International Journal Of Humanities Education And Social Sciences ***(IJHESS)*** *E-ISSN:* **2808-1765**
Volume 3, Number 3, December 2023, *Page. 1017 - 1127*
Email : editorijhess@gmail.com

Challenges and Opportunities in Meeting the Needs of IKN Weapon Systems in the Era of Modern Weaponry Technologies

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Abstract

The relocation of Indonesia's capital city to East Kalimantan has implications for defense and security. This research analyzes the challenges and opportunities of fulfilling the main equipment of the National Capital Integrated Coastal Development (IKN) defense system in the era of modern weaponry technology. Through the Systematic Literature Review (SLR) method, the evolution of warfare from the first generation to the information and cyber era is analyzed in relation to IKN. The research also highlights the development of weaponry technology and its impact on the IKN transition, as well as the urgency of fulfilling modern defense equipment and integrating advanced technology. The results indicate that the relocation of IKN requires strategic adaptation to the evolution of warfare and the use of new technologies in defense. It is crucial to comprehensively fulfill the needs of defense equipment in the air, land, sea, and cyber domains to maintain the sovereignty and security of IKN. With the integration of advanced technology and wise planning, the relocation of IKN can be approached with thorough preparation and an effective defense system. In facing these complex dynamics, international collaboration efforts and adaptation of defense policies become important to respond to global challenges and generate appropriate solutions.

Keywords : The Main Tool Of The Weapon System, Weaponry Technology, Ikn, National Defense

INTRODUCTION

The relocation of Indonesia's capital city (IKN) to two regencies in East Kalimantan, namely Kutai Kartanegara Regency and Penajam Paser Utara Regency, is a monumental step announced by President Joko Widodo (Jokowi) in 2019 (ikn.go.id, 2022). This transformation involves not only the physical change of the governmental center but also brings deep implications for national defense and security aspects. In this context, the need for the fulfillment of main weapon systems (alutsista) to support the defense requirements of IKN becomes a crucial issue that needs to be addressed.

The capital city relocation has wide implications on defense and security (Pratami, 2020). The new IKN territory, covering Kutai Kartanegara Regency and Penajam Paser Utara Regency, requires a careful defense strategy due to its borders with various districts and cities in East Kalimantan, as well as the Makassar Strait to the east (ikn.go.id, 2022). Therefore, safeguarding this new territory, including vital infrastructure and governmental leadership, becomes a top priority.

In 2024, the plans for relocating the Presidential Palace and several key ministries, such as the Ministry of Home Affairs, Ministry of Foreign Affairs, Ministry of Defense, and State Secretariat Ministry, will be a significant milestone in this transition (ikn.go.id, 2022). This relocation not only involves administrative aspects but also presents challenges in terms of protection and security of the centers of government decision-making.

However, behind these challenges, there are also opportunities to build a more modern and adaptive defense system. The era of modern weapon technology offers significant advancements in various fields, including artificial intelligence, cyber security, and advanced weaponry (Haney, 2020). The use of such technology can enhance the effectiveness of main

weapon systems and the national defense system as a whole. The development of IKN itself is guided by a series of established regulations, ranging from laws to presidential regulations and authority regulations. Nonetheless, President Jokowi acknowledges the development process as a task that requires a considerable amount of time, estimated to be around 15-20 years. During this period, it's important to maintain the security of the area and ensure adequate defense equipment in line with advancements in weapon technology.

The relocation of the capital city is also an interesting topic in Kazakhstan when they moved the capital from Almaty to Nur-Sultan in 1997. The research highlights the transformation of the city and changes in economic growth patterns, as well as the implications for the lives of local communities (Kaye-Essien & Bhuiyan, 202). Furthermore, the relocation of the capital has also been a research focus in Malaysia when they decided to move the capital from Kuala Lumpur to Putrajaya in 1999. This study emphasizes the strategy of developing a new city as an effort to improve government efficiency and support economic growth (Mubaroq & Solikin, 2019). The findings of this research from various countries can provide additional perspectives and valuable lessons for Indonesia in managing the impacts and challenges related to the relocation of the capital.

This research aims to explore the challenges and opportunities arising in meeting the alutsista needs of IKN in the face of the modern weapon technology era. In-depth analysis of factors such as geopolitics, technology, and defense policies will be the main focus, with the goal of understanding how alutsista can be well-integrated within the evolving IKN defense framework. Thus, this research seeks to provide valuable insights in navigating the complex dynamics of transitioning the capital city towards a new era full of challenges and opportunities.

RESEARCH METHODS

In this research, a literature review is conducted using the Systematic Literature Review (SLR) method. SLR is a structured and comprehensive approach used to gather, evaluate, and analyze relevant literature in a specific field (Doni et al., 2023). The primary focus of SLR is to provide a comprehensive overview of existing knowledge, identify gaps in the literature, and develop a deeper understanding of the research topic. The implementation of SLR involves a carefully structured set of steps.

Firstly, the planning phase is carried out to establish clear objectives, inclusion and exclusion criteria for selecting literature, and the search strategy to be employed. Subsequently, a thorough literature search is conducted using relevant keywords through various sources, including academic journals, conferences, and online databases. Once the literature is gathered, the selection phase takes place by applying the predefined inclusion and exclusion criteria. After the selection process, the next step involves evaluating and analyzing the literature. In this phase, the literature is assessed based on quality, methodology, findings, and relevance to the research topic. Relevant data is extracted and synthesized to identify patterns, trends, or common findings from the analyzed literature.

The results of this analysis are then interpreted and presented in an easily understandable form, including narrative summaries and visualizations such as diagrams or tables. In the literature search process, keyword search techniques are employed in alignment with the research questions. These keywords encompass topics such as alutsista needs, weapon technology, capital city relocation (IKN), and national defense. Article searches are conducted in both English and Indonesian languages, utilizing sources from journals and research articles published between 2011 and 2023. The researcher performed data searches through various databases, including Google Scholar and Sciencedirect.

RESULT AND DISCUSSION

Schematic or Diagram (PRISMA)

Chart 1 illustrates the article selection steps using the guidelines from the Preferred Reporting Systematic Reviews and Meta-analysis (PRISMA), a framework designed to assist researchers in conducting and reporting systematic reviews and meta-analyses in a more transparent, detailed, and consistent manner (Riyadi et al., 2022). The initial search phase yielded a total of 67 articles published between 2011 and 2023. Through the screening process, the number of articles was reduced to 53 relevant articles for the subsequent stage. Evaluation of article quality was carried out, ultimately resulting in the synthesis of 7 articles included in the final report of this literature review.

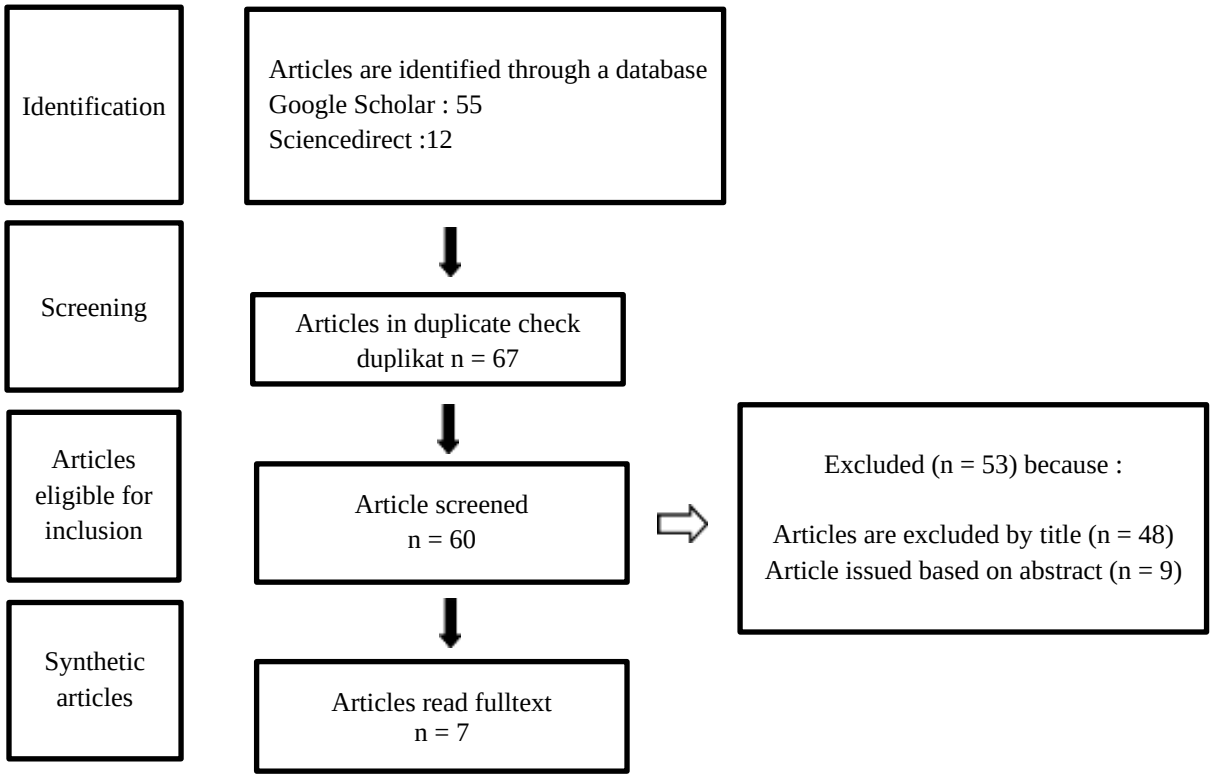

Chart 1. PRISMA Diagram

The researchers conducted a selection of the obtained articles and extracted data from each article acquired from various databases. The findings of these articles are reviewed regarding the challenges and opportunities for meeting the defense equipment needs of the National Defense Industry (IKN) in the era of modern weaponry technology.

Table 1. Articles Related to Challenges and Opportunities for Meeting the Defense Equipment Needs of IKN in the Era of Modern Weaponry Technology

Title and Researchers	Purpose	Result
Analisis Kebijakan Publik Pemindahan Ibu Kota Negara	To provide input in the formulation of strategic policies related to the	This research presents interesting results regarding considerations for the relocation of a country's capital. Over time, various studies have been conducted in this context. Not only

(Purnama & Chotib, 2023)	relocation of the country's capital, which is the topic of analysis.	that, the research also reviews various factors that influence the decision of capital relocation, including GDP per capita, land area, population size, and population density. All of these are elements that significantly affect the considerations and policy processes in planning the capital relocation.
Analisis Pemenuhan Kebutuhan Minimum Essential Froce (Mef) Dalam Pengadaan Alat Utama Sistem Senjata (Alutsista) Tentara Nasional Indonesia (Tni) (Anissa & Djuyandi, 2021)	To analyze the fulfillment of MEF (Minimum Essential Force) needs in the procurement of Indonesian National Armed Forces' defense equipment (Alutsista) through the collection of primary and secondary data, as well as conducting data analysis using data triangulation techniques.	Although the government has attempted to modernize defense equipment, these efforts are still hindered by several challenges such as limited budget, lack of transparency in equipment procurement, difficulties in achieving the MEF target, and issues related to human resources and dependency on equipment imports. Strong commitment and planning are required, along with cooperation between ministries and institutions, to address these issues in MEF fulfillment through defense equipment modernization.
The Challenges Of Indonesia Future Defense Capability Advancement. (Sjamsoeddin, Yusgiantoro, Saragih & Soepandji, 2022)	To analyze Indonesia's defense capability progress in the future.	The research results indicate that future defense capabilities require a complex defense system that ensures the security of both individuals and the nation. Indonesia's defense capability adopts the People's Comprehensive Defense and Security System, supported by a strong sense of national defense awareness. Every citizen possesses a high level of awareness to support national defense and security, instilled from an early age. Defense readiness also requires innovation and competence in weapon technology. Given that future warfare involves advanced technology, preparing superior human resources is also of paramount importance. Research recommendations are proposed to the Republic of Indonesia Ministry of Defense to update the national defense threat mapping pattern by formulating dynamic policies, strategies, and defense doctrines in line with strategic environment developments. Other suggestions are directed towards academics, practitioners, and policy-makers to collaborate in formulating studies on weapon technology innovation for defense purposes.
Relokasi Ibu Kota Negara : Lesson	To explore the reasons behind the	Research findings suggest that the policy of relocating the national capital must be well-

Learned Dari Negara Lain. (Aziz, 2020).	necessity of relocation, its potential impacts on Jakarta and the new capital, and lessons that can be drawn from other countries that have undergone similar processes.	planned. Considerations include benefits for local residents and the economy, as well as long-term political support and commitment. The choice to realize the relocation needs comprehensive master planning, encompassing cost aspects and environmental impacts. The capital's relocation should also take into account allocating funds for regional development equity. With a solid plan, relocation can become a step towards a sustainable, intelligent capital that meets future demands.
Tantangan dan Peluang Perkembangan Teknologi Pertahanan Global Bagi Pembangunan Kekuatan Pertahanan Indonesia. (Rachmat, 2014)	To discuss global defense technology's obstacles and opportunities for Indonesia's defense system, particularly concerning the development and adaptation capabilities of Indonesia's defense industry.	Research results indicate that technological advancements significantly impact military and national defense. All countries, including Indonesia, must enhance their defense systems to counter technological threats. The main challenge lies in the quality and quantity of military equipment, which is still far from ideal. However, global technological developments also provide opportunities to improve military equipment by optimizing the domestic defense industry and engaging in technology transfers through defense collaboration with advanced nations. This drives Indonesia towards greater self-sufficiency in military equipment production.
Nusantara Capital City (IKN): Threats And Defense Strategies For Indonesia's New Capital. (Editha, Firre, Yusuf, Surachman, & Rui, 2023)	To identify potential threats in the proposed new capital, "Ibukota Nusantara" (IKN), and propose strategies to mitigate these threats.	Research results indicate that the primary threats to IKN originate from the air (combat, UAVs, ICBMs), while low-level threats stem from its proximity to borders and FIR that coincide with IASL. A critical effort in IKN's defense is to strengthen national defense diplomacy in the region. In conclusion, this research provides insights into potential threats in the proposed new capital and suggests strategies for mitigation.
Kebijakan Negara Terkait Perkembangan Dan Revitalisasi Industri Pertahanan Indonesia Dari Masa Ke Masa. (Susdarwono, Setiawan & Husna, 2020)	To seek answers regarding the State's policies concerning the development and revitalization of Indonesia's defense industry over time.	Research findings show that Indonesia's defense industry has developed since independence, involving private sector and state-owned enterprises. In the 1980s, the government established teams, councils, and bodies to advance the national defense industry. The 1998 economic crisis affected the industry's trajectory, leading to the dissolution of PT BPIS in 2001. Revitalization began through the Defense Industry Policy Committee (KKIP) and the Defense Industry Law of 2012. KKIP is tasked with setting strategic policies, coordinating international cooperation,

	overseeing policy implementation, and industry development.

Source : Data Processed by Researchers, 2023

Weaponry Technology Development

The development of weaponry technology has undergone significant transformations throughout human history, shaping the face of warfare and national defense over time (Van Creveld, 2009). From simple tools in ancient warfare to the advanced weapon systems of today, this evolution has had a significant impact on defense strategies, operational efficiency, and the balance of power in the international world.

1) Ancient Warfare to the Industrial Era

   In ancient history, warfare was marked by the use of sharp weapons such as spears, swords, and bows and arrows (Devries, 2012). The development of metal technology led to the transition from stone to iron, paving the way for the development of shields and armor. The industrial era brought a revolution in mass weapon production, such as rifles and artillery, which influenced tactics and the scale of battles.

2) World Wars and Technological Revolutions

   World Wars I and II were turning points in the development of weaponry technology. Weapons like machine guns, chemical weapons, and tanks changed the face of modern warfare (House, 2001). After World War II, nuclear and rocket developments introduced a new dimension to global threats.

3) Modern Era and Advanced Technology

   The present time witnesses rapid advancements in weaponry technology. Automatic weapons, ballistic missiles, and advanced reconnaissance technologies like satellites and drones are changing the dynamics of warfare (Bousquet, 2018). Cybersecurity has also become a crucial aspect of defense due to the reliance on digital networks and systems.

4) Future Plans

   Future plans for weaponry technology involve several trends that will shape the battlefield and national defense. Anticipated trends include:

- Autonomous Technology: The use of autonomous weapon systems and robotics in warfare is becoming more real. Armed drones and unmanned vehicles have the potential to change tactics and operational risks.
- Artificial Intelligence (AI): Integrating artificial intelligence into weapon systems allows for quicker and more accurate decision-making in battles, enhancing military intelligence capabilities.
- Anti-Ballistic Defense: Developing more advanced anti-ballistic missiles will be crucial to counter modern ballistic missile threats.
- Energy and Electromagnetic Weapons: Energy-based and electromagnetic weapons like lasers and microwave technology are being developed as potential non-kinetic options.

Overall, the development of weaponry technology continues to move toward more advanced and complex innovations. It's important for countries to adapt to these changes while considering the ethical and humanitarian implications that may arise. By combining the latest technological developments with wise policies, the future of national defense can be directed towards a more stable and secure balance of power.

Capital City Relocation (IKN)

President Joko Widodo's decision to relocate Indonesia's capital city to two districts in East Kalimantan, namely Kutai Kartanegara and Penajam Paser Utara, is an ambitious step with

significant implications for governance and national infrastructure (Rakhmat et al., 2020). Here are some important pieces of information about the relocation of the capital city:

1) Relocation of Government Center

   The relocation of the government center, including the Presidential Palace and several ministries, is at the core of this plan. The Presidential Palace and four ministries—Ministry of Home Affairs, Ministry of Foreign Affairs, Ministry of Defense, and Ministry of State Secretariat—are scheduled to operate in the new capital by 2024. This step aims to distribute governmental activities more evenly and promote development in regions beyond Java.

2) Geographical Boundaries and Strategic Location

   The new capital has crucial geographical boundaries for security and regional development. Its boundaries encompass districts and cities in East Kalimantan, as well as the Makassar Strait to the east. The chosen location offers strategic advantages in terms of proximity to waterways, regional accessibility, and economic development potential.

3) Complex Development Process

   President Jokowi recognizes that building the new capital is not a simple task. This development process requires a significant amount of time, estimated to take around 15-20 years to complete fully. A series of regulations, including laws, government regulations, and presidential regulations, form the legal foundation that governs the development of the new capital.

4) Legal-Based Development Plans

   The development of the new capital is based on several established regulations, such as Law No. 3 of 2022 regarding the Capital City and government regulations related to funding, spatial planning, land acquisition, and permits. These regulations provide a clear and measurable legal framework to ensure the development proceeds as planned.

5) Contribution to Sustainable Development

   The relocation of the capital city also has the potential to positively impact sustainable development. By designing the new capital intelligently, the government can integrate smart city concepts, renewable energy usage, and sustainable environmental management.

   Overall, the relocation of the capital city to East Kalimantan is an ambitious step with various impacts and complexities. This process requires strong coordination between the central government, local authorities, and various stakeholders. By following established regulations and ensuring public involvement, the government can overcome challenges and realize the vision of a new capital city that is more modern, inclusive, and sustainable.

Evolution of Warfare and its Relation to the New Capital City (IKN)

The evolution of warfare has undergone significant transformations over time. Throughout history, shifts in strategic approaches and technology have changed the way wars are fought (Bousquet, 2022). In the context of Indonesia's new capital city (IKN) relocation, this evolution has implications for national defense preparedness and challenges faced. Presently, warfare has evolved into the fifth generation, dominated by information and cyber warfare (Nadeem, Mustafa & Kakar, 2021). The following are the generations of warfare evolution:

1) First Generation: Emphasis on Troop Numbers

   Early warfare focused on the strength of troop numbers. Physical toughness, group coordination, and simple tactics determined victory. However, this approach often led to significant casualties.

2) Second Generation: Maneuver and Firepower

   Tactical developments in maneuver and firepower became crucial in the second generation of warfare. More advanced weapon technologies, such as rifles, artillery, and machine guns, allowed for more complex tactics and better coordination among troops.

3) Third Generation: Technology Utilization

The third generation entered the technology era, where the utilization of computers and information systems played a significant role. For instance, the British invasion of the Falkland Islands with the use of the C3I system (Command, Control, Communication, and Intelligence) involving 40,000 computers reflected the use of technology in warfare tactics and strategies.

4) Fourth Generation: Asymmetric Warfare

The fourth generation is characterized by asymmetric warfare, where weaker parties employ unconventional tactics against stronger forces. Tactics like guerrilla warfare, terrorism, and media usage became crucial in this context.

5) Fifth Generation: Information and Cyber Warfare

The fifth generation has entered the era of information and cyber warfare. Speed and access to information, along with cyber attacks, have become powerful weapons. Propaganda, social media influence, and cyber attacks can impact public opinion and disrupt digital infrastructure.

As part of technological and tactical developments, the security of the new capital city and its defense preparations must integrate elements from these generations of warfare. The use of advanced technologies such as surveillance drones, artificial intelligence systems, and cybersecurity will be crucial in maintaining the security of the new capital city (Pasaribu & Widjaja, 2022). Additionally, the regulations and policies underlying the development of the new capital city must also consider the advancements in weaponry technology. This includes spatial planning, physical and digital protection, and potential threats in the information and cyber era. To ensure the security of the new capital city and achieve the vision of a new, modern, inclusive, and sustainable capital, the country must adopt a holistic approach, combining lessons from the evolution of warfare with the application of the latest technologies. This will ensure that the transition to the new capital city proceeds smoothly and securely, facing changing challenges over time.

Fulfilling the Military Equipment Needs of IKN

The relocation of Indonesia's capital city to East Kalimantan carries important consequences for meeting military equipment needs (Silitonga & Kurniawan, 2023). Meeting the military equipment needs of IKN is crucial to safeguard the sovereignty of this new territory and adapt to developments in modern weaponry technology. Various aspects such as air defense, ground defense, naval defense, and cybersecurity need to be accommodated in the effort to build a robust and adaptive defense system in IKN.

1) Air Defense

Meeting military equipment needs in air defense for IKN includes modern fighter aircraft, anti-aircraft defense systems, and advanced radar systems. Modern fighter aircraft and air defense systems can protect the IKN airspace from air threats, both aircraft and missiles. Advanced radar technology is also important for detecting threats well before they reach IKN territory.

2) Ground Defense

In the context of ground defense, military equipment needs include tanks, armored vehicles, artillery, and ground-based surface-to-air defense systems (SAM). Tanks and armored vehicles can secure the land territory, while artillery provides long-range firing capabilities. Ground-based air defense systems like SAM will protect the area from low-flying air threats.

3) Naval Defense

The military equipment needs in naval defense encompass warships, submarines, and anti-ship defense systems. Modern warships can secure the maritime territory of IKN and maintain maritime sovereignty. Submarines play a strategic role in monitoring and countering underwater threats. Anti-ship defense systems are also important to counter threats from the sea.

4) Cybersecurity

The reality of cybersecurity challenges in the digital era is evident. Meeting military equipment needs in cybersecurity involves the development of cybersecurity defense systems, network security, and encrypted communication systems. Protecting digital infrastructure and sensitive data is essential due to the potential for cyber attacks on government decision centers..

5) Integrating Advanced Technology

Meeting military equipment needs for IKN should also encompass the integration of advanced technologies such as artificial intelligence (AI), drones, and automated weapon systems. The use of AI in intelligence analysis can enhance decision-making capabilities. Drones and automated weapon systems can provide more flexible maneuvering and attack options.

Meeting the military equipment needs of IKN must be based on in-depth analysis, and the application of advanced technology and integrated defense strategies will be key to maintaining sovereignty and security in the new IKN territory. Alongside the evolution of weaponry technology, fulfilling military equipment needs must be dynamic and adaptive to effectively respond to changing security situations.

CONCLUSION

The relocation of Indonesia's capital city to East Kalimantan presents both challenges and opportunities in the realm of defense and security. Meeting military equipment needs is essential to safeguard the sovereignty of this new territory and adapt to the developments in modern weaponry technology. Various aspects of air defense, ground defense, naval defense, and cybersecurity need comprehensive consideration. Analyzing geopolitical factors, technology, and defense policies will be the focus in addressing the complex dynamics of meeting military equipment needs for IKN. Leveraging technology like artificial intelligence (AI), cybersecurity, and advanced weapons can enhance the effectiveness of the defense system.

The evolution of warfare and its relation to IKN highlights the importance of integrating the generations of warfare in IKN's defense preparations. The use of advanced technology like drones and artificial intelligence must be integrated with legally grounded IKN development policies. In meeting the military equipment needs of IKN, air, ground, naval defense, and cybersecurity must be carefully considered. The use of modern military equipment such as fighter aircraft, warships, and anti-ship defense systems will strengthen IKN's defense system. In conclusion, the relocation of IKN opens opportunities to build a modern and adaptive defense system. Combining cutting-edge technology with wise policies can result in an effective defense system in facing future challenges.

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