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COUNTER-TERRORIST IMPLICATIONS OF ISRAEL DEFENSE FORCES' DATA AND AI STRATEGY

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Counter-Terrorist Implications of Israel Defense Forces' Data and AI Strategy

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Executive Summary

"Alchemist," "Gospel," and "Depth of Wisdom" AI-powered Iron Dome intercepting Hamas' al-Qassam type short-range missiles in under 22.5 seconds during Operation Guardian of the Walls (often dubbed Israel's first AI war by senior members of the Israel Defense Forces (IDF)) pushed Avad Dagnan's Digital Transformation Administration (DTA), Unit 8200, and Unit 9900 to develop a four-step Data and Artificial Intelligence Strategy in 2022, that constitutes Israel's trident vision: **1. Multidimensional Battlefields; 2. Flexibility and Adaptation; 3. Speed and Efficiency of Weaponization.**

Although nationally applauded, the strategy has received its fair share of criticism concerning cybersecurity, transparency, and the risk of miscalculation that could lead to civilian casualties in a conflict.

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Introduction

After harvesting the data obtained through Operation Guardian of the Walls and what the IDF referred to as Israel's first AI war during the May 2021 escalation with terrorist organizations Hamas, Palestinian Islamic Jihad (PIJ), and Hezbollah (partly), Brig.-Gen. Erez Askel, the commander of the Israel Defense Forces (IDF) Unit 9900, publicly announced the integration of artificial intelligence into counter-terrorist battlefields at the Ramon GeoInt360 conference: "…IDF soldiers today receive intelligence completely differently and also use it differently. De facto. The battlefield looks completely different…". [2]

According to a senior representative from the IDF, Maj. M., AI in counter-terrorism aims to enhance border security while minimizing the risk to the lives of Israeli soldiers: "We want our borders to be smart and deadly. Instead of putting troops at risk, we can deploy a semi-autonomous vehicle with sensors and cameras to do the same job." [3]

While Israel seeks to perfect its military application of AI by fully automating counter-terrorist decision-making, senior representatives of the IDF, Israel Aerospace Industries, and Rafael Advanced Defense Systems agree with Brig.-Gen. Erez Askel, who in a jokey manner called today's Fortnite players the future soldiers, envisioning the future of Israel's defense as a combination of human and digital capabilities:

> *… There's been a lot of advancements in terms of technology because we told them really what the soldier on the battlefield needs. There's technology, but you need to give the soldier what he needs in a way he understands like a computer game, and doesn't confuse them with too much data…*[4]

For all that, the Israel Defense Forces are the proud carriers of "groundbreaker" status in AI military applications. However, senior IDF representatives seek superiority

[2] Brig.-Gen. Erez Askel at Ramon GeoInt360 (2022). Conference highlights are available at: https://www.geoint360.com/2022-highlights

[3] The Jerusalem Post (2021). Interview with IDF's Maj. M.. Snippets are available at: https://www.jpost.com/israel-news/the-idf-and-the-ai-game-changer-674636

[4] Ibid [2].

and consider themselves contenders to the People's Republic of China, whose leadership in the field is guaranteed "because there are no regulations" **(Dr. Irit Idan).** [5]

'Breaking the Human Barrier': Israel's First AI War

Israeli paratroopers directly notifying an aircraft pilot, Tzofit, about being a floor above Hamas terrorists in the same building, requesting active engagement, and the Zikim base warning the infantry and an available aircraft about Al-Qassam Brigade members trying to covertly swim to the shore during Operation Protective Edge in 2014 are the highlights of the IDF's first full-scale digital war against Hamas. The 2014 Gaza War has given the Israel Defense Forces a breakthrough in information sharing about the battlefield by funneling the field footage to HQ and streaming it to appropriate commanders on demand or when necessary. [6]

Seven years later, Operation Guardian of the Walls became the IDF's first AI-led counter-terrorist effort, using the data possession to its both defensive and offensive advantage, assisting the Iron Dome anti-aircraft defense system to calculate Hamas-fired Qassam rocket trajectories based on the radar information to intercept and orchestrate precision attacks against Hamas target assets in the course of counter-actions.

IDF's data-driven counter-terrorist targeting against Hamas in the 2021 Israeli-Palestinian conflict relied on raw data received from open source (OSINT), geospatial (GEOINT), and human intelligence, and UNIT-8200-developed "Alchemist," "Gospel," and "Depth of Wisdom" programs to identify the opponent's weaponry, location, and safe areas for infantry operations. The software delivered military recommendations with a designated target list for the IDF, ready to share with the Israel Air Force. Unit 9900's

[5] Ibid [3]

[6] Ginsburg, M. (2014). The IDF's First Fully Digital War. The Times of Israel. Available at: https://www.timesofisrael.com/the-idfs-first-fully-digital-war/

use of "Alchemist," "Gospel," and “Depth of Wisdom” allowed the Israel Defense Forces to:

- Locate Hamas’ 14 rocket launchers near schools in the Gaza Strip;
- Trace more than 150 Hamas and PIJ members and neutralize them;
- Map Hamas’ “Metro” tunnel network and conduct precision airstrikes;
- Launch an offensive against senior Hamas operatives, Bassem Issa and Joma Tahla.
- Calculate the trajectory of more than 3000 missiles and shells fired toward Israel.

Counter-Terrorist Implications of Israel Defense Force’s Data and AI Strategy 2022

The success of Operation Guardian of the Wall significantly increased Israel's investment in AI. IDF's Chief of Staff, Lt.-Gen. Aviv Kohavi, stated that "data and AI can win wars," leading to his approval of the AI Strategy 2022, designed by Brig.-Gen. Aviad Dagan's Digital Transformation Administration (DTA).[7]

The designation of enemy-in-hiding (violent extremist, non-state actors) as Israel’s primary security concern has reinforced the counter-terrorist context of DTA’s strategy and resulted in the IDF’s trident vision against terrorist organizations (e.g. Hamas, PIJ, Hezbollah, Daesh, and Al Qaeda, or any other), that considers:

[1] Multidimensional Battlefields: Digital Transformation Administration brings the cyber dimension to conventional air, land, and sea arenas and supports joint action.

[2] Flexibility and Adaptation: While states and large companies manufacture conventional arms, DTA appreciates non-state actors contributing their data to (military) AI networks, making data weaponization a more flexible procedure.

[7] Ibid [3]

[3] **Increasing the speed and efficiency of data weaponization** through non-state actor engagement and live data updates.

To develop AI-supported decision-making and automation with human supervision, the Data and AI Strategy lists four steps: **[1] Provision of high-speed, protected networks by** IDF trading its broadband connectivity for the cloud. **[2] Building data lakes** through interagency coordination to help Israel's security-responsible actors receive data on time; **[3] Reorganizing data factories** by sorting existing data according to topic, region, and manufacturer; **[4] Obtaining AI superiority** over enemies and competitors.

il.CT-AI.exe: Two Math Problems

The strategy's success in a terrorist-infested battlefield scenario depends on the speed advantage the IDF can receive in decision-making, thanks to artificial intelligence, which has been demonstrated defensively and offensively during the escalation with terrorist organizations: Hamas, PIJ, and partly Hezbollah. This paragraph simplifies the math behind offensive and defensive AI CT applications to demonstrate the IDF's AI-derived advantage on the battlefield.

[Math Problem 1: Iron Dome]

Short-range al-Qassam rockets, used by Hamas in 2021 to bomb the southern part of Israel, travel at 200 m/s (720 km/h) and have a range of 4.5 km. Therefore, Qassam 1 reaching an Israeli target at 4.5 km from the launching point requires 0.00625 hours (4.5/720) = 0.375 minutes = 22.5 seconds, leaving IDF staff with even less time to calculate the trajectory and intercept the rocket. However, Iron Dome, with the assistance of Alchemist," Gospel," and "Depth of Wisdom," successfully neutralized more than 3500 rockets, including Qassam 1.

[Math Problem 2: Precision Strikes]

According to Avad Dagnan, in a non-battlefield scenario, the IDF can successfully shortlist targets from the list of 10 for a precision airstrike. However, the situation

dramatically changes in battlefield dynamics when the number of targets significantly increases. According to Dagnan, AI-assisted decision-making was able to shortlist not just 10 targets but identify ten types of targets, including a hideout surrounded by schools that sheltered senior Hamas member Bassem Issa.

Senior IDF officials deemed the AI performance in Operation Guardian of the Walls a success, comparing the battlefield results with the 2014 Gaza Strip scenario: "We [Israel] achieved more in 50 hours of fighting than in the 50 days of Operation Protective Edge." [8]

International Feedback on Data and AI Strategy 2022

Although the senior IDF members publicly applauded the strategy, it received some criticism from Israel's international partners, who were concerned about using AI in offensive decision-making that would target violent extremist actors but could also harm civilians due to miscalculations. The miscalculation risks are empowered by cybersecurity concerns and know-how transference, which could eventually end up in the hands of what strategy calls the enemy in hiding.

Conclusion

IDF's initiative to introduce AI to counter-terrorist battlefields due to its success against Hamas, PIJ, and Hezbollah in May 2021, was met with approval amongst senior security personnel. The 4-step documentation of the IDF's vision for military AI in Data and AI Strategy (while reasonable) worries Israel's international partners about target miscalculation, cybersecurity, and know-how control.

[8] Warsaw Institute (2021). Artificial Intelligence on the Battlefield. Available at: https://warsawinstitute.org/artificial-intelligence-battlefield/

List of Abbreviations:

AI - Artificial Intelligence

DTA - Digital Transformation Administration

GEOINT - Geospatial Intelligence

HQ – Headquarters

IDF - Israel Defense Forces

il.CT-AI.exe: .il – Israel's Internet Country Code; CT – Counter-Terrorist; .exe – executable

OSINT - Open Source Intelligence

PIJ - Islamic Jihad Movement in Palestine / Palestinian Islamic Jihad

References:

Brig.-Gen. Erez Askel at Ramon GeoInt360 (2022). Conference highlights are available at: https://www.geoint360.com/2022-highlights

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Ginsburg, M. (2014). The IDF's First Fully Digital War. The Times of Israel. Available at: https://www.timesofisrael.com/the-idfs-first-fully-digital-war/

Warsaw Institute (2021). Artificial Intelligence on the Battlefield. Available at: https://warsawinstitute.org/artificial-intelligence-battlefield/