages to truly encourage innovation. Innovation is a particularly challenging matter for large organizations, which dedicate most of their resources to maintenance and enhancing what also exists (e.g., manufacturing and supplying products, or broader nation-wide concerns like health care and security). That's why they find it difficult to develop and implement innovative processes.

Innovation is difficult for well-established companies. By and large, they are better executors than innovators, and most succeed less through game-changing creativity than by optimizing their existing businesses.

- Mark de Jong, McKinsey

There is no proven formula for success in implementing innovation. There are studies and numerous test cases from which we have collected and selected the following examples, but each organization should strive to make specific adjustments to its needs and aspirations with respect to existing methods and think of new methods specifically tailored to it.



A study conducted by McKinsey, in which 2,500 senior executives from 300 companies participated, identified 8 critical factors that determined how companies that most impressively achieved these goals (i.e., creating a culture of innovation) operated –

ASPIRE - set measurable goals for innovation, CHOOSE - we must define how we choose and what we focus on, DISCOVER - identify new areas and fields to operate in, EVOLVE - develop business models, ACCELERATE - accelerate innovation processes while facing bureaucracy and inhibiting factors, SCALE - assess the volume of anticipated realization and adjust the investment to the final product, EXTEND - extend innovation resources beyond the organization's own resources, MOBILIZE - incentivizing people in the organization to take action with respect to innovation, including entrepreneurship, striving to conduct active experimentation, and creating success stories.

*"Great things in business are never done by one person.
They're done by a team of people"*

- Steve Jobs

Open innovation models are used to locate and harness islands of excellence outside of the organization, while striving to create a win-win situation between the organization and those external entities. For these models to be successfully implemented, they must be able to generate value for the external entities (financial value, data, beta site, customer access and more) while connecting to those entities and integrating technologies or breakthroughs back into the organization. Here are some sample models (see Appendix 4.3.2.4 for details):

- A. Collaboration mechanisms for creative collaboration with customers - channels and mechanisms for relevant activities with business or individual customers producing a proactive dialogue, collection of broad data on various uses, joint pilot studies or experimentation, and integration.



- B. Partnerships with academia - Academic research is one of the common sources for creating new knowledge, so strong connections with academic expert communities allow companies to advance research related to their core areas of activity and new 'blue oceans.'
- C. Greenhouses and accelerators to boost relevant external innovation - establishing "high-speed tracks" for entrepreneurs for business and technological empowerment, with an emphasis on connecting to the internal business units and purposes of the organization. These tracks provide fertile ground for the emergence of new ventures, while aligning them to the goals of the organization, and usually doing so in a subtle way.
- D. External expert communities– when companies identify expert communities that are not incorporated under a particular organization (academia, research body, start-ups, etc.), they may choose to issue a tender with technological and business challenges. Often, knowledge is decentralized and outside of the organization, and dedicated platforms, like InnoCentive, allow them to publicize, connect, incentivize, and protect the intellectual property of inventors and developers outside of the organization.
- E. Technology/Knowledge Transfer - companies that scout relevant technologies whose intellectual property is currently at an early stage or not in use in their particular industry. Licensing agreements can be concluded with academic or research institutions, or even with industrial entities, for the applicative implementation of the relevant intellectual property in question, based on the organization's development infrastructure and business units. In this way, they benefit from relevant or proven technologies deployed to achieve the purposes of the organization.

One can assume that making military technologies and doctrines accessible to those outside of the military due to security classification constraints would be somewhat of a challenge, the IDF employs hundreds of thousands of people and faces many dilemmas that do not involve sensitive information, from food services to construction, transportation, and medical care. In all of these areas, the IDF can and should develop lines of communication with expert communities to find potential solutions and allow access to "solution-finders" outside of the organization.



2.2 Corporate Innovation framework

Defense innovation is the transformation of ideas and knowledge into new or improved products, processes, and services for military and dual-use applications.

- Andrew Ross, 2018

Figure 14 outlines the overall framework for promoting corporate innovation - from guidance and measurement to providing a standard, effective toolbox to identifying the main sources of internal and external innovation. It is important to note that these activities require infrastructure and support from the organization - from the CEO's vision to budget and procurement issues, legal support, human capital, and administrative support. Without broad support, implementation will be very challenging, to say the least.

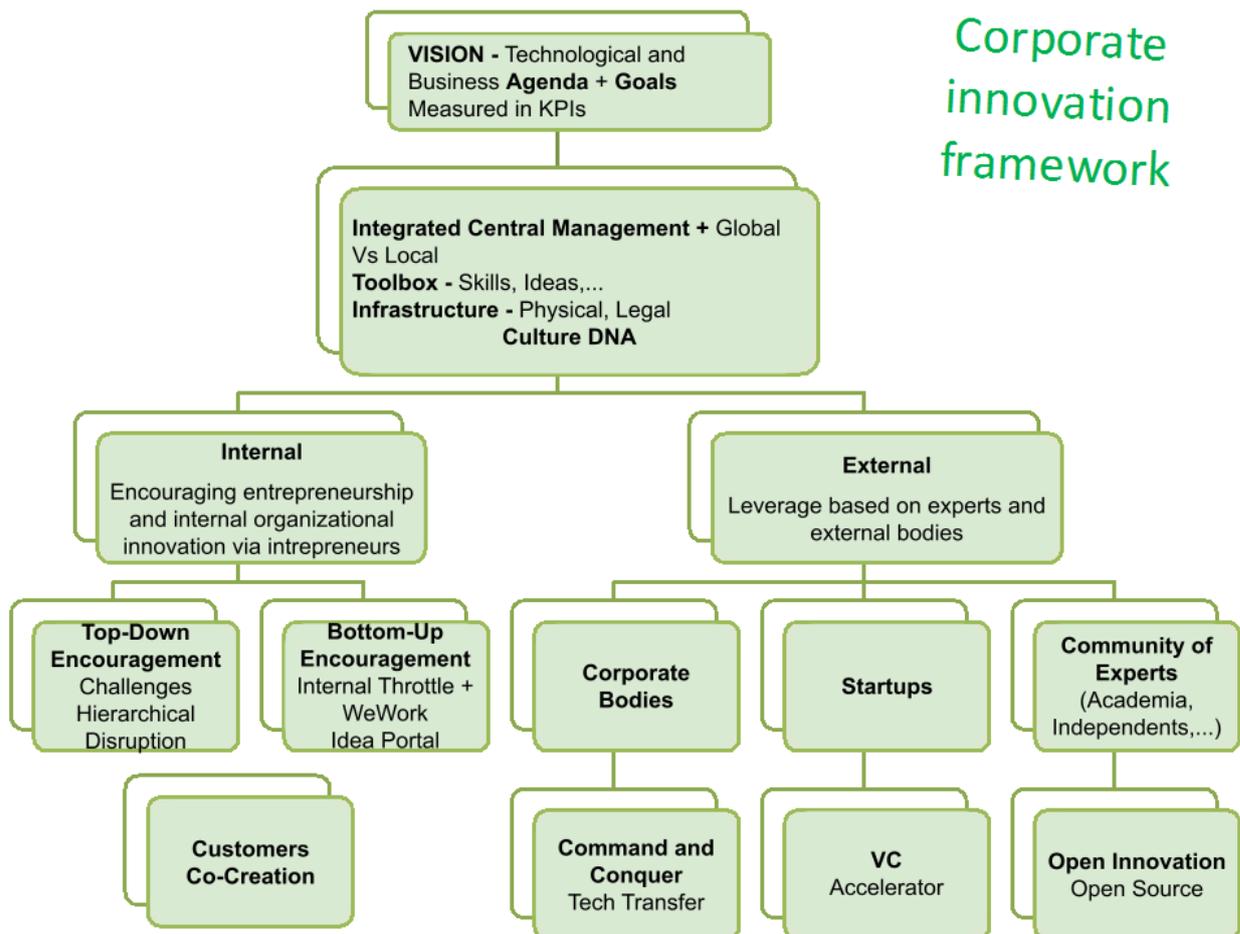


Figure 14 - Corporate Innovation



Part III

Appendices

Businesses that fail to innovate die.

Their people go on.

Armies that fail to innovate endure,

but their people may die.

- Brigadier General Eran Ortal, Bein HaKtavim



3.1 Innovation Portfolio:

Accelerating innovation processes in the organization

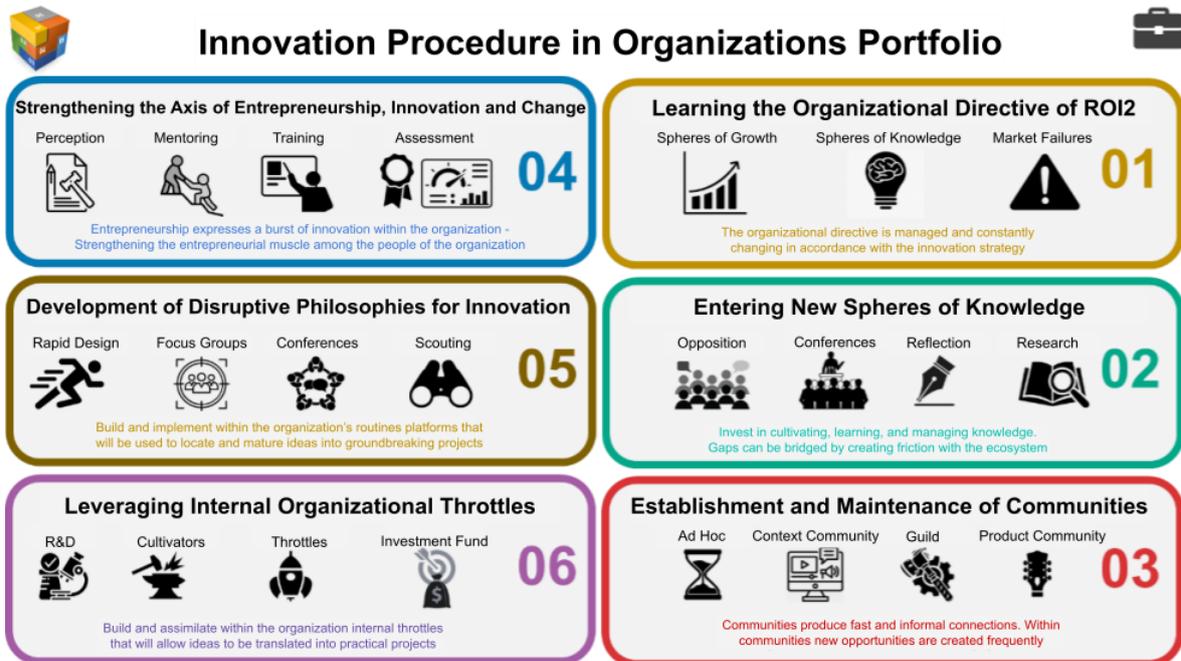


Figure 15- Portfolio of Innovative Activities

Figure 15 depicts the full spectrum of related activities available to the organization's innovation leaders, designed to help them advance innovation strategy, as part of managing their organization's innovation system. The numbering of each category in the figure refers to the order in which these processes are run and implemented, indicating "maturity" of the question that the organization seeks to promote.

A. Studying the organization's directive:

The organization's directive is managed and constantly changing, and the innovation strategy should vary accordingly. The first step driving the innovation process is studying the organization's directive and devising a long-term innovation directive based on the that directive. As part of the learning phase, the innovation leader must meet with the head of the organization, and together, review the current challenges before their organization.



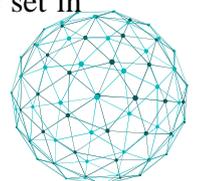
The innovation lead must meet with their colleagues at the senior management level and learn which work plan and force design efforts the organization is already committed to, and where those efforts are being exerted. To complete the study phase, they should meet with major partners, and learn about their pain points. The innovation directive is not immutable. It should guide the organization in areas of growth and the knowledge the organization is interested in establishing to deal with its market failures, or to prepare itself by creating resilience to anticipated failures. The term generally used to refer to identifying advisable investment directions is (ROI²) – Return on Investment & Innovation. ROI² is about calculating the advisability of the and effectiveness of the investment by measuring strategic gain.

B. Venturing into new fields of knowledge

Cultivation, learning, and knowledge management – knowledge gaps can be bridged by engaging with the ecosystem. To be able to promote new directions for investment, one must have a critical mass of knowledge relevant to those areas, and a community of people who translate that knowledge into opportunities. If the organization does not possess that knowledge, it can be produced by running an unconference, which is innovation event in a community format, thus opening a window into the ecosystem and bridge knowledge gaps. During the event, participants get to know the community, and learn how to identify major market trends. When an unconference is produced properly, the community of participants becomes a community of content. By encouraging the participation of the organization's members in professional conferences and their involvement in brainstorming and research processes, the knowledge in the organization – can be processed and developed into an asset for the organization.

C. Community creation and maintenance

Communities produce fast and informal connections, and within those communities, new opportunities are created frequently. Communities provide a way for encouraging opportunities and creating partnerships and crowdsourcing. Through the establishment, management and maintenance of communities dealing with common interest areas, venture technologies or brands, value can be added, and open innovation processes can be set in motion, breathing fresh air into the organization.



D. Strengthening entrepreneurship, innovation, and transformation among members of the organization

Entrepreneurship leads to a surge of innovation to the organization, strengthening its personnel's "entrepreneurial muscle".

An organization's people are its greatest asset. The greater their abilities, talents, skills, and level of interest, the greater their marginal contribution to accelerating innovation within the organization. Cultivation of entrepreneurial DNA among the organization's members (through training, initiation, and recognition processes) are key to integrating a culture of innovation, in which the person takes responsibility for the future of the organization in which they serve, and not just the tasks assigned to them.

E. Generating ideas for groundbreaking innovation projects

Creation and implementation of the organization's platforms and routines, used to identify ideas and develop them into groundbreaking projects.

Hierarchical disruption, focus teams, Design Sprint processes or hackathons help innovation leaders focus the efforts of the community and inter-organizational efforts to solve a problem that is not well defined and that interests the organization. Such events focus on development and proof of concept for projects. The participants in the event would be responsible for contributing the creative concept for the solution to the problem raised. Through these events, innovative ideas drawn from the real world can be generated and developed, rather than sticking to the known, standard courses of force design.

F. Leveraging intraorganizational accelerators

Creating and implementing intraorganizational accelerators so that projects and ideas may be developed into practical solutions. The way to enable projects or ideas to be developed into organic projects is by taking the ventures to entrepreneurship centers, accelerators, or incubators, which develop the venture and dramatically reduce its risks. Once a venture reaches a sufficient level of maturity, it can be implemented as a regular project.

"Hub" or "startup accelerator" are terms that describes time-delimited programs in which entrepreneurial groups study different aspects of the world of entrepreneurship in order to develop faster. During the program, entrepreneurs are accompanied by experienced



mentors who help them with the venture's business development, from building a detailed business plan to helping implement marketing and sales strategies.

The purpose of the accelerator is to put the entrepreneur in a time tunnel, they would go through a business and technological development course within just a few months.

In the technology incubators, for a set period of time, entrepreneurs receive financing and assistance with management, marketing, and administration (which usually includes physical space), until they reach a mature operational product or raise capital from investors. While in the incubator, the entrepreneur should build a proper business plan, demonstrate technological and marketing advisability, including a prototype or beta version of the final product, and bring the venture to a state where it is ready to find the first customers, attract commercial investment or team up with strategic partners. The expected outcome is support for the production and proof of concept of a working prototype and/or the launch of a product in the market through serial production.



3.2 ISO 56000-56007 -

Innovation Management in the Organization

ISO 56000-56007, published in 2019-2020, is an international quality standard for innovation management in organizations, providing guidelines for the establishment, implementation, maintenance, and continuous improvement of an innovation management system for use in all established organizations.

The standard applies to organizations seeking to produce lasting success, by developing the ability to effectively manage effective innovations activities in order to achieve the organization's directive. The ability to innovate the organization is recognized as a key factor for growth that is financially advisable, leads to enhanced wellbeing, and develops the individual." The organization's innovation capabilities include the ability to identify and respond to change, to seize new opportunities and leverage the knowledge and creativity of people within the organization, in partnership with external entities. An organization can innovate more effectively and efficiently if all necessary activities and other interrelated or interacting elements are managed as a system. An innovation management system guides the organization on how to determine its innovation vision, strategy, policies, and objectives.

Establishing an innovation management system

The standard stipulates that the organization must determine the intent, limitations, and applicability of an innovation management system, in order to establish its scope. The organization shall establish, implement, maintain, and continuously improve the innovation management system, in accordance with the intent of the organization's innovation, including the processes and support mechanisms necessary for their existence. The intent of innovation is the basis for determining the innovation strategy. The realization of it all would be supported by instilling culture and creating collaborations within the organization. Therefore, the organization must promote a culture that supports innovative activities, in order to enable and encourage creative thinking and creative action, and innovate, as necessary.



The organization must create a work environment characterized by openness, curiosity and user focus; encouraging feedback and suggestions; encouraging learning, experimentation, creativity, change, and critical thinking; encouraging risk-taking and learning from failures, operating as a community; collaboration and participation in internal and external forums, diversity, respect and inclusion; disciplines and different perspectives in innovation activities; common values, beliefs and behaviors, and establishing a balance between linear and nonlinear planning and processes.



Figure 16: The eight principles of operation of the innovation system and 5 stages in the management of the organization's innovation system



3.3 Innovation strategy in the United States Military

Like the IDF, advanced militaries face similar barriers and needs, which may be either external, such as geopolitical changes, a shift in enemy concept, or concentration of technological innovation in the civilian market, or internal, such as a culture that does not promote innovation, difficulty developing the appropriate infrastructure, and methods for organizational innovation.

The U.S. Air Force, for example, has learned that "Innovation is the new battlefield", and that it is a crucial component in shaping national security and future battles. As described in the document entitled "Force design gaps", about 80% of American R&D takes place in the civilian market. Military procurement and development systems are outdated and are out of sync with the evolving market.

In 2017, the US Air Force established the AFWERX program, for the development of innovation, emphasizing a culture of organizational innovation within the service branch. This program aims to develop, integrate, and implement innovation, creativity and disruptive technology while creating a platform for cooperation involving the air force, the academic world, industries, and new companies and buyers.

The US Army also felt a shortage of proper strategic doctrine guiding the development of a culture of innovation. Therefore, in 2017, a five-year plan, called "The Army Innovation Strategy", was released. Its vision – to develop a competitive advantage, today and in the future, through the adoption of a culture of innovation and entrepreneurship that will lead to winning solutions in a dynamic world.



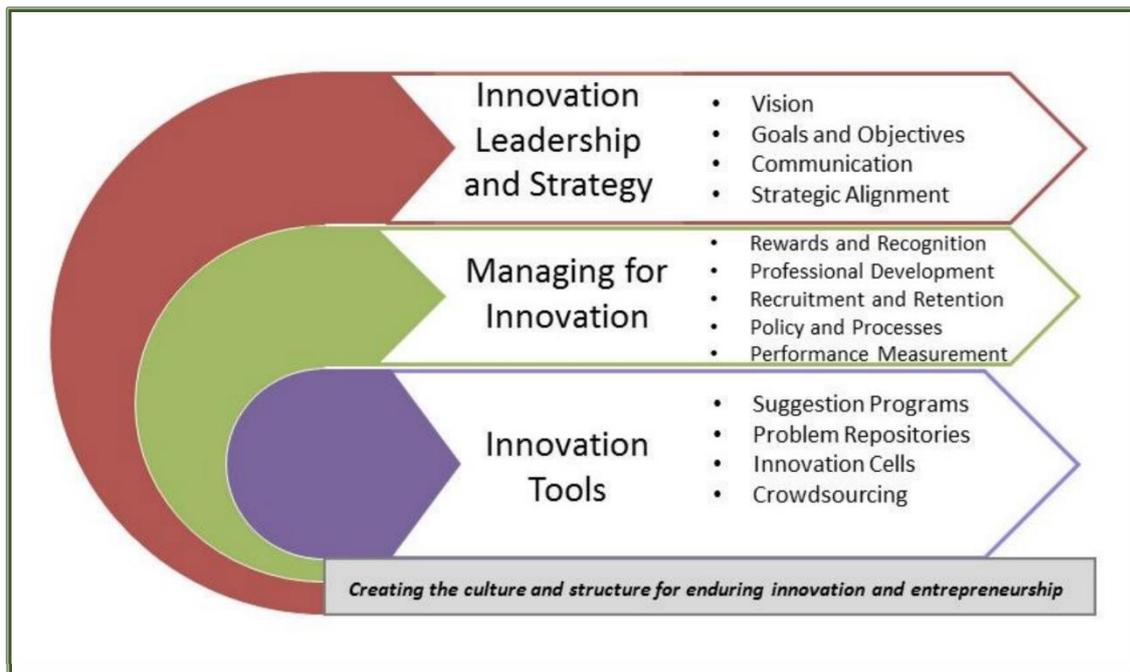


Figure 17. Source: *Army Innovation Strategy 2017-2021*

This plan includes three main components - leadership innovation and strategy, innovation management and tools for innovation, as well as division and breakdown of milestones at each stage (each year within the five-year plan), from the lack of innovation and discovery of gaps to planning military innovation structure, optimization, and measuring the innovation processes that were executed.

Following the transition to a multi-dimensional concept of operations, the AFC (Army Future Command) was established in 2018. Its purpose – to develop capabilities, training, doctrines, and multidimensional teams to deal with evolving operational challenges. This command's flagship project is Project Convergence 2021, which is currently being implemented.

Military and corporate innovation are both based on organizational innovation that enables the infrastructure needed to develop practical technological innovation and puts into practice a culture of independent and critical thinking, creativity, open communication, breaking bureaucratic barriers, and readiness to change basic assumptions and develop new concepts. Since they are large, stable, and successful entities that also suffer from cumbersome bureaucracy and a cultural and organizational concept that does not encourage change, we can assume that the need for corporate transformation is also applicable to the IDF.



Innovation is a key factor in the strategy of most organizations today. 84% of senior executives surveyed define innovation as a critical component in future growth and success. The need for innovation is more relevant today than ever, as technological developments produce strategic threats in the form of disruptive technology, at a higher quantity pace. An organization unprepared for this challenge will probably be unable to justify its existence in the coming years.

Like other corporations, the IDF also needs to embrace innovation and transform. This argument is clearly made in the Chief of the General Staff's document, *Gaps in Force Design*, in which he lists the gaps in the way the IDF executes force design, the reason for these gaps, and the required change. According to the CoS, the IDF's effectiveness in countering its enemies and the lack of a decisive outcome in its military operations, as well as the conceptual conservative, slow pace and cumbersome nature of force design underline the need for change and form the basis for the creation of this strategy document.



3.4 The most innovation corporates

The top five innovative companies of 2021 by BCG were Apple, Google (Alphabet), Amazon, Microsoft, and Tesla.

It is for good reason that the leading companies in the world today are also among the most innovative. These companies heavily invest in maintaining a competitive edge, penetrating new markets, and creating new opportunities. These achievements are reserved for entities that succeed in being impressively innovative.

Innovation is a particularly challenging for large organizations, as they dedicate most of their resources to maintenance and enhancing what already exists (e.g., manufacturing and supplying products, or broader nation-wide issues like health care and safety).

Innovation is difficult for well-established companies. By and large, they are better executors than innovators, and most succeed less through game-changing creativity than by optimizing their existing businesses.

There is not a proven formula for success in implementing innovation. We have collected and selected the following examples nevertheless, each organization should strive to make specific adjustments to its needs and aspirations with respect to existing and new forward-thinking methods.

Despite this challenge, any organization that wishes to persevere, be it a private business or a governmental or military agency, must take action to encourage innovation processes in its activities, otherwise it will lag behind and become irrelevant.

Our liberty... is endangered if we pause for the passing moment, if we rest on our achievements, if we resist the pace of progress. For time, and the world, do not stand still. Change is the law of life. And those who look only to the past or the present are certain to miss the future.

- John F. Kennedy, 1963



Google case study

Google serves as an inspirational example of organizational innovation, with an extensive list of mechanisms that act to ensure its technological and commercial superiority, including:

- An unobstructed vision and a clear mission that unite tens of thousands of employees around the world and many relevant external partners.
- A mechanism that encourages pilot programs, with continuous improvement of outputs and continuous learning.
- "Google day", which practically gives its employees a free hand to promote innovative individual and group projects.
- "10x thinking", which promotes radical innovation, strives to enhance results exponentially, and features Google[x], a special department focused on groundbreaking innovation.
- The 70/20/10 model: 70% of the focus is on the core business, 20% in expanding that core business, and 10% of inputs are invested in projects or vectors that are unrelated with the core business.
- Sophisticated open innovation mechanisms that include lucrative partnerships with academia, industry, startups, government entities, and more.
- Built-in incentives that encourage innovation and are tolerant of failures – "never fail to fail" – that try to preserve an innovative, bold, and relevant culture, even when the company grows into a global operation with a large number of employees.
- Focusing on data-driven decision-making, working closely with customers, and incessantly striding towards new blue oceans.

Various organizations have chosen to adopt innovation as a central value in their culture and their regular commercial-technological behavior. Over the years, models have been developed for effective managing innovation, both internally, i.e., vis-a-vis company employees, and externally, with respect to the external innovation ecosystem.



3.5 Innovation in the Israeli Government Sector

Innovation in the public sector can create significant value for society, citizens, and the environment. This is the ability to improve the civil service and take to enhance all facets of the public's quality of life, creating a better reality for much of the population. Potentially, this could have a significant impact, one that's even greater than innovation in the private sector and the opportunities it generates.

Despite the many challenges inherent to innovation in this sector, which include bureaucratic duties, a complex organizational culture, and, sometimes, a lack of competition, many examples of innovation can be found in the public sector, which has already reached significant strategic achievements.

The largest non-military governmental R&D organizations in Israel, including the Innovation Authority (investment and partnerships with the private sector) and the Council for Higher Education (academia), advance diverse innovation programs connected to most of the models and mechanisms described earlier. This also holds true for government bodies that seemingly operate as a monopoly, yet they still push for innovation and relevance. It can be said that the government sector operates in the field of innovation to encourage the existing Israeli ecosystem and to link the purposes of the various government entities.

Government companies have also made decisions and promoted relevant entities and innovative actions, such as KARAT, the Israel Electric Corporation's venture promotion unit, the Israel Railways' "Start-Up Station", and WaTech, Mekorot's innovation and R&D center. These programs implement diverse internal (closed) innovation and open innovation models, which were covered in previous chapters.

The innovation program in government companies was launched following a May 2018 Socio-Economic Cabinet resolution, having understood the importance of "Putting government companies at the forefront of technology, and transforming them into leaders in implementing



technologies through the early adoption of innovative technology and development designed to improve business results and the level of service provided to customers.

Direct and indirect assistance to various technology development efforts will lead to the creation of positive externalities that will enhance the wellbeing of Israeli citizens, while improving business results and the level of service provided by those companies."

The program was designed to remove barriers and limitations facing government companies inhibiting the adoption of innovative technologies, and to enable, among other things, the establishment of companies whose main focus is technological innovation, or to enable the receipt or acquisition of shares in such companies. The aggregate investment limits will be up to 10% of the equity of government companies, or up to 200 million NIS.

In addition, in 2018, the Innovation Authority issued a call for bids for the establishment of a new support course for R&D programs and pilot projects (the "Pilot Program"). This was created as a joint track for the Innovation Authority and the Government Companies Authority in the Ministry of Economy.

To conclude, the Israeli public sector effectively implements the various relevant models for advancing innovation, and this acts as a force multiplier for activities and as a potential for saving the time and resources involved in re-establishing the means of contracting, decision-making, support, and control.



3.6 Innovation in the Israeli Defense Sector

A. INNOFENSE (the defense community): In 2019, the Director of MAFAT, the Israeli ministry of defense's Directorate of Defense Research & Development, took steps to establish an innovation center for defense technologies, in collaboration with the SOSA global innovation network and the IHLS defense accelerator.

The goal was to set up an innovation center for Israeli entrepreneurs, based on a business model that would allow the defense establishment to receive what was important to it – new knowledge and groundbreaking developments – at a relatively negligible cost, while giving entrepreneurs access to the defense establishment's knowledge sources and beta sites which are otherwise unavailable to civilian entrepreneurs. It also provided relatively small MOD investments as SEED capital. The objective was to find dual-use technologies, that is, technology that could be used for both civilian and military purposes, to the greatest possible extent. This entailed the realization of open innovation, and a combination of crowdsourcing and an accelerator.

The Innovation Center has announced 30 challenges, devised by MAFAT and IDF servicemembers and these were shared with accelerator centers, SOA and IHLS. By publicizing these challenges in this way, it would reveal specific and well-defined needs of the IDF to more than 10,000 startups and entrepreneurs. We have recently started the screening process with the different candidates, at the end of which 12 companies will be selected. They will develop the projects until the proof of concept (POC).



B. Libertad Foundation (Mossad) - In 2017, the Mossad established the Libertad Fund, as its strategic investments arm in the private market, with the purpose of expanding its freedom of operation by acquiring new technological knowledge and forging partnerships with the high-tech industry. The fund invests in companies and entrepreneurs at early seed stages by providing mentoring in exchange for free access, without commercial exclusivity, to the knowledge that is developed.

C. The Garage and the Xcelerator- Several years ago, and more specifically, the General Secret Service known as 'Shabak' realized it must keep innovation fresh within the organization, thus it established the 'Garage'. What initially started as an internal hackathon (akin to internal innovation) in which the organization's employees advanced private and intraorganizational initiatives, Eventually, continued as open innovation utilizing the many advantages the private market could offer. Finally, this later became an accelerator called "The Xcelerator, in collaboration with TAU Ventures, (Tel Aviv University), to locate dual-use technology, or technology whose foundations could be used for security activities, regardless of the company's original goal, while the Shabak over a course of four months would provide "accelerating mentorship" for startups. At the end of this period, each company would present its progress and the technological capabilities it had obtained.

The highly sought-after program has so far seen dozens of hand-picked start-ups that enabled Shabak to apply brand new technologies in its clandestine activities.



