

**Pacific Partners: A Coalition Framework for Enhancing Missile Defense in the Pacific**

USC SHIELD Executive Program in Global Space and Deterrence

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## Introduction

“When the Senate Armed Services Committee (SASC) asked about the potential capability and capacity gaps in the Indo-Pacific Theater, the future Commander of the United States Indo-Pacific Command (USINDOPACOM), Admiral Samuel Paparo, highlighted Integrated Air and Missile Defense (IAMD) as a critical gap” (Paparo, 2024, p. 7). The United States (U.S.) and its Pacific allies face a growing missile threat, both regional and global, from the People’s Republic of China (PRC) and the Democratic People’s Republic of Korea (DPRK). China’s People’s Liberation Army (PLA) has accelerated investment in robust missile capabilities, developing a formidable arsenal to match the most powerful missile defenses in the world. Meanwhile, North Korea continues advancing their capability with increased launches each year.

The PRC and DPRK activities combined with conflicts in Ukraine and the Middle East demonstrate the high level of risk from missile threats and the need for Integrated Missile Defense (IMD) coordination, as countries seek to defend their citizens from missiles and drones. The U.S. has an opportunity to coalesce regional allies and partners around this problem to establish a viable IMD construct in the Pacific. A lasting IMD construct in the Pacific demands a whole-of-government approach, plus academic and commercial support, to establish the web of formal agreements and informal cooperation that is necessary to support the complex technical efforts of the military while fusing commercial capabilities and academic ingenuity. Comprehensive IMD requires economic investment in smarter technology, a forward posture, fusion with commercial industry innovation, and optimal placement of capabilities. To do this, the U.S. must understand and aggressively appeal to the diverse interests of regional actors to build a network of missile defense that provides security without provoking

escalation. Therefore, the U.S. must take a leading role in forging a coalition of the willing and capable that marries increasing obligations to increasing capabilities, ultimately enhancing Indo-Pacific missile security.

In 2018, U.S. INDOPACOM published their *IAMD Vision 2028* as “an innovative jump forward in IAMD for the United States and its allies/partners to maintain a competitive advantage in the region...” (Savage, 2022, page 3, para. 1). *IAMD Vision 2028* imagines fully integrated operations, where participating nations integrate the entirety of offensive and defensive skill (Savage, 2022). Each nation must share information across the entire range of China’s reach, which inherently implies technology to immediately link information, tactics, and procedures that are common for use its use, and the same ‘game plan’ for what to do next (Savage, 2022). As a perfect description of this vision, Savage (2022) advocates for an Area of Responsibility (AOR) wide integrated, netted, and layered sensor grid that ultimately creates an ‘any sensor, any shooter’ scenario.

As wonderful as that description sounds, the time to enact, effort to politically navigate, funding to provide and sustain, and national-level wherewithal to make this vision a reality are all extreme; even Savage (2022) describes the Vision as grandiose. The concept behind this research attempts to address these challenges with a long-term, continuous, and unifying direction that allows room for participation that considers political sensitivities, which do not provoke adversaries (e.g., they focus on simple regional missile security and not offensive ability), accept different levels of ability (e.g., tiers that allow for graduated participation, encouraging room for growth and increase but still providing distancing from the U.S. military if politically needed), and will last over the long timeline necessary to move beyond the 2027-2030 event horizon (e.g. a sustainable process that provides opportunity for capability

improvement). This concept has several critical elements that overlap with *IAMD Vision 2028*, but it has key aspects that differ for specific reasons.

### **Primary and Secondary Research Questions**

The primary research question this paper attempts to answer is: How can the United States best leverage allies and partners to develop a whole-of-government approach to missile defense in the Pacific region before the 2027-2030 threat horizon? Answering this question will provide policy options that mitigate the risk of hostile actors in the Pacific region and enhance United States security. Additionally, why does the U.S. need allies and partners to develop an effective Integrated Missile Defense (IMD) in the region? What are some of the challenges to working with allies and partners in the INDOPACOM theater for IMD? How does INDOPACOM differ from U.S. European Command (EUCOM), and how does that shape and inform our approach? What risks and opportunities are associated with an increased IMD posture in the region? What non-military elements of national power (such as deterrence and left-of-launch capabilities) are needed for effective IMD? How can the commercial sector and academia be leveraged for INDOPACOM IMD?

### **Research Design and Approach**

This inquiry takes a qualitative approach, using a descriptive design methodology leveraging secondary research methods. First, the research topic and questions were defined, followed by selecting secondary research sources, analyzing the secondary data and finally the development of a descriptive framework. The findings and interpretations derived from the framework are presented in this paper, along with identified limitations, and recommendations are provided for future research.

## The Changing Strategic Environment

For the past 20 years, politicians and think tanks have written multiple articles about the decline of American hegemony. “In the battle for global influence, all sides have their jargon. The US and its allies talk of ‘rules-based international order’” (RBIO) (Rachman, 2024, para. 1). What is clear is that as the world has returned to a state of competition with multiple nations challenging the United States for power and influence (Ashford & Cooper, 2023). In their October 2023 policy paper, *Assumption Testing: Multi-polarity is more dangerous than bipolarity for the United States*, Emma Ashford and Evan Cooper identify that the United States is shifting toward a system of “unbalanced multipolarity.” (Ashford & Cooper, 2023, Conclusion, para. 2).

A multipolar world is a more dangerous place for the United States, as countries like China, Russia, and even the Democratic People’s Republic of Korea (DPRK) become more aggressive (Ashford & Cooper, 2023). Examples of increased aggression include Russia’s war in Ukraine, China’s “10-(dash) line” claims activities against Taiwan and in the South China Sea, and DPRK’s ballistic missile launches in Northeast Asia. In this new strategic environment, there are significant opportunities for the United States to be the strategic partner of choice, as regional Allies and Partners (A&P) seek to defend their homelands. The missile technology and capabilities in the region drives a need for IMD education, multinational agreements, and leadership in the Pacific.

The geometry of geography in the Pacific has not changed since World War II, while the political environment has significantly changed with development of the American-led RBIO (Flynn & Devine, 2023). Unlike WWII, operating in an RIBO environment requires diplomatic concurrence from host nations to avoid being perceived as an aggressor. To employ successful

IMD the Operations, Activities, and Investments (OAI) in competition, crisis, and conflict in the Pacific requires buy-in from A&P through policy, posture, and military capabilities.

### **The Threat Horizon**

During the fifth plenary session of the 19th Communist Party of China (CPC) meeting in October of 2020, Chinese President Xi Jinping met with the leaders of China to identify “long-range objectives through the year 2035” (CGTN, 2020, para. 2). The result of the meeting was a communique published to the Chinese people (CGTN, 2020). Among the goals within the communique was the goal to “promote the reunification of the Chinese mainland and Taiwan, as well as peaceful cross-strait development” (CGTN, 2020, para. 13 under heading “Proposals to reach the goals”). The CPC further identified that the “country's national defense capabilities and economic strength should be strengthened and reach the centennial goal of building a modern military by 2027” (Asia News Monitor, 2021, para. 2). The accomplishment of these goals by 2027 would align with the PLA centenary in 2027. In March 2023, President Xi “called for ‘more quickly elevating the [PRC] armed forces to world-class standards,’” and he “warned of the growing possibility of conflict with the U.S.” (AP, 2024, para. 1). In the same speech, President Xi “mentioned the need for 'achieving the goals for the centenary of the PLA in 2027’” (AP, 2024, para. 6).

The DOD has identified China as the pacing threat now and for the foreseeable future (Garamone, 2021). As the pacing threat, President Xi’s comments are a driving factor for the U.S. military to focus on deterring potential conflict and if necessary to be prepared for Chinese malign activity around 2027. In their article, *The Ambitious Dragon; Beijing’s Calculus for Invading Taiwan by 2030*, U.S. Army Major Kyle Amonson and U.S. Coast Guard Captain Dane Egli identify that the window of opportunity (WOO) for a potential Taiwan invasion spans from

2027 through 2030 (Amonson & Egli, 2023). This WOO threat drives the need to have an IMD coalition in place to protect the homelands of the U.S. and its allies and partners.

### **Current Events Influencing Missile Defense**

The recent conflicts in Ukraine and the Middle East are evidence of an imminent need for a global rules-based IMD order. In the absence of such an order, IMD coordination and integration is left to senior regional military leaders to develop IMD coalitions and constructs, often after missiles and drones have attacked. Following the invasion of Ukraine, North Atlantic Treaty Organization (NATO) re-addressed its IMD construct to strengthen deterrence against Russia. At the time of this writing, ships and planes of a coalition including the U.S., France, and the U.K., are shooting down Houthi drones and missiles attacking merchant shipping in the Red Sea. Some of the participating coalition countries are operating under existing agreements related to protecting regional shipping lanes, while others are now operating under the U.S.-led coalition policies, procedures, and processes.

Unlike Europe, the Pacific does not have a standing construct like NATO to pre-organize IMD policies. Much like the recent response to the Middle East, if an IMD crisis occurred in the Pacific today, a response in the Pacific theater would likely be an impromptu coalition of the willing and able without the benefit of treaties, training, and coordinated command and control (C2). The threat horizon of 2027 is quickly approaching, and there must be a proactive approach to form an IMD structure in the Pacific now and this is not solely a military responsibility. Since its founding, the U.S. military has been led by civilian leadership, and it is civilian leadership that must take the lead in developing a Pacific IMD regional coalition to ultimately establish an enforceable global rules-based IMD order.



## **North Korea's Missile Program**

Over the past six decades, North Korea has built its missile capabilities from a non-existent technological and industrial base in the mid-1960s to one of the most active proliferators of ballistic missile systems, technology, and components in the world today. The DPRK achieved these advances despite heavy resistance and United Nations (UN) sanctions, enduring years of high failure rates that would deter most other nations. Yet, they persevered via a singularly focused drive, leveraging foreign sympathetic support (some anti-American or simply anti-West) and large investments in national resources. All these characteristics and geopolitical conditions remain today, creating the assumption that their progress will continue at pace.

North Korea's original missile program in the 60s and 70s was limited to artillery rockets and defensive anti-ship cruise missiles purchased from the Soviet Union and the People's Republic of China (Center for Arms Control, 2024). However, North Korea's Kim Il Sung set the ultimate objective of indigenous ballistic missile production (NTI, 2020). After that decision in 1965, Kim Il Sung directed many years of internal development, reverse engineering, and assisted learning. During the mid-1960s, the DPRK established its Mamhung Military Academy, delivering initial training in missile development to its military (NTI, 2020). Around the same time, North Korea's military budget increased to approximately 30% of its total state budget (NTI, 2020). That investment eventually paid off. For many years, North Korea had been limited to external sources of hardware and technology but finally began indigenous development in earnest in the late 1970s when North Korean engineers were active participants with China's development of the DF-61 (NTI, 2020). Through consistent efforts and further acquisition of Soviet-made Scud missiles (purchased from Egypt), North Korea eventually produced and flight tested the Hwasong-5 indigenous missile in 1984, an event which quickly

garnered further financial assistance from Iran (NTI, 2020). This funding (and probably more foreign technical assistance) allowed North Korea to rapidly progress with missile production and unprecedented advancements in capability in the remaining years of the 1980s (NTI, 2020). That ‘springboard decade’ saw North Korea go from a fiscally and technologically dependent nation to providing technology transfers and Scud factories to Middle East countries (NTI, 2020). This backdrop served as the basis for the burgeoning mid-1990s North Korean missile program. This decade saw the DPRK begin to flourish in the export business, providing technology and factories to countries in the Middle East (NTI, 2020). The late 1990s saw North Korea combining indigenous missiles to create three-stage rockets, progressing to mobile land-based rockets in the early 2000s (NTI, 2020). While publicized missile development and parade displays were prominent deterrence tools throughout the 2000s, North Korea shifted strategic communication tactics after Kim Jong Un’s ascension. He initiated rapid succession testing of six missiles in early 2016 followed by a simultaneous test of three separate missiles (each never having been seen before) in late 2016 (NTI, 2020). Currently, in the 2020s, North Korea continues to aggressively ramp up their missile testing and development, purposely delving into the world of hyper sonics with a test in January of 2024 (Center for Arms Control, 2024).

Simply measuring test firing, it is clear North Korea has maintained constant progress toward indigenous missile development. Their initial investments resulted in only 17 missile tests during the end of Kim Il Sung’s reign (1984-1994) but increased steadily with 46 missile tests during Kim Jong Il’s tenure between 1994-2011 (Center for Arms Control, 2024). Kim Jong Un’s intense focus on missile development proved an exponential continuum, with 214 missile tests between 2011-2023 (Center for Arms Control, 2024). Correspondingly, North Korea’s failure rate for launches started at about 50% in the 1994-2011 timeframe, was cut by

more than half (23%) between 2011-2023, and by 2023, failure rate was down to 15% (Center for Arms Control, 2024).

These improvements have all been accomplished despite UN and U.S. sanctions as well as political pressure. A UN report from February 2018 asserted that the DPRK continues to illegally trade in missile technology, not only with historical actors such as Egypt, Syria, Libya, and Iran, but also regional actors such as Myanmar (NTI, 2020). North Korea is not a member of the Missile Technology Control Regime or the Hague Code of Conduct against Ballistic Missile Proliferation (NTI, 2020). Despite UN and U.S. efforts to slow their production and initially struggling with high rates of failure, North Korea is demonstrating an exponential increase in test firings, success rates, and indigenous capability and capacity, and it is now providing systems to other nations in the Pacific region. North Korea today has successfully created a means of military security and economic growth as well as regional political and informational impact through ballistic missile component and technology sales (NTI, 2020).

North Korea is a persistently nefarious actor in the Pacific region, overcoming technology limits, initial high fail rates, and political opposition to culminate years of significant investment and effort into becoming an international exporter, recognized collaborator, and anti-American supporter in missile technology. This position gives them influence that the U.S. and allies have yet to successfully thwart. Military efforts alone have not succeeded in slowing, let alone stopping, North Korean efforts. There must be another avenue of engagement.

### **China's Missile Program**

China's missile development has grown from a highly dependent program completely reliant upon acquisition and education from the Soviet Union to a peer nation with decades of

asymmetric developmental advantage that has aspirations of becoming the hegemonic regional power in the Pacific.

The PRC successfully hid their missile development (and recent accelerated progress) by refusing to participate in arms control agreements or other transparency agreements (Missile Defense Project, 2021). Their foray into missile development was facilitated by the Soviet Union from 1956-1960 with the sale of two R-1 missiles, blueprints for R-2 missiles, technical advisors to assist in development, formal training and education in Russian universities (U.S. House of Representatives, 1999). In 1960, the relationship terminated due to the Sino-Soviet split, but later this relationship returned (U.S. House of Representatives, 1999; Missile Defense Advocacy, 2023). The other significant boost to China's missile development inadvertently came from the United States through a suspected spy returned to China (U.S. House of Representatives, 1999). Qian Xuesen left China in 1935, earned a master's degree from MIT, a PhD from CalTech, did significant work at the Guggenheim Aero Lab as well as JPL, and eventually became a Colonel in the U.S. Army Air Force working on the Titan missile project (U.S. House of Representatives, 1999). During the 1950s, he was suspected of espionage and eventually (along with 4 others) returned to China in 1956 where he became known as the "Father of the PRC ballistic missile force" (U.S. House of Representatives, 1999, para. 3). These two 'planted seeds' became the backbone of a robust and well supported missile program that lay dormant for many decades.

After the 1960 split with the Soviets, China began missile development on their own in earnest. Their CSS-2 and CSS-3 demonstrated heavy Soviet influence and successfully bridged the gap to the CSS-4, forming the backbone of their Intercontinental Ballistic Missile (ICBM) program, and the CSS-5, which started their medium range missile program (U.S. House of

Representatives, 1999). In 1957, China developed research organizations that eventually evolved into their core academies of today, specifically, China Aerospace Science and Technology Corporation Limited (CASC) and China Aerospace Science and Industry Corporation Limited (CASIC) (Wood & Stone, 2021). Their academy R&D was spurred by internal motivation with tasks to achieve full-range ICBM test flight by 1975 and to build four different types of missiles within an eight-year time span (Wood & Stone, 2021). The academies responded with the creation of the Dongfeng (Chinese for “east wind”) program, which solidified China’s ballistic missile R&D program (Wood & Stone, 2021). Between 1964 and 1980, the central government invested over 205 billion RMB in growth, such as companies, R&D and production facilities, and scientific research institutes and universities (Wood & Stone, 2021).

In the 1980s, however, China's strategic view shifted in economic and market reform that drew down much of the funding in defense R&D (Wood & Stone, 2021). The new policy directive was to use civilian support and sales to sustain military R&D, ultimately forcing military exports to fill the sustainment gap (Wood & Stone, 2021). China exported missiles to Saudi Arabia, Iran, and Pakistan during the mid-1980s and early 1990 (Wood & Stone, 2021). Potentially due to U.S. influence (discussed in the next paragraph), in 1999, China divided its five defense corporations into two groups, attempting to utilize rivalry to invigorate competition and evolution (Wood & Stone, 2021). China focused on their system organizations and operational mechanisms rather than just their products, ultimately creating CASC and CASIC (Wood & Stone, 2021). Despite years of reorganization and funding cuts, China’s current ballistic missile R&D infrastructure has existed since 1960 and is a strong backbone for modernization and proliferation (Wood & Stone, 2021).

China's modern missile production appears to be motivated by U.S. influence and observation. As a response to a live-fire exercise, the U.S. sent two aircraft carrier battle groups to the region as a display of power in 1995-96 (Rumbaugh & Horitski, 2015). With China's inability to respond now highlighted around the globe, China would create their anti-access and area denial (A2AD) doctrine and begin focusing their efforts on defeating the U.S. carrier battle group (Rumbaugh & Horitski, 2015). By 2015, the results of this shift were readily evident, with older missile systems like DF-4 and DF-21A being replaced with DF-26s that were in production (Eveleth, 2023). This growth has continued, as China's Intermediate Range Ballistic Missile (IRBM) launchers grew from zero in 2015 to 72 in 2020 (China Power Team, 2021). China's Medium Range Ballistic Missile (MRBM) launchers went from 42 in 2013 to 94 by 2020 (China Power Team, 2021). China has slightly increased its GLCM from 54 to 70 in the same timeframe but developed the CJ-100, which is believed to have a range of 2,000 km (China Power Team, 2021). This growing trend is confirmed by other sources than CSIS; the DOD estimates (although even higher in some areas) mimic this trend (China Power Team, 2021). Furthermore, China's growth has until recently benefitted from the Intermediate-Range Nuclear Force Treaty, which prohibited the U.S. from developing and deploying land-based missiles with ranges between 500-5,500 km from 1987 until the U.S. withdrew from the treaty in 2019 (China Power Team, 2021). It is estimated that approximately 95% of China's missile arsenal are non-compliant with the INF Treaty (China Power Team, 2021).

Ultimately, China's decades-old missile program was born from the knowledge and technology of two global superpowers (the U.S. and the former Soviet Union) and spent years of highly funded and highly focused development quietly advancing their expertise. Then a significant funding cut forged China's missile program into an innovative machine, exporting

and proliferating R&D and advanced production to sustain their technical advancement. China's Rocket Force is now highly motivated to counter U.S. naval supremacy and has capitalized on decades of treaty-driven, singular advantage over the U.S., growing its capability and capacity. This massive missile growth is clearly connected to its leadership, Xi Jinping, and is clearly connected to his aspirational goals for China's global influence (Eveleth, 2023). This pattern is expected to continue.

In 2021, Secretary of Defense Lloyd Austin called China the "Pacing Threat" (Garamone, 2021). As the leader of the PRC, President Xi told the Chinese military to be "ready by 2027" to invade Taiwan (Yen, 2023). "Three factors highlight geostrategically that, if President Xi continues to pursue the annexation of Taiwan, the PLA will be prepared by 2027, and he will likely take steps to realize these ambitions by 2030 as China's population ages, while pursuing annexation to solidify his historic legacy in his lifetime" (Amonson & Egli, 2023, p. 39). To deter missile aggression and protect the U.S. and A&P homelands, an IMD coalition must be functional before 2027.

### **Threat to the United States**

The Defense Science Board's October 12, 2022, report on Homeland Air Defense concluded that

The current security environment necessitates a homeland air defense capability that is adaptable, scalable, and affordable to provide long-term defense against competitor and adversary threats. Using current defense in the interim period will minimize the window of opportunity that could potentially be exploited by adversaries with modern capabilities. Maximizing defensive potential will also involve the Department of State,

the Department of Homeland Security and the other federal agencies and departments as well as international allies and partners. (U.S. Department of Defense, 2022, p. 2)

Missile programs in China and North Korea reflect two different threats to the United States, our national interests, and our Allies. Both countries possess the capability to deliver a nuclear warhead to the continental United States. However, there are key differences that require different response postures. First, the DPRK has a limited stockpile of both ICBMs and nuclear warheads, while the PRC has tremendous magazine depth. Second, while the PRC is seen as engaging in aggressive regional competition, the country still appears to be acting in rational self-interest, while the DPRK is considered an unpredictable rogue state. Because of these differences in capability and expected behavior, the U.S. requires distinct strategies for regional and homeland defense.

The DPRK is a regional power whose missile program makes it a threat to the U.S. homeland as well as A&P in the region. Because of concerns regarding unpredictable behavior, the threat of a strong U.S. nuclear response to a North Korean attack on the homeland is not a reliable deterrent. Instead, the Ground-based Midcourse Defense (GMD) system provides the U.S. with the ability to actively defend against a North Korean ICBM attack. Additionally, because of the threat posed by North Korea's rogue behavior, both Japan and the Republic of Korea (ROK) have developed the capability and willingness to detect and defend against missile attack, presenting the U.S. with strategic flexibility and deterrence.

While China's missile program poses a threat to the U.S. homeland, it is their ability to affect U.S. territories within the region that presents the most likely hazard. China possesses sufficient ICBMs to saturate the U.S. GMD system, should they so choose. However, U.S. policy is clear that the threat of an overwhelming nuclear response is expected to deter a PRC



attack on the U.S. homeland. Unfortunately, there are doubts on whether the U.S. has the stomach to unleash the nuclear triad should territories of the United States in the Pacific come under attack. Guam's location makes it key for power projection, supporting numerous air wings and possessing deep-water ports for naval support. With deterrence in question, the U.S. must construct a robust missile defense to protect the citizens and assets in Guam. Strategically and politically, Guam might well be the equivalent to Pearl Harbor for this generation.

### **Recent Historical and Current U.S. Actions in the Indo-Pacific**

With the Obama Administration, the U.S. began to shift focus to the Pacific region. President Obama gave a presentation to the Australian Parliament in which he described the 'new' U.S. focus on the region, emphasizing the U.S. is a Pacific Nation (Myre, 2021). This initiative was dubbed "Pivot to Asia" or "Pivot to the Pacific" within many circles. Despite this high-level prioritization, the initiative was continually degraded by distracting actions in other regions (Myer, 2021). However, the focus from the overall strategy had three key elements: a security plan, an economic plan, and a diplomatic plan (Myre, 2021). These elements are still key today, but the conditions in which they are sought have increased in complexity due to China's previously mentioned rapid missile development and proliferation, which has impacted the entire region across all the tenets of power of a nation state. Therefore, experts such as Roy Kamphausen (president of the national Bureau of Asian Research) express that the U.S. approach requires competition with China without provoking them (Myre 2021).

This delicacy is emphasized by a recent RAND study in the region that reviewed the likelihood key A&P in the Pacific region would contribute to combat air operations in the Pacific. The 2023 study found that many nations in the region would be reluctant (at best) to support any actual combat air operations that were not a direct attack on them (Mazarr,

2023). Australia and Japan, while both are very supportive of the U.S., were found to have significant political and economic issues (Australia) with additional legal/constitutional issues (Japan) unless they were directly engaged first (Mazarr, 2023). South Korea and Thailand have very little interest in increasing their regional risk (Mazarr, 2023). Many countries such as India, Indonesia, Malaysia, and Vietnam have traditionally not aligned with the U.S., and would likely continue that behavior unless directly provoked (Mazarr, 2023). Finally, some countries such as New Zealand and the Philippines do not have air assets (and presumably missile defense assets) to contribute to a U.S. initiative (Mazarr, 2023). One of RAND's culminating points from the analysis is to focus on generating local self-defense capability/capacity that is interoperable with the U.S. but is very narrowly focused specifically away from combat aircraft, which this paper conceptually implies to offensive missile operations (Mazarr, 2023).

While the U.S. 'Pivot to the Pacific' suffered delays, that is not to say it stagnated. Not coincidentally, in the 2015 article in *Air and Space Power Journal*, "Back to the Future: Integrated Air and Missile Defense in the Pacific" it is clearly seen that INDOPACOM was already maneuvering to counter China and was aware of the need for A&P participation with its reference to 'Places not Bases' and 'Runways and Relationships' (Savage, 2022). But the U.S. realized that it is still being out paced, acknowledging that U.S. IMD forces alone are overmatched in the region (Savage, 2022). Therefore, not long after that article, INDOPACOM (renamed after witnessing China's growth into the Indian Ocean with a base in Djibouti) crafted the previously mentioned *IAMD Vision 2028* (Savage, 2022). This new vision makes one subtle but dramatic shift: focus on integrated regional operations instead of aligned operations (Savage, 2022). The difference is difficult to describe, but the article's example of aligned operations (side by side) is the D-Day landing, where each country was responsible for their own beachhead

(Savage, 2022). This geographic deconfliction tool enabled nations to utilize their own technology, tactics, and procedures, and avoided the frustrations of failed interoperability while creating unified effects. But China's missile program defies this type of geographic delineation of effort. They can reach across any lane the U.S. builds to impact any nation of their choice.

A different aspect key to the proposed hierarchy comes from the RAND study. Given that many countries are 'bound' (either politically, socially, economically, legally, or technologically) to defensive actions from a direct attack, the 'lowest level' of the U.S. hierarchy does not include "Air" in Integrated Air Missile Defense. Thus, the proposal narrows the scope, much like the RAND study recommended. This situation creates the narrowly focused aspect of 'inclusive regional defense against any and all missile aggression' and enables the U.S. 'bottom tier' to become the 'gateway' to increasing U.S. influence in the region. Additionally, by making the lowest level academic and commercially focused, the U.S. creates a political border for any nation that is unwilling to risk provoking China by avoiding direct U.S. military connection. Lastly, the continued risk from North Korea can be the political rationale for any nation to participate.

### **Existing IMD Efforts in the Pacific**

This shifting geopolitical landscape has created a volatile operational environment where United States political leaders and the Department of Defense must adapt their IMD approach. Any approach should account for operating in a multilateral RBIO. Enforcement of the RIBO cannot be done solely through military action, it will require a multilateral whole-of-government (WOG) approach to guide IMD knowledge, operational integration, and the development of future capabilities that maximizes the limited resources of the U.S. and its

A&P. In the Pacific, U.S. leadership has placed the military at the forefront to manage and coordinate the technical, tactical, and operational challenges related to IMD.

The Department of Defense divides the strategic management of the world into six Geographic Combatant Commands and five Functional Combatant Commands, providing command and control of military forces in peacetime (U.S. DOD, 2024). The Geographic Combatant Command in the Pacific theater is U.S. Indo-Pacific Command (USINDOPACOM). The mission of USINDOPACOM is to “...implement a combat credible deterrence strategy capable of denying our adversaries sustained air and sea dominance by focusing on posturing the Joint Force to win before fighting while being ready to fight and win, if required.” (USINDOPACOM, 2024, para. 7). The components, U.S. Pacific Fleet (PACFLT), Pacific Air Forces (PACAF), United States Army Pacific (USARPAC), Marine Forces Pacific (MARFORPAC), Special Operations Command Pacific (SOCPAC), and Space Force Component Pacific (SPAFORPAC) are responsible for executing the mission of USINDOPACOM and the U.S. IMD efforts in the Pacific.

In 2014, the Pacific Air Force (PACAF) founded the Integrated Air Missile Defense Center in Oahu, Hawaii (Department of Defense [DOD], 2014). The Pacific IAMD Center was envisioned to increase multinational integrated air and missile defense capabilities in the United States Indo-Pacific Command (USINDOAPCOM) Area of Responsibility (AOR) through education and training with partner nation militaries IAMD operators and planners (DOD, 2014). The IAMD Center focuses on the coordination and interoperability of technical, tactical, and operational IAMD capabilities.

In February 2022, the Pacific IAMD Center hosted its sixth iteration of the Multilateral IAMD Experiment (MIX), which builds upon prior theater security cooperation successes and

challenges in the multilateral environment (DOD, 2022). Exercising with A&P builds IMD military connections in the Pacific and allows the USINDOPACOM to better understand the IMD capabilities and gaps of U.S. allies and partners (DOD, 2022). While the efforts of the Pacific IAMD Center have paid dividends over the past decade, a Pacific IMD coalition of nations is necessary before the 2027 threat horizon to maximize IMD protection of coalition homelands. The formation of a coalition of IMD nations must start with political buy-in from the senior levels of governments and defense leaders.

With the support of the DOD, USINDOPACOM has presented its recommendation for the Pacific Deterrence Initiative (PDI). The PDI is the DOD's focus "on strengthening Indo-Pacific deterrence and building a resilient security architecture as part of a modernized Joint Force" (DOD, 2024, p. 4). In February 2024, the Department of Defense Comptroller released USINDOPACOM's FY2025 funding for the PDI, totaling \$9.9 billion dollars (DOD, 2024). The sum of all IAMD-related programs from the Army and Missile Defense Agency (MDA), which totals \$1,516,714,000, is within the PDI request (DOD, 2024). While this number does not reflect all the IAMD investments across the DOD, it does highlight the significant investments necessary to deter and if necessary defend the United States from missile threats in the Pacific.

The PDI funding request includes funding for the defense of Guam, a U.S. territory and critical logistics hub for the U.S. military. "China will almost certainly try to destroy Guam's military infrastructure in the opening hours of any conflict with the United States, so the island's defenses demand urgent attention" (Peters, 2024, para. 1). Guam plays a vital role in IMD in the Pacific for both the United States homeland and for protection throughout the Pacific. There is inadequate IMD protection of Guam and the U.S. citizens living there (Peters, 2024). The lack of an approved FY24 Defense Budget, exacerbates the current gaps in IMD deterrence efforts,

and the closer the threat horizon of 2027 approaches, the larger the risk of an inadequate missile defense in the Pacific.

At the highest level of DOD, ministerial level policy-related engagements occur with defense leaders from other countries. There are two Trilateral Defense Minister Meetings (TDMM) that occur annually, one that occurs between the Defense Ministers of Australia, Japan, and the U.S., and a separate meeting of the Defense Ministers of the Republic of Korea, Japan, and the U.S. IAMD was a topic of both meetings in 2023. With the Australia Trilateral event, all participants agreed to expand cooperation to “(b)ooost strategic capabilities cooperation across multiple domains, including in integrated air and missile defense (IAMD), intelligence, surveillance, and reconnaissance (ISR), and undersea warfare” (DOD, 2023a, para. 22). Within the ROK Trilateral meeting, the three leaders agreed on a “...mechanism to facilitate the exchange of real-time missile warning data and improve each country's ability to monitor missiles launched by the DPRK” (DOD, 2023b, para. 6). Both efforts are vital to build the foundational trust and confidence required between nations necessary to support a potential IMD coalition in the future. With the recent missile launches from the DPRK and the approaching 2027 threat WOO, these relationships must quickly blossom into an IMD coalition network capable of protecting all homelands from a defensive perspective, even if the trilateral relationship remains separated.

### **Commercial Technology Trends**

Advancements in commercial technology have increased domain awareness in Ukraine and debunked strategic messaging from Russia and Iran about their military activities, exemplifying the huge impact commercial companies can provide in the military environment. Commercial companies like Maxar, Hawkeye 360, SpaceX, ICEYE, and others

have proven that they add an incredible amount of situational awareness (and potentially indications and warnings), which can both validate strategic messaging and disrupt false media campaigns. Additionally, commercial Space Domain Awareness data, like that provided by some of the companies previously mentioned, can also provide surveillance monitoring and alerting services to the National Space Defense Center and other stakeholders across the globe. The U.S. Space Force (USSF) and U.S. Space Command (SPACECOM) are expanding the use of commercial Space Domain Awareness data to include other regimes, such as multiple orbits, new foreign launch identification, notifications of pending launches, timing, and alignment, electromagnetic spectrum monitoring, military space flight safety, and orbits beyond geosynchronous. Considering commercial technologies enable tracking of hypersonic weapons and their launch vehicles, commercial and allied space and ground-based capabilities for early identification could be applied to IMD, thus strengthening the visibility and strategic messaging in the Global Rules Based IMD order.

### **A New Approach – A Multi-Tiered Solution**

Operating in this shifting geopolitical environment amongst potentially hostile militaries with increased missile capabilities demands a shift in how the United States approaches defense, more specifically IMD. The WOG plus commercial and academia is necessary to successfully compete in this emerging IMD environment. This paper recommends the creation of a systematic approach toward IMD in the Pacific theater consisting of three tiers.

A tiered participation framework would enable enhanced regional security while catering to our partners' national interests. Specifically, such a framework would match each nation's technical capabilities with their willingness to participate, as missile defense requires technology that not all regional powers have or reasonably will possess. Thus, participation can scale from

the lowest level of sharing sensor data for detection and tracking, through a mid-tier of target-quality tracking and discrimination, to the few powers capable of and willing to engage a rogue launch.

This 'lowest level' of the hierarchy by 'unobligated and non-classified' design is to have the largest number of participants and resources available. This tier leverages passive detection capabilities that participants already possess and are willing to share. Keeping this tier non-military (non-classified) circumvents many of the barriers of participation that prevent information sharing, cooperation, and resourcing. USSPACECOM has seen the benefits of leveraging commercial and non-classified data, which contributes significantly to the operational environment in the area of Space Domain Awareness through the non-classified coalition Joint Commercial Operations (JCO) cell. Modeling a similar approach where allies can participate (e.g., 'staff the ops floor'), train, and contribute national assets to operations for IAMD could be a game changer. This method includes bringing allies in to learn how to do space operations together as well as assist the coalition in producing a global operations center that includes staffing and using commercial and allied data to type and queue traditional military sensors and operational capability. Today, USSPACECOM and the USSF have 14 nations participating in the JCO cell for Space Domain Awareness in support of the U.S. National Space Defense Center. Having 14 nations trained to staff an operational floor and analyze commercial and non-classified data has enabled the U.S. to move to 24x5 operations with three cells (Meridian, Pacific, Americas) where going it alone only allowed the U.S. to do 8x5 operations with U.S. personnel. IMD could replicate this concept via the IAMD center or an operational cell like the JCO. As commercial companies continue to advance their technology and capabilities, the early warning, indication, assessments, tipping, and cueing of military assets with commercial systems



will become a reality. Harnessing these types of commercial capabilities on a non-classified operations floor allows participation by many nations without the commitment to true military actions. There are two or three viable commercial partners today that have produced radar fences. Raytheon also has a commercial off market capability. These companies can be contracted commercially today and leveraged in a commercial ops floor similar to the JCO. In addition, there are new Low Earth Orbit (LEO) sweeping satellites on orbit today that can add additional capabilities. Once commercial providers field constellations of sweeping satellites that are the size of Starlink, one can envision this being a game changing commercial sensing capability.

Providing seed money for a MW/MT commercial operations floor would allow Pacific nations to join a “commercial and non-classified” training environment without having to commit to pure military training and exercise activities, which may appeal to those nations without military assets or the legal and policy authorities to contribute to IAMD.

The mid-tier includes nations capable of and willing to process, exploit, and disseminate information that could potentially be used to conduct an engagement. Those nations with access to IAMD capabilities already along with the political support and authorities to execute warning and response should be exercising and training in detection warning and response options in a coalition environment to the maximum extent. These nations could also embrace the JCO concept and leverage commercial data as an initial warning and prediction then tip and cue military assets to validate and verify. This method gives the mid-tier nations an opportunity to detect, warn, and validate prior to engagement. Testing these capabilities through exercises in peacetime gives nations the ability to test not only weapon systems but also the ability to exchange information, dialogue about responses, and ensure that identification, consultation, and

decision-making are possible at all required classification levels. Ensuring policies and agreements to enable information sharing and the appropriate networks at the appropriate classification levels are in place between all nations at all tiers before crises are critical and must be tested at every opportunity.

The highest tier is reserved for nations that are capable and willing to engage a qualifying missile launch within their sphere. Nations that agree will ‘be obligated’ to engage an unannounced and uncoordinated launch that poses a threat to any of the participating entities. These nations must have both the political will and the technological capability to act in a defensive nature on behalf of the compact. These nations also have the policies and authorities in place to share bilaterally and multilaterally all information and data at the highest levels of classification and have the data transport capability in place to support exchanges.

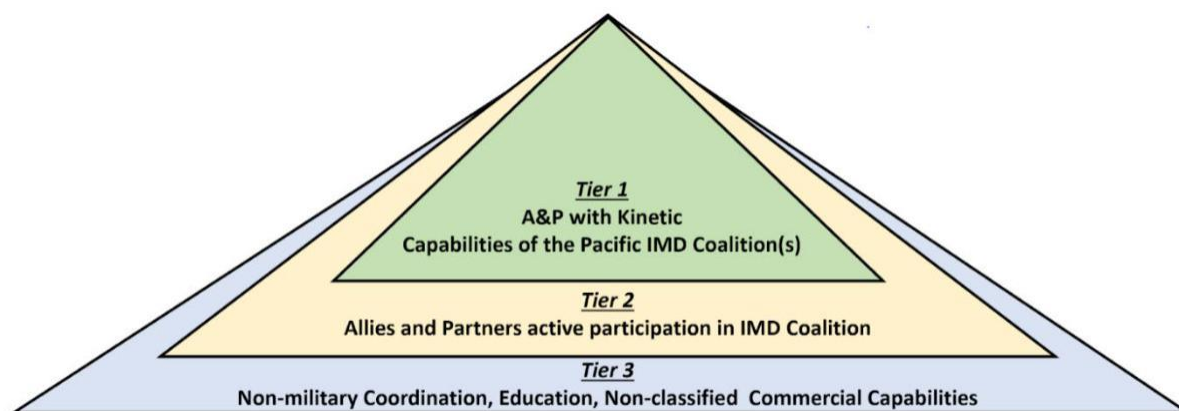


Figure 1. Proposed Framework for Pacific IMD

Unlike Europe where longstanding alliances were galvanized by two world wars and the Cold War, the Indo-Pacific is characterized by numerous countries with their own independent and sometimes conflicting national interests. The U.S. needs A&P in the region both from a cost-sharing perspective as well as the geographic requirements to position systems capable of addressing both regional and homeland threats. Economic ties in the region make it difficult to

use China as a catalyst in the same way the Soviet Union provided a focus for NATO. Furthermore, doing so risks instilling in China a sense of being encircled and threatened. The U.S. must do the hard work of understanding and appealing to the varied interests of players in the region to develop a network of integrated air and missile defense.

Our allies must trust and collaborate with each other to leverage the “any sensor, any shooter” capability and establish the IAMD network in the Pacific originally envisioned in IAMD Vision 2028 (Savage, 2022). Trilateral Defense Ministers' Meetings are a great start and likely a key venue to build upon to establish the relationships and trust between our most capable allies - the ROK, Australia, and Japan. With policy-level information sharing and engagement criteria agreements between allies in place, the military's efforts of IAMD systems integration will reach its potential, and a foundation will be set for regional partners to join the IAMD Network.

Bringing allies in at the unclassified/commercial level enables basic training, learning how to operate together with other allies not traditionally in the eco-sphere of some, and the ability to plan global effects or tip and cue national assets (as allowable) to move effects to a higher level of engagement. Given the ability of the commercial market to provide situational awareness, validate and verify military actions, and move data around the globe, initiating partnerships at this level can bring immediate effects to the IAMD infrastructure. A Joint Commercial Operations (JCO) construct for IAMD can begin to build the partnerships across nations without the overhead and burden of lengthy international agreements, formal training sessions, and bureaucratic processes. Showcasing the value of allied partners on an operational floor, providing operationally relevant commercial and allied data, and expanding the hours and

reach of the ops floor can be powerful ways to demonstrate the immediate impacts allies can make.

Participation Hierarchy: This framework allows the U.S. to take a leadership role in educating, planning, and ultimately combining efforts of a multi-nation, Pacific-focused IMD and minimize political/economic blowback on participating nations (as needed) through a commercial/academic venue. Additionally, this tool will help manage expectations of the level of participation a nation will hold within the Pacific IMD construct. This structure is specifically designed for graduated levels of participation that depend upon the nation's willingness (e.g., political considerations for the region being extremely sensitive) and their capability/capacity to participate (e.g., missile defense in today's age requires extensive technologically advanced ability that not all nations in the Indo-Pacific have...or even will have in the near future). However, knowing the situation and categorizing each nation accordingly can manage expectations, provide options for participation that match the nation's political and technological level, and even allow for planned movement between levels (upgrade) to react to the changing reality of the region.

Given the political sensitivity of the region and China's economic sway, the framework must provide a means of participation that does not negatively impact any participants' relationship with China. The lowest level (academic/commercial) is intended to allow this avenue of access to countries in the region that are susceptible to China's influence, but need 'somewhere else to go' that does not invoke retribution from China. Above the lowest level, the political justification option for countries to participate is the focus on the singularity of an unannounced/non-coordinated missile launch and limited only to defensive reaction to that event. This level is designed/intended to permit a country to participate with 'plausible

deniability' to China on an eco-political level (e.g., a country can claim to be concerned about North Korea or China, or both as needed). This construct, at higher levels, will have agreement between the 'same level' nations to be 'obligated to react defensively based' to a singular event. But no obligation for further reaction. Rapid sequence of 'singular events' (e.g., multiple missiles fired) will require rapid repeated defensive reactions...but at no point does this construct include an offensive nature. This intentional design is meant to increase national participation allowing any nation to be involved in the effort of unified defense without any antagonistic elements that could ignite a response. Additionally, the level of participation (described shortly) will also provide plausible deniability for a nation's participation.

Nations that agree to 'be obligated' will base their commitment to reaction upon three criteria: does the missile launch qualify as nefarious (unannounced and uncoordinated); does it pose a threat to another participating nation (trajectory terminates in damaging impact); and does the nation have the capability to react? These criteria make the action a collective behavior, but unlike a formal alliance, this 'pact' is limited to defensive missiles activity only. This type of response allows for collective resourcing, which is greatly needed in the region but provides un-antagonistically political positioning for nations as well.

Fully integrated Kinetic Capability: This level of participation matches the 'full right' of the cooperation spectrum. These nations have both the political will and technological desire to act in a defensive nature to a singular (or multiple) unannounced/uncoordinated launch. Nations at this level will be called upon to participate (to the utmost of their ability) in all the steps up to destruction of a qualifying missile launch. The facts that the missile launch qualifies as 'unannounced and threatening' and that the nation can engage and destroy trigger the requirement to act, irrespective of the projected point of impact or potential target nation.

Military Participations: This level's key identification is a country's willingness to participate (e.g., provide something to the collective) in a defensive network. Within level II, there will be capability and capacity differences of participation based upon two things: a nation's ability to process, exploit, and disseminate information that is supportive to categorizing missile launches, and if needed, assisting in targeting and the willingness to participate in an obligatory agreement to do so. Therefore, this level is bifurcated by the 'obligation and information custody line.' Nations that have the capability to provide processing, exploitation, and dissemination (PED) but not actively target fall into this category. Nations 'above the line' have agreed to be obligated to act based upon the two criteria of 'qualified missile launch' and within their capability to act.

Education/Research: This 'lowest level' of the hierarchy by 'unobligated and non-classified' design is to have the largest number of participants and resources available. The key element of this level is a non-military affiliation venue for open information exchanges, research, and academia. The significance of this element is it allows any nation to participate, at low to no cost (or whatever they can contribute) and provides the un-antagonistic venue that will not create political tension. Nations can participate without any affiliation to any military. To make this concept a reality, utilization of the IAMD Center of Excellence and possibly a Joint Commercial Operations cell are key.

Nations below this line are not in any obligatory status, and participation is not via a source of military or political vehicle, but rather, it is commercial and/or academic. Nations, companies, non-military agencies, academic, or scientific institutions may all participate 'below the line.' This demarcation line becomes significant in that it drastically lowers the level of bureaucracy, political scrutiny, ease of participation, and therefore also dramatically widens the

net of participants. This process in turn dramatically widens the net of resources for sensing and processing resources.

Endstate	2024	2025	2026	2027
Tier 3: Build trust and expand MD Awareness capabilities to willing Allies and Partners	Establish IMD Center of Excellence	Expand number of Universities programs like SHIELD / Open courses to international allies and partners	Expand MD Awareness capabilities to willing Allies and Partners	
		Expand IMD awareness capabilities to Allies and Partners by establishing a Joint Commercial Operations cell		
	Demonstrate non-classified Space/MD Awareness (Like JCO) to Allies and Partners	Expand MD Awareness capabilities to willing Allies and Partners		
Tier 2: Expanded ABO for IMD and Multi-lateral IMD positioned to counter primary threats	Demonstrate IMD capabilities to potential host nation	Expand MD Awareness capabilities to willing Allies and Partners		
	Propose to potential Allies and Partners	Develop multilateral agreements to support IMD	Exercise multilateral agreements to support IMD Expand posture to Tier 2 Allies and Posture location	IMD capabilities positioned for more efficient and effective protection
Tier 1: A fully operational multi-lateral IMD coalition with agreed to Rules of Engagement and positioned to counter primary threats	Discuss and propose North Pacific IMD multi-lateral agreement between JPN / ROK	Establish North Asia IMD multi-lateral agreement w/ ROEs between JPN / ROK	Exercise North Asia IMD multi-lateral agreement between JPN / ROK	
			Posture North Asia IMD capabilities for homeland defense	
	Discuss and propose Pacific IMD multi-lateral agreement between JPN / AUS / US	Establish Pacific IMD multi-lateral agreement/ ROEs between JPN / AUS / US	Exercise Pacific IMD multi-lateral agreement between JPN / AUS / US	
		Posture North Asia IMD capabilities for homeland defense	Posture Pacific IMD capabilities for homeland defense	

Table 1. Potential Implementation and Timeline

With a threat horizon of 2027, any IMD effort must achieve initial operational capability (IOC) as soon as feasible with the goal of employing multi-lateral IMD coalitions or full operational capability (FOC) in the Pacific by 2027. Table 1 provides a recommended timeline for implementation of the proposed tiers within the 2027 threat horizon. Tier 1 focuses on building trust and IMD education with potential allies and partners and utilizing the existing IAMD Center of Excellence for added familiarization and training along with introducing a Joint Commercial Operations cell like the one the USSF uses for Space Domain Awareness. Tier 2 focuses on establishing IMD agreements and improving posture for Tier 1 IMD Coalitions. Tier 3 exists today but may need to be expanded with nations who can procure, field, and operate IMD weapons.

## Conclusion

Missile defense is an essential part of preserving a free and open Indo Pacific region. As a champion of the rules-based international order, the United States has a vested interest in deterring and defending against potential threats in the region. The current regime in the DPRK holds the homelands of the ROK, Japan, and the United States at risk with their missile program. The PRC's ambitions in the South and East China Seas, as well as regarding the island of Taiwan, have the potential to escalate quickly. Japan, the Philippines, and Vietnam all have claims in those waters and an interest in defending those claims. Anti-Access Area Denial activities, intended to give the PRC wide latitude of action in those areas, could easily affect sovereign U.S. territory in Guam. Furthermore, as demonstrated by the Houthis' missile campaign in the Red Sea, a regional dispute could have worldwide effect by disrupting the trillions of dollars of annual trade that flows through the area (CSIS, 2021). Clearly, a number of actors have vested interests in ensuring stability in the Indo Pacific region.

Despite its national power, the U.S. alone cannot preserve a free and open Indo Pacific. Building and deploying an integrated sensor and shooter network across the Pacific would prove to be a tremendously expensive undertaking. It is only reasonable that shared interests also result in shared expenses. While the U.S. satellite network is quite capable at detecting ballistic missile launches, low-flying conventional and hypersonic cruise missiles are more difficult to track even as they develop in range and capability. The geographic reality is that sensors must be positioned in partner nation territories and waters to ensure complete coverage. While shared interest should inspire cooperation, the inherent cost and expansive geography make it a necessity.



A civil-military tiered approach to cooperative missile defense is ideal for engaging partners at a level they are comfortable. While many of the regional powers in the Indo-Pacific do not want to be drawn into a conflict between China and the U.S., they are likely to respond favorably to assistance in protecting their own claims. This reluctance, combined with limited technical capabilities, make it unrealistic to make mutual defense demands required for participation. Furthermore, such actions on behalf of the U.S. could be seen as antagonistic by China, resulting in potential economic repercussions. Instead, by helping regional powers build capability and protect their interests, it creates a network of enhanced stability in the area.

A tiered civil-military missile defense framework to enable cooperation between nations is a feasible approach that would enhance stability in the Indo Pacific. By establishing a tier of cooperation that is both non-military and unclassified, the U.S. and partners would enhance domain awareness in a manner that deters aggression by ensuring attribution and early warning of impending missile attacks. Existing international frameworks for Space Domain Awareness show that this approach is both practical and functional. Such relationships reinforce international norms of behavior and build trust, laying the groundwork for progressive levels of cooperation. U.S. policy makers should assign a lead agency to develop the entry-level tier needed to enable civil partnerships in the region and set them on the pathway for defense engagement in the future.

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