The Rise of AI and Autonomous Systems: Reshaping the Defense and Military Contracting Landscape

The defense and military contracting industry is undergoing a profound transformation, driven by the rapid advancement and adoption of artificial intelligence (AI) and autonomous technologies. This shift is disrupting the traditional dominance of large, established contractors and creating opportunities for smaller, more agile companies to emerge as key players. This report examines the impact of several leading AI and autonomous systems companies on the defense industry, analyzing market dynamics, contract values, and industry influence over the past 20 years. It also explores the implications of these trends for the future of defense contracting.

Market Dynamics: A 20-Year Overview

Market Size and Growth

The defense and military contracting industry has experienced a significant expansion in recent decades. In 2025, the US defense market alone was estimated at USD 320.86 billion [1]. This growth is part of a larger trend of increased global military spending, which reached an all-time high of $2.44 trillion in 2023 [2]. This surge is primarily fueled by ongoing conflicts, such as the war in Ukraine, and rising geopolitical tensions in various regions [2].

Shift in Contract Distribution

Within this expanding market, there has been a noticeable shift in the distribution of contracts among different contractor sizes. While large defense contractors have historically dominated the industry, smaller companies are gaining traction, particularly in niche areas like AI and autonomous systems. This trend is driven by several factors, including:

- **Increased demand for innovation:** To maintain a competitive edge in a rapidly evolving technological landscape, defense agencies are increasingly seeking solutions from smaller, more agile companies that can quickly develop and deploy new capabilities [3].
- **Emphasis on agility and speed:** Modern warfare requires rapid adaptation and responsiveness to changing threats and operational environments [4]. Smaller contractors often have shorter development cycles and can adapt more quickly to these demands.
- **Government initiatives supporting small businesses:** Policies like the Small Business Act encourage government agencies to do more business with smaller companies, providing them with greater access to defense contracts [5].

This shift is evident in the distribution of contract dollars. An analysis of defense contracting data from 1999 to 2009 reveals a "squeezing" of mid-sized contractors, with both large and small contractors gaining market share [6]. This trend suggests that smaller companies are successfully

competing for defense contracts, while larger companies maintain their dominance in the overall market.

Despite these trends, large defense contractors still hold a significant share of the market. In 2023, the top five defense contractors alone received approximately 33% of total defense contract obligations [2]. However, the emergence of smaller, specialized companies is creating a more dynamic and competitive landscape.

Historical Context of Defense Contracting

The evolution of defense contracting over the past 20 years has been shaped by significant geopolitical events and technological advancements. The 9/11 attacks and the subsequent wars in Iraq and Afghanistan led to a surge in defense spending and a renewed focus on national security [7]. This period also saw the rise of new technologies, such as unmanned aerial vehicles (UAVs) and advanced surveillance systems, which transformed the way wars are fought.

The 2000s witnessed a reorganization of the defense procurement structure, with a greater emphasis on efficiency and streamlining processes [7]. This era also saw the emergence of new regulations and policies aimed at improving contract management and oversight.

In recent years, the focus has shifted towards innovation and the adoption of cutting-edge technologies like AI and autonomous systems. This shift is driven by the need to maintain a technological edge in an increasingly complex and competitive global environment.

Contract Values and Trends

Analyzing defense contract values and trends over the past 20 years reveals a steady increase in overall spending, with a notable shift towards modernization priorities. While the exact figures for small, mid-size, and large contractors are not readily available, some key trends can be observed:

- **Growth in R&D spending:** Investment in research and development has increased significantly, reflecting the emphasis on developing next-generation technologies like AI and autonomous systems [8].
- **Shift towards services:** Spending on services has grown faster than spending on products, indicating a greater reliance on contractors for specialized expertise and support [9].
- **Rise of Other Transaction Authority (OTA) agreements:** The use of OTA agreements, which provide greater flexibility in contracting with non-traditional companies, has increased substantially [8].
- **Stability amidst global events:** Despite significant global events, such as the war in Ukraine and ongoing supply chain challenges, defense contract spending remained relatively stable in FY 2022 [10]. This stability highlights the resilience of the defense contracting market and the continued prioritization of national security investments.

These trends suggest a move towards a more agile and adaptable acquisition system that can

accommodate the rapid pace of technological advancement in the defense sector.

Technological Adoption Rates

The adoption of AI and autonomous technologies in the defense industry is accelerating rapidly. The global AI in the military market is projected to grow at a CAGR of 12.9% from 2024 to 2034, reaching USD 32.17 billion by 2034 [11]. Similarly, the autonomous vehicle market in the defense sector is expected to reach $62.4 billion by 2030, with a CAGR of 13.3% [12].

This rapid adoption is driven by the potential of these technologies to:

- **Enhance situational awareness:** AI-powered systems can analyze vast amounts of data from various sources, providing commanders with a comprehensive and real-time understanding of the battlefield. For example, AI can be used to rapidly analyze battlefield data and provide visualization aids for soldiers using augmented reality technologies [13].
- **Improve decision-making:** AI algorithms can assist in threat assessment, target prioritization, and strategic planning, enabling faster and more informed decisions. AI is also being used to optimize logistics and supply chain management, ensuring smooth military operations by predicting demand, optimizing routes, and managing inventory [14].
- **Increase operational efficiency:** Autonomous systems can automate tasks, optimize logistics, and reduce the risk to human personnel in dangerous environments.

The Department of Defense (DoD) has significantly increased its investment in AI, with spending on AI-related contracts rising from $190 million to $557 million in just one year [15]. This surge underscores the DoD's commitment to incorporating AI into its operations.

Leading the adoption of AI in defense are companies like BAE Systems, Boeing, Elbit Systems, Leidos, Lockheed Martin, and Raytheon [16]. These companies are developing AI-powered solutions for a wide range of applications, from intelligence analysis and threat detection to autonomous navigation and weapons systems.

Impact of Key Players

This section examines the impact of 18 companies that are at the forefront of AI and autonomous systems development in the defense industry. These companies are categorized into three groups based on their primary focus areas:

1. AI-Focused Companies:

Company	Products/Services	Focus Areas	Impact on Defense Industry
Palantir	Data analytics platforms (Gotham, Foundry)	Intelligence analysis, decision-making, battlefield management	Provides critical tools for integrating and analyzing data, enabling informed decisions and enhanced situational awareness. Palantir has a strong focus on the U.S. Army, providing software solutions for various Army mission areas[17].
OpenAI	Large language models (e.g., GPT-4)	Natural language processing, code generation, knowledge representation	Offers potential for automating tasks, improving communication, and enhancing decision support systems[19].
C3.ai	Enterprise AI software	Predictive maintenance, supply chain optimization, fraud detection	Enables data-driven decision-making and operational efficiency across various defense functions[19].
BigBear.ai	AI-powered decision support	Complex data analysis, alternative analysis, course of action generation	Provides tools for understanding complex data and anticipating future events, enhancing strategic planning and decision-making.

Company	Products/Services	Focus Areas	Impact on Defense Industry
Scale AI	Data infrastructure for AI	Data curation, annotation, and analysis	Enables the development and deployment of AI applications by providing high-quality training data and infrastructure. Scale AI secured a $250 million contract with the DoD to provide AI data infrastructure to federal agencies[20].

2. Autonomous Systems Companies:

Company	Products/Services	Focus Areas	Impact on Defense Industry
Anduril	Autonomous drones, surveillance systems, counter-drone solutions	Border security, intelligence gathering, threat detection	Develops and deploys autonomous systems that enhance situational awareness, reduce risk to personnel, and improve mission effectiveness. Anduril is focused on scaling production to meet the demands of potential conflicts with China[22].

Company	Products/Services	Focus Areas	Impact on Defense Industry
Shield AI	AI pilots for aircraft and drones (Hivemind)	Autonomous navigation, reconnaissance, close-quarters combat	Develops AI pilots that enable autonomous operation of aircraft and drones in challenging environments, increasing mission capabilities and reducing reliance on human pilots. Shield AI is valued at $2.7 billion, highlighting its success in the defense market[25].
Helsing	AI-powered military solutions	Real-time battlefield analysis, target identification	Develops AI software that enhances situational awareness and decision-making in combat scenarios. Helsing emphasizes ethical considerations and responsible AI development in defense[28].
Archangel Imaging	AI-powered cameras and drone copilots (Argonaut)	Surveillance, threat detection, remote operation	Develops AI systems that enhance the capabilities of cameras and drones, enabling autonomous operation and improved

Company	Products/Services	Focus Areas	Impact on Defense Industry
			situational awareness. Archangel Imaging emphasizes human-machine teaming in its vision for the future of defense technology[31].
Saronic	Autonomous surface vessels (ASVs)	Maritime surveillance, reconnaissance, force projection	Develops autonomous vessels that can augment naval forces, providing increased capabilities and reducing risk to personnel. Saronic secured $55 million in private funding to accelerate autonomous maritime vessel development[32].
SpaceX	Launch services, satellite networks (Starshield)	Space-based intelligence, surveillance, and reconnaissance	Provides launch services and satellite networks that support military and intelligence operations, enabling access to space and enhancing situational awareness. SpaceX has secured classified

Company	Products/Services	Focus Areas	Impact on Defense Industry
			contracts with the U.S. government, highlighting its growing role in national security space operations[35].
Epirus	Electromagnetic pulse (EMP) weapons	Counter-electronics, drone defense	Develops EMP weapons that can disable electronic systems, providing a new capability for countering drones and other threats[37].

3. Traditional Defense Contractors with AI/Autonomous Focus:

Company	Products/Services	Focus Areas	Impact on Defense Industry
Rebellion Defense	AI-powered software for defense	Mission data analysis, cybersecurity, decision support	Develops software solutions that enhance situational awareness, improve decision-making, and strengthen cybersecurity for defense operations. Rebellion Defense utilizes an open architecture approach for interoperability and

Company	Products/Services	Focus Areas	Impact on Defense Industry
			compatibility with existing systems[38].
Vannevar Labs	Computer vision and NLP products	Battlefield information analysis, threat identification	Develops AI-powered tools that analyze open-source intelligence (OSINT) and provide critical insights for defense and intelligence agencies[40].
SAIC	Systems integration, engineering, IT services	AI/ML integration, cybersecurity, C4ISR	Provides a wide range of services that support the adoption and integration of AI and autonomous technologies in defense systems[37].
Parsons Corporation	Engineering, construction, technology services	Defense infrastructure, cybersecurity, C4ISR	Provides engineering and technology solutions that support the development and deployment of AI and autonomous systems in defense applications. Parsons Corporation is focused on defense research and development and has a bullish

Company	Products/Services	Focus Areas	Impact on Defense Industry
			outlook on the defense budget[42].
Leidos	Defense, intelligence, and civilian agency support	AI/ML integration, cybersecurity, C4ISR	Provides a wide range of services that support the adoption and integration of AI and autonomous technologies in defense systems. Leidos secured a $276 million contract for researching and developing critical minerals for munitions[16].
BAE Systems AI Lab	AI research and development	Autonomous systems, machine learning, cyber defense	Conducts research and development in AI to advance the capabilities of autonomous systems and enhance cyber defenses. BAE Systems is focused on multi-domain integration as a key aspect of modern defense strategies[16].

These companies are playing a crucial role in shaping the future of the defense industry by developing and deploying innovative AI and autonomous solutions that enhance military capabilities and address evolving threats. The interplay of competition and collaboration among these companies is also noteworthy. For example, Palantir and Anduril, while offering competing capabilities, have partnered to develop products tailored to defense needs [19]. This dynamic highlights the complex landscape of the defense industry, where companies must both compete

and collaborate to succeed.

Implications for the Future of Defense Contracting

The trends outlined in this report have significant implications for the future of defense contracting. As AI and autonomous technologies continue to advance, the industry can expect:

- **Continued growth in AI and autonomous systems spending:** Investment in these technologies will likely increase as they become more sophisticated and integrated into defense operations.
- **Greater emphasis on software and data:** Software development and data analysis will become increasingly important, creating opportunities for companies with expertise in these areas. As noted by industry experts, "software is going to eat the military too" [19]. This shift towards software-driven solutions is changing the landscape of defense innovation and potentially shifting influence towards software companies.
- **Increased competition from non-traditional contractors:** Smaller, more agile companies will continue to challenge the dominance of large, established contractors.
- **Shift towards a more agile and adaptable acquisition system:** Defense agencies will need to adapt their acquisition processes to accommodate the rapid pace of technological change and the emergence of new players.

The war in Ukraine has further highlighted the importance of AI and autonomous systems in modern warfare. The conflict has demonstrated the need for rapid scaling of production to meet increased demand and the critical role of AI in decision-making and targeting [24].

Ethical Considerations of AI in Defense

The increasing use of AI in defense raises important ethical considerations, particularly regarding autonomous weapons systems. Concerns about human control, accountability, and the potential for unintended consequences are prominent in discussions about the future of AI in warfare [14]. As AI systems become more sophisticated, it is crucial to establish clear ethical guidelines and ensure human oversight to prevent unintended escalation and maintain responsible use of this technology.

To thrive in this evolving landscape, defense contractors will need to:

- **Embrace innovation:** Invest in research and development to stay ahead of the curve in AI and autonomous systems.
- **Develop agile capabilities:** Adopt flexible and responsive approaches to meet the evolving needs of defense agencies.
- **Build strategic partnerships:** Collaborate with other companies to leverage complementary expertise and resources.
- **Focus on talent acquisition and retention:** Attract and retain skilled professionals in AI, software development, and data analysis.

By adapting to these trends and embracing innovation, defense contractors can position

themselves for success in the rapidly changing landscape of the 21st-century defense industry.

Conclusion

The defense and military contracting industry is undergoing a significant transformation, driven by the rise of AI and autonomous technologies. This shift is creating a more dynamic and competitive landscape, with opportunities for both established and emerging companies. By understanding the market dynamics, technological trends, and the impact of key players, defense contractors can adapt and thrive in this evolving environment. The future of defense contracting will be defined by innovation, agility, and a focus on AI and autonomous systems.

Synthesis

The defense industry is experiencing a paradigm shift towards AI, autonomous technologies, and smaller, more agile contractors. This transformation is driven by several factors, including the increasing demand for innovation, the need for rapid adaptation in modern warfare, and government initiatives supporting small businesses.

AI and autonomous systems are being rapidly adopted to enhance situational awareness, improve decision-making, and increase operational efficiency in defense. Leading companies in this space are developing innovative solutions for a wide range of applications, from intelligence analysis and threat detection to autonomous navigation and weapons systems.

The implications for the future of defense contracting are significant. Continued growth in AI and autonomous systems spending, a greater emphasis on software and data, increased competition from non-traditional contractors, and a shift towards a more agile acquisition system are expected.

To succeed in this evolving landscape, defense contractors must embrace innovation, develop agile capabilities, build strategic partnerships, and focus on talent acquisition and retention. The future of defense contracting will be defined by those who can adapt and thrive in this dynamic environment.

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