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SAHA İSTANBUL & TÜBİTAK TÜSSİDE

SAHA AKADEMİ MBA YÖNETİCİ GELİŞTİRME PROGRAMI

Warfare Tactical Drone Pilot Training & Simulator Program

MBA Project

Ali Kemal ALDANMAZ

Consultant

Dr. Uğur TARÇIN

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ARAŞTIRMA PROJESİ UYGUNLUK FORMU

MBA: 2024-2025/01

1. SAHA İstanbul Yönetim Kurulu kararıyla, 2024-2025 eğitim döneminden itibaren SAHA AKADEMİ MBA katılımcılarına "Araştırma Projesi" hazırlama yükümlülüğü getirilmiştir. Bu uygulama; katılımcıların sektörel bilgi, stratejik düşünme ve akademik üretkenlik yetkinliklerini geliştirmeyi hedeflerken, savunma sanayii ekosistemine bilimsel katkıyı artırmayı amaçlamaktadır. Bu girişim, Türk savunma sanayii ekosisteminde bilimsel katkıyı artırmaya yönelik önemli bir adımdır.

2. SAHA İstanbul-SAHA AKADEMİ tarafından yayımlanan bu çalışma, ilgili yazar tarafından özgün biçimde hazırlanmış ve beyan edilmiştir. Çalışmada yer alan görüşler yazara ait olup, SAHA İstanbul'un kurumsal görüşünü yansıtmamaktadır. İçerikte sunulan bilgi, yorum ve sonuçların doğruluğu sorumlu yazara aittir. SAHA AKADEMİ; benzerlik oran tespitini yapmıştır.

3. Bu çalışma, [Ali Kemal ALDANMAZ] tarafından hazırlanmıştır. Araştırma Projesi danışman tarafından değerlendirilmiş ve sunumu [11 Mayıs 2025] tarihinde yeterli görülerek kabul edilmiştir.

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Başkan	Dr. Uğur Tarçın (*SAHA AKADEMİ Öğr.Görevlisi)*	*e-imzalıdır*
Üye	Ayşe Çağın (*SAHA AKADEMİ Yöneticisi)*	*e-imzalıdır*
Üye	Muzaffer Ünsaldı (*Kurumsal İletişim ve Marka Yöneticisi*)	*e-imzalıdır*

(Formun aslı, imzalı olarak ilgili dosyada muhafaza edilmektedir.)

CONTENT

WARFARE TACTICAL DRONE PILOT TRAINING & SIMULATOR PROGRAM

(PROJECT)

Ali Kemal ALDANMAZ
TR Motor
alialdanmaz@hotmail.com

1. Summary (Turkish)

Warfare Tactical Drone Pilot Training & Simulator Program, askeri sektör için geliştirilen yenilikçi bir eğitim çözümüdür. Bu program, taktiksel drone operasyonları konusunda profesyonel pilotlar yetiştirmeyi amaçlar. Geleneksel drone eğitimine kıyasla daha düşük maliyetli, daha güvenli ve daha etkili bir yöntem sunan simülasyon tabanlı eğitim yaklaşımı, gerçekçi savaş ve görev senaryolarıyla desteklenmektedir. Program kapsamında VR/AR destekli simülatörler, yapay zeka tabanlı performans analizi ve gerçek zamanlı operasyon simülasyonları gibi ileri teknolojiler kullanılmaktadır. Savunma sanayi, güvenlik şirketleri ve lojistik sektörleri için büyük avantajlar sunan bu program, özel sektörün hızla büyüyen taktik drone pazarına uyum sağlamasını ve rekabet gücünü artırmasını hedeflemektedir.

2. Project Scope

The drone market is crucial due to its wide-ranging applications across multiple industries, technological advancements, and its impact on both civilian and military operations. For this reason, the project is developed.

3. Objective

The primary objective of the **Warfare Tactical Drone Pilot Training & Simulator Program** is to provide a comprehensive and efficient training system for drone pilots operating in tactical and security environments. This program aims to enhance pilot proficiency by integrating advanced simulation technology, real-time data analytics, and mission-based learning scenarios. By reducing training costs and operational risks, the program ensures that private sector organizations, security firms, and defense contractors can develop highly skilled drone operators with the capability to execute complex missions effectively. Furthermore, the program seeks to establish a standardized training protocol that aligns with modern battlefield and security requirements, making drone training more accessible, scalable, and technology-driven.

4. Introduction

The Ukrainian battlespace features the most intensive use of drones in a military conflict in history, marking a shift in warfare tactics and technology. First drone war in Ukraine shows high tech and expensive tank and equipments were damaged by drones.

The use of tactical drones has become increasingly important in both military and private sector operations. However, traditional drone training is costly and involves high risks. **The Warfare Tactical Drone Pilot Training & Simulator Program** offers a low-cost, highly efficient, and safe training model tailored for the private sector, ensuring that pilots are trained at a professional level. This report comprehensively examines the program's content, market opportunities, and investment potential.

Figure 1. Tactical Drones Samples.

5. Why This Program?

The aim of this program is to improve efficiency of drone usage in field. Traditional drone training is costly and risky. Simulation-based training enables safer and more efficient pilot training. Significant market opportunities for the private & military sectors.

Figure 2. Comman Control of System.

6. Market Opportunities

The increasing use of drone technology presents significant opportunities in defense, security, logistics, and the private sector. Key market segments include defense and security companies, which require operational training for private security firms and military organizations. The logistics and cargo sector also demands drone operator training for autonomous delivery operations. Disaster management and public safety agencies benefit from trained drone pilots for emergency response operations. Additionally, industries such as agriculture, construction, and energy increasingly rely on drone technology, highlighting the need for specialized training programs.

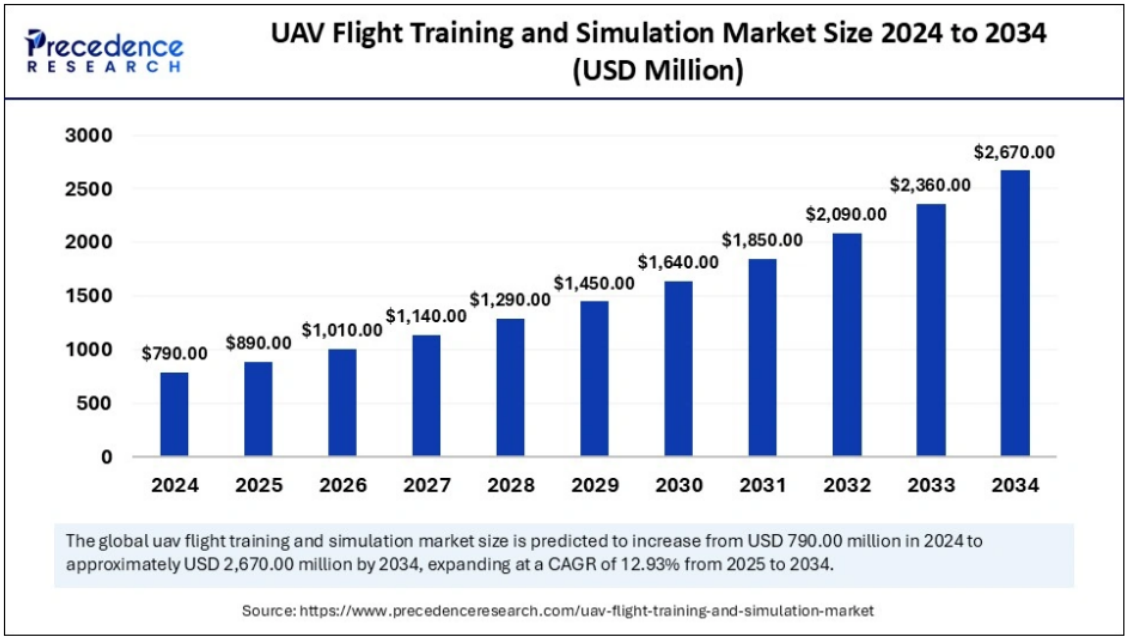

Figure 3. UAV Market (2024 – 2034)

The global UAV flight training and simulation market size is calculated at USD 890 million in 2025 and is forecasted to reach around USD 2,670 million by 2034, accelerating at a CAGR of 12.93% from 2025 to 2034. The North America market size surpassed USD 320 million in 2024 and is expanding at a CAGR of 12.95% during the forecast period. The market sizing and forecasts are revenue-based (USD Million/Billion), with 2024 as the base year.

7. Training Content & Technology

The training program consists of a structured curriculum designed to equip drone pilots with the necessary skills to operate effectively in tactical scenarios. The program covers both theoretical and practical aspects to ensure a well-rounded learning experience. The theoretical portion

includes in-depth lessons on aerodynamics, flight mechanics, communication protocols, and safety measures. Additionally, students learn about modern warfare strategies, mission planning, and regulatory compliance, providing them with a solid foundation in tactical drone operations.

On the practical side, the program incorporates advanced simulation-based training, leveraging virtual reality (VR) and augmented reality (AR) technologies to create highly realistic operational environments. Trainees can engage in mission-based learning scenarios that replicate real-world combat and surveillance operations. These scenarios include reconnaissance, target tracking, search and rescue missions, and defensive maneuvers, allowing pilots to develop critical decision-making skills under pressure.

Furthermore, the program utilizes artificial intelligence (AI)-powered performance analytics to monitor and assess trainees' progress. This technology provides data-driven insights, helping instructors tailor training sessions to individual learning needs. Real-time data processing and telemetry integration enhance the accuracy and responsiveness of the training simulations, ensuring that pilots are fully prepared for live operations. The incorporation of next-generation drone control systems and automation techniques ensures that pilots remain at the forefront of evolving drone technologies, making the training program both future-proof and adaptable to new advancements in the field.

Figure 4. Visual Picture/Motion.

Türkiye: HAVELSAN is a leading Turkish defense and technology company specializing in advanced simulations systems using augmented reality (AR), virtual reality (VR) and mixed reality (MR). The company develops: Maintenance and Training Simulators for T-129 and F.16, Full Flight Simulators (A320, B737), Holographic Command – Control Systems (ASGEK) and AR/MR Platforms. In this regard HAVELSAN and other Turkish companies are able to this projects.

8. Investment & Business Model

The program offers a variety of revenue models, including direct training service sales tailored for companies and institutions. A subscription-based training model allows continuous adaptation to evolving drone technologies. Strategic corporate partnerships with defense, security, and logistics sectors create opportunities for long-term collaboration. Investment and R&D support further enhance technological advancements, providing investors with lucrative business opportunities.

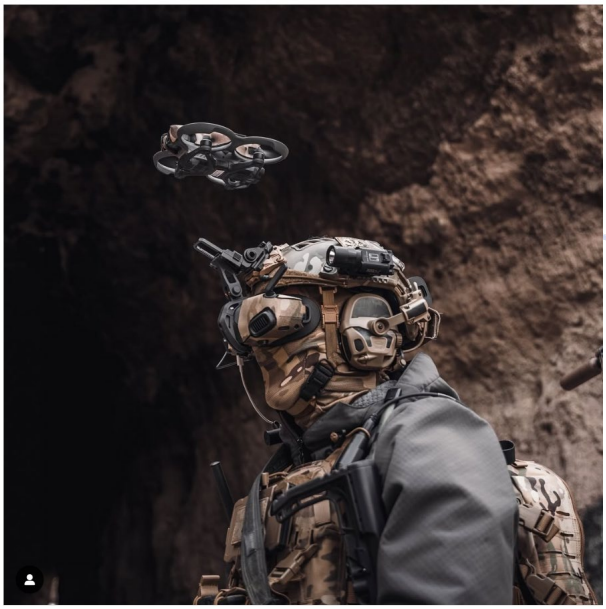

Figure 5. Drone/Pilot in the Battle.

9. Conclusion

The **Warfare Tactical Drone Pilot Training & Simulator Program** is an innovative training solution that offers significant advantages for the private sector. By utilizing a simulation-based approach, the program reduces costs, minimizes risks, and enhances pilot proficiency, providing businesses with a competitive edge.

Key Players are as follows in his domain:

- NATO & Allied Defense Institutions

- Military Training Centers & Academies
- Defense Contractors (e.g., BAYKAR, ASELSAN, HAVELSAN, Lockheed Martin, Thales, Boeing)
- Tech Firms Specializing in VR/AI Simulation

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