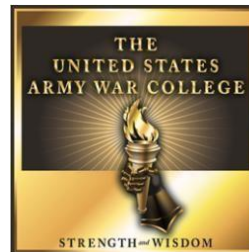# Strategy Research Project

Achieving Integrated Air and Missile Defense

by

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The current strategic environment and threat pose an immense challenge for outnumbered Air and Missile Defense forces. It is not possible for U.S. forces to deter and defeat current ballistic missile threats alone. Building partner capacity and seeking opportunities to work together with partners and allies are mandates in current defense strategic guidance. Critical to meeting the evolving and expanding threat that ballistic missiles pose, is establishing an interoperable and Integrated Air and Missile Defense capability with partners that have purchased U.S. defense systems through Foreign Military Sales. However, current policy constraints limit the ways in which integration can be achieved, rendering the current strategy inept. Updating policy guidance and ensuring process synchronization offer a possible solution to attain synergy and enable burden sharing to partially mitigate the risk currently imposed by the supply versus demand imbalance.

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Achieving Integrated Air and Missile Defense

(6,697 words)

Abstract

The current strategic environment and threat pose an immense challenge for outnumbered Air and Missile Defense forces. It is not possible for U.S. forces to deter and defeat current ballistic missile threats alone. Building partner capacity and seeking opportunities to work together with partners and allies are mandates in current defense strategic guidance. Critical to meeting the evolving and expanding threat that ballistic missiles pose, is establishing an interoperable and Integrated Air and Missile Defense capability with partners that have purchased U.S. defense systems through Foreign Military Sales. However, current policy constraints limit the ways in which integration can be achieved, rendering the current strategy inept. Updating policy guidance and ensuring process synchronization offer a possible solution to attain synergy and enable burden sharing to partially mitigate the risk currently imposed by the supply versus demand imbalance.

Achieving Integrated Air and Missile Defense

> In order to succeed in IAMD, we must offset fewer resources with more innovation to develop and maintain an affordable, integrated, interdependent Joint and combined approach ready to answer the nation's call--anytime, anywhere.

> —General Martin E. Dempsey[1]

Army Warfighting Challenge 14 is Ensure Interoperability and Operate in a Joint, Interorganizational and Multinational Environment.[2] Inclusion of multinational interoperability within the Army Operating Concept (AOC) is a recognition of the uncertain nature of the future, coupled with the proliferation of technology and arms that make unilateral action less desirable. The global demand for Air and Missile Defense (AMD) forces significantly outweighs the supply. Current strategic guidance directs the establishment of regional Integrated Air and Missile Defense (IAMD) to build partner capacity, build trust between partners and allies, strengthen deterrence, and enable burden sharing.[3] In the preface of the 2015 National Security Strategy, President Obama states, that the United States is stronger as part of coalitions, "we and our partners must make the reforms and investments needed to make sure we can work more effectively with each other while growing the ranks of responsible, capable states."[4] The current threat that potential adversaries pose, coupled with the proliferation of ballistic missile technology make it in the national interest of the United States to establish IAMD[5]. Currently, policy and practice are not aligned with this interest. A strategy for IAMD exists, but policy constraints render it inept. To achieve the objective IAMD, policies must be updated to both be in recognition of the current strategic environment and better align with strategic guidance.

Strategic Environment

The Chairman of the Joint Chiefs of Staff' (CJCS) Joint Integrated Air and Missile Defense Vision 2020 uses four themes to characterize the current and future AMD environment. First, the United States faces an "increasingly capable" ballistic missile threat from adversaries. Second, the potential battlespace is expanding and requires plans to combat both regional and homeland threats. Third, the increased demand across the combatant commands will be constrained by shrinking defense budgets. Lastly, there are a growing number of countries that have a desire to acquire U.S. AMD systems.[6]

The Budget Control Act of 2011, coupled with current Army downsizing efforts has added additional strain. The Army is not building new units; doing so would place an unacceptable burden on concurrent operations, and modernization plans. "While the Department of Defense fiscal resources continue to shrink, the threat posed by ballistic missiles…continues to expand in numbers, complexity, and lethality."[7] To meet the demands of this environment, the AMD force must defend the nation's interests by adapting and exploring new opportunities. The world is now a consistent battlespace inside of which missile attacks can quickly cross established boundaries, making coordination and shared effort more important.[8]

The AOC visualizes this environment "with an appreciation for changes in the character of armed conflict," balanced with domestic fiscal and political realities.[9] The central idea that underpins "Win in a Complex World" is that "the Army, as part of joint, inter-organizational, and multinational teams, provides multiple options to the Nation's leadership, integrates multiple partners…and achieves sustainable outcomes."[10]

The review of the 2014 Quadrennial Defense Review (QDR) by the CJCS summarizes the environment appropriately. "The QDR preserves the ends articulated in the Defense Strategic Guidance of 2012… with our ends fixed and our means reducing… it is imperative that we innovate within the ways we defend the nation."[11]

Threat

The AOC states, "the enemy is unknown, the location is unknown, and the coalitions involved are unknown,"[12] however much is known about the ballistic missile capabilities that potential adversaries possess. As of 1990, it was estimated that thirty-four countries possess a ballistic missile inventory.[13] The ballistic missile threat is increasing in numbers, reliability, technology, and is likely to continue to do so over the next decade.[14] Trends in ballistic missile proliferation continue upward as the technology is easily transferable, cost efficient when compared to alternatives, and a source of perceived power. The United States faces a significant ballistic missile threat in three geographic combatant commands: Central Command (CENTCOM), European Command (EUCOM), and Pacific Command (PACOM).

Iran poses the greatest ballistic missile threat in the CENTCOM Area of Operations (AOR). The Iranian missile program has the largest inventory of systems in the Middle East, and over the last twenty years has tailored its efforts against perceived threats posed by Israel and coalition forces in the Middle East.[15] Although the U.S. Department of Defense assessed that Iran had the technology to develop an intercontinental ballistic missile by 2015,[16] the country has not demonstrated the capacity to produce a system capable of ranging the continental United States. It is possible that Joint Comprehensive Plan of Action (JCPOA) dealing with Iran's nuclear program will delay significant missile system advancement because of associated

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program inspections.[17] Additionally, the United Nations Security Council did extend a prohibition on Iranian ballistic missile activity and trade.[18] Regardless of these potential constraints, Iran continues to demonstrate a capability to develop and test both short- and long-range missiles that pose a significant threat to U.S. regional interests and partners.

Russia possesses the most robust ballistic missile inventory in the European theater. Despite treaties between the United States and Russia to reduce the number of ballistic missiles, Russia's continued investment in missile technologies in response to a North Atlantic Treaty Organization (NATO) ballistic missile shield poses a threat to the United States and its European allies.[19] As part of his re-election campaign in 2012, Russian President Vladimir Putin stated, that Russia will invest in improving the capability of its nuclear forces to overcome the ballistic missile defense threat, an indirect reference to U.S. Ballistic Missile Defense (BMD) efforts in Europe.[20] In 2014, Russia divulged their inventory consisted of more than 1500 warheads and 500 Intercontinental Ballistic Missiles,[21] all capable of ranging the United States, but this number does not include the numbers of short- to medium-range missiles that can impact U.S. regional interests and allies.

North Korea and China present the largest potential challenge to the United States in the Pacific Theater. The PACOM Commander, in his 2015 Posture Statement to Congress, characterizes North Korea as the "most dangerous and unpredictable security challenge…the regime continues its aggressive attitude while advancing its nuclear capability and ballistic missile programs."[22] China's focus on anti-access/area denial operations to deter outside intervention in regional efforts include developments

in ballistic missile technology.[23] Further, the region continues to be the hub for ballistic

missile technology proliferation to countries such as Iran.[24]

<center>Countering the Threat</center>

The 2010 Ballistic Missile Defense Review Report lays out the policy priorities for

the United States to address the threat detailed above.

- Defend the homeland from ballistic missile attack.

- Defend deployed forces and protect allies and partners and enable them to

  defend themselves.

- Ensure new technologies are tested before fielding.

- New capabilities must be fiscally sustainable over the long term.

- New capabilities must be flexible and adaptable to future and changing

  threats.

- The United States will lead expanded international efforts for missile defense.

To support the policy priorities, the United States has either deployed or forward

stationed Air and Missile Defense units that are structured to the unique security

conditions in Europe, the Middle East, and Pacific (theaters).[25] These forces not only

actively defend U.S. and allied interests and assist in building partner capacity, they

also serve as a deterrent to potential adversaries. Unfortunately, missile defense forces

are low-density units and do not exist in sufficient numbers to negate or adequately

deter the increasing threat. The threat has created demand for AMD forces that cannot

be resourced, and senior military leaders are concerned that current AMD force

rotations cannot be sustained.[26] Furthermore, not enough missile defense interceptors

exist, compared to the threat, to rely on U.S. forces alone.[27]

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A 5 November, 2014, memo addressed to the Secretary of Defense (SECDEF) signed by the Army and Navy Chiefs of Staff highlighted this challenge. "The recent Army-Navy Warfighter Talks highlighted the growing challenges associated with ballistic missile threats that are increasingly capable, continue to outpace our active defense systems, and exceed our Services' capacity to meet Combatant Commanders' demand."[28] The memo proposed a strategy and policy review to "balance priorities, inform resourcing decisions, and restore our strategic flexibility."[29] The SECDEF response in February 2015 acknowledged the Services' concerns but essentially said there currently was no appetite to review the strategy.[30] During a House Armed Services Strategic Forces Subcommittee hearing, senior leaders underscored these challenges saying that the impacts of the Budget Control Act, coupled with the demand, has driven the operational tempo of these forces higher creating additional stress to the force.[31]

A possible way to mitigate the risk created by the imbalance between supply and demand was offered by Brian McKeon, the Principal Under Secretary of Defense for Policy. During congressional testimony he stated that the risk could be partially mitigated by "encouraging our allies and partners to acquire missile defense capabilities, and to strengthen operational missile defense cooperation."[32] To this end, the United States has opened several Foreign Military Sales (FMS) cases with partner countries to share the burden by enabling their self-defense. FMS is a form of security assistance governed by the Arms Export Control Act where the United States may sell defense equipment to foreign countries. The purpose of FMS is not merely to make money but also to encourage military partnerships with other countries.[33] One of the

stated goals in the Presidential Policy Directive for Conventional Arms Transfer is to "promote the acquisition of U.S. systems to increase interoperability with allies and partners."[34] FMS supports U.S. national interests, whereby, partners that rely on U.S. equipment and training should be more interoperable, which in turn, could enable burden sharing to counter the threat.[35] Integration and interoperability[36] are crucial prerequisites to the successful operation of any missile defense system; without them there is no way to meet the sheer magnitude of the threat.[37]

The Current Strategy

Given the immense ballistic missile threat, and the limited supply of AMD forces that the United States has to counter it, IAMD is an imperative. A strategy does exist, but because of policy constraints, it does not pass the Feasibility, Acceptability, Suitability, Risk (FAS-R) test.

The Ends laid out by both strategic guidance and the various combatant commands, center around maintaining an integrated ballistic missile defense capability and a coalition IAMD network. The 2015 National Security Strategy states, "while we will act unilaterally against threats to our core interests, we are stronger when we mobilize collective action."[38] The 2015 National Military Strategy (NMS) "places special emphasis on maintaining highly-ready forces forward, as well as…interoperability with allies and partners."[39] Former CENTCOM Commander, General James N. Mattis, described the objective in an address in Saudi Arabia as,

> growing in-theater capabilities: Patriot batteries, coupled with Theater High Altitude Air Defense (THAAD) and maritime platforms, linked together by shared early warning, and displayed on a common operational picture these capabilities – and more importantly our collective collaboration – will provide synergy and result in reduced reaction times to imminent threats close regional borders make closer coordination in air and missile defense an imperative.[40]

The Ways to build an IAMD network consist of first ensuring that partner countries have the means (systems that are capable of interoperability) available through FMS cases. Second, partner capacity has to be built to ensure that the country can effectively operate the systems, and apply air defense doctrine to operations. Lastly, there must exist a technical solution to incorporate U.S. and partner country's systems into a network.

The Means to support this strategy are required by both the United States and a partner. The United States must have forward deployed units available to join a IAMD architecture. The partner must simply have the appropriate equipment and trained personnel available.

The current IAMD strategy is feasible because the means to achieve it are present. The United States has deployed or forward stationed AMD forces in a number of countries to include Japan, Korea, Kuwait, Qatar, UAE, Bahrain, and several others. The majority of these countries have already acquired or are in the process of purchasing weapon systems, such as PATRIOT, through approved FMS cases. The countries that have a compatible AMD capability are willing to and desire to be integrated at least at a bilateral level with the United States, if not multilateral in a regional architecture.

The strategy is currently not acceptable has a whole. Three requirements exist for IAMD, equipment, training, and interoperability. The equipment and training requirements (means and some ways) have been met, but the lack of interoperability prevents the strategy from being acceptable. First, most partner countries have completed the FMS process to acquire the systems. Second, the United States, as part

of the approved FMS cases, provides training and assistance to build partner capacity. This is accomplished through training at U.S. installations where foreign Soldiers undergo a system-specific U.S. type of Advanced Individual Training. The individual training is continued through collective training, by the United States Army Military Training Mission (USAMTM). The train, advise, assist mission that USAMTM conducts is under the authorities of Title 22 of U.S. Code for Security Cooperation. Despite the ability to build partner capacity and ensure partners have compatible equipment, it is still not acceptable due to prohibitions that current policies place on data and information sharing. Lastly, the strategy does not provide an implementation plan. Commanders pursue courses of action based on strategic guidance, but policy makers' actions are not aligned with those efforts. Thus, the strategy is bound to fail without the support of an implementation plan and policy.[41]

The ends of the strategy are suitable. It is within the national interest of the United States to deter and defend against threats by potential adversaries through the creation of regional IAMD architectures. Not only does it help mitigate the supply versus demand inequality, but also helps establish trust and long-lasting military and diplomatic partnerships with partners and allies.

Several types of risk exist within this strategy to varying degrees. First, at the tactical level, a lack of integration and interoperability among AMD forces increases the chance of fratricide. Operators that cannot communicate with each other in real time, and systems that cannot share friendly and enemy data prevents the friendly protect role from fully being realized. Second, the lack of communication can cause what is termed missile wastage, or over-engagement. If an operator does not know that a

partner is or already has engaged a threat, he may engage that threat as well. Whereas threat missile systems outnumber friendly AMD systems, so do missiles outnumber interceptors, making it critical to prevent unnecessary engagements. Third, given existing missile technology, the reaction time for engagements is in most cases extremely short. Combining and synchronizing air pictures from various U.S. and partner sensors can help increase situational awareness and increase available reaction time. The last risk at the tactical level is the inability to know when a partner system does not have the ability to engage because of a maintenance or some other system failure, causing the potential impact of a threat missile.

Financial risk exists at the operational and strategic level. Any decision to act unilaterally, made because of disclosure policy, increases the cost to the United States significantly in both the deployment, operating costs, and ammunition costs of AMD systems. At some point the cost of missile defense becomes prohibitive to deter the growing threat. Further, the lack of available AMD forces creates a level of strategic risk that must be mitigated. Threats to U.S. interests must be either deterred, or the capacity to defeat them must exist. The lack of available U.S. forces makes deterrence currently impossible if it is going to be applied through military means.

In order for the IAMD strategy to be successful, the ends must be attainable with the given ways and means. Currently, three policies impact the strategy ends of IAMD: Acquisition and Export Policy, Foreign Disclosure Policy, and Access and Security Policy. These three policies lay out the reasons why the United States would or would not be able to share information or data required for interoperability. To be able to share information and data to enable interoperability three criteria must be met. First, the

partner nation must possess the same or similar equipment (Acquisition and Export Policy). Second, the country must be eligible (Foreign Disclosure) to receive the information or data. Lastly, they must be able to access the information through either physical or technical means (Access and Security Policy).

Acquisition and Export policy governs FMS. The policy lays out five main goals as decisions are made whether or not to approve sales. They are:

- Ensure U.S. military forces maintain technological advantage over their adversaries.

- Help allies and friends deter or defend against aggression, while promoting interoperability with U.S. forces when combined operations are required.

- Promote stability in regions critical to U.S. interests, while preventing the proliferation of weapons of mass destruction and their missile delivery systems.

- Promote peaceful conflict resolution and arms control, human rights, democratization, and other U.S. foreign policy objectives.

- Enhance the ability of the U.S. defense industrial base to meet U.S. defense requirements and maintain long-term military technological superiority at lower costs.[42]

The determination on potential FMS cases goes though complex, multilevel reviews and coordination with different U.S. government agencies that often have varying interests.[43] The National Disclosure Policy 1 (NDP-1) provides the guidelines for who is eligible, and for what level of classification, equipment, or technology they are eligible. The National Disclosure Policy Committee (NDPC) ultimately makes policy decisions if an

individual service cannot make a determination because of classification level. The

NDPC is a joint and interagency board made up of General and Special Members.

Membership consists of representatives from the Department of Defense, individual

services, Offices of the Secretary of Defense, and the interagency.[44] After an FMS case

is approved and the partner or ally receives the equipment, the first criteria for

interoperability has been met.

Army Foreign Disclosure Regulations lay out the guidelines for the transfer of

classified military information, through approved channels, to authorized representatives

of foreign governments.[45]

The NDPC, and the same NDP guidelines that guide FMS, govern policy decisions

regarding foreign disclosure.

> It is the policy of the United States Government to treat classified military
> information as a national security asset which must be conserved and
> protected and which may be disclosed to foreign governments and
> international organizations only where there is a clearly defined advantage
> to the United States.[46]

The Army G-2 Foreign Disclosure Branch defines success "as striking the proper

balance between supporting Army international activities and programs, while

simultaneously protecting the critical enablers of technology and information that

provide the overmatch capabilities of our current and future force."[47]

The policy breaks down types of Classified Military Information (CMI) into eight

categories. Decisions to disclose U.S. data and intelligence is made on a case-by-case

basis, depending on a country's eligibility, which is based on their capability and intent

to protect our information.[48] Capability (can they) is informed by a NDPC Security

Survey and a Central Intelligence Agency Risk Assessment.[49] Whereas Intent (will they)

is determined by that country's willingness to sign an appropriate international

agreement.[50] Last, there must be a clear benefit, aligned with U.S. interests, for foreign disclosure to be approved. Army Regulation 380-10 states, "U.S. sharing of its military resources is a critical component of security cooperation,"[51] and provides the following conditions for sharing of information:

- The national security and other legitimate interests of the United States Government (USG) must be demonstrably furthered by doing so.

- The information must be approved for disclosure by the appropriate USG disclosure official.

- The country must be eligible for the information to be disclosed and the disclosure criteria and conditions of NDP–1.[52]

The NDPC bases decisions to disclose on national policy and interests, the level of classification of the information, and a cost, benefit, risk analysis to the United States. The benefits of sharing data or intelligence is weighed against the risk to the United States if that information is shared with an entity outside of any agreement. One noted exception to the policy is Emergency Dissemination Authority where, "Under conditions of actual or imminent hostilities, any Unified Commander may disclose CMI through TOP SECRET to an actively participating allied force when support of combined combat operations requires it."[53] This is the only exception to the process that allows delegation for commanders to make disclosure decisions. Approving foreign disclosure of CMI fulfills the second criteria required for sharing.

Access and Security policies within the DoD are not written specifically with multinational partners and potential foreign disclosure in mind. These policies are closely associated with DoD Information Assurance (IA) policies. The three reasons why

this policy affects interoperability are: partners cannot get into the area to see the information or data (physical security); they cannot connect to the network (information assurance); or most importantly, they can connect to the network, but the United States does not have the access to see where the data goes after it is shared. Two of these reasons are inconsequential because with approval of an FMS case, the partner has the equipment already and then inherently has the ability to connect to the network. Despite the partner being able to physically access equipment or technologically connect to the network, these policies still prevent the sharing of information between the United States and that country. The main reason is that the IA policies that govern U.S. data systems do not apply to our partners and allies, which means that the United States would relinquish control of the data. A determination cannot be made that the recipient will ensure the same degree of protection to the information that the United States provides.[54] Access and security policies are not grounded in NDP-1, and are based on IA and physical security for data and equipment, respectively. The latest version NDP-1 is outdated, written long before networks and data became so prevalent. When equipment and data or information transfers are supported by FMS and disclosure policies, disclosure requests are still denied because of access and security policies that have been published more recently.

Commanders often mistakenly cite the foreign disclosure policy for the lack of interoperability and integration when disclosure requests are denied. Unfortunately, there is no doctrine that governs foreign disclosure, and very little training exists for commanders and operators to understand the process. In reality, foreign disclosure policy is relatively permissive, and as long as a country meets the requirements laid out

in regulations and directives, most disclosure requests are approved. Interoperability

and integration still remain a challenge because access and security policies, that are

not synchronized with FMS and disclosure decisions, can override both of those

approvals and prevent interoperability.

To be able to interoperate with partners, acquisition and export policies,

disclosure policies, and network access and security policies (both physical and

electronic) must be synchronized in time and process. Decision makers responsible for

network and access policies are not part of the NDPC, which approves both FMS and

disclosures. Both FMS and foreign disclosure processes consider the individual

customer and cost, benefit, and risk analysis on a case by case basis, while network

and access policies are decided in a vacuum; and more importantly, because the

processes are not synchronized, issues are not anticipated and all actions in support of

interoperability are reactive in nature.

These asynchronous policy processes cause issues for security cooperation

operations to build partner capacity. The United States may approve an FMS case to

sell equipment to a specific country, but because of policies (data and information

sharing), that country will not be interoperable, and therefore cannot integrate fully with

U.S. forces. The disconnect caused by policy contradictions often affects partner

relationships, as there is an expectation by the country purchasing the equipment that

they would then be interoperable with U.S. forces. Is it greater risk to sell a country

sensitive military equipment, or to share data and information once the equipment is

sold? This question highlights an asymmetry in interests between protection of data and

enabling multinational operations that must be resolved at the national policy level.

There are more than fifteen approved FMS cases with partners and allies for

AMD systems,[55] including the PATRIOT, AEGIS, and the Terminal High Altitude Air

Defense Systems. Unfortunately, FMS case approval, because of foreign disclosure

constraints, does not mean interoperability, so rather than a force multiplier that U.S.

systems could integrate with, other countries' systems are stovepiped and act

autonomously.

Department of Defense Directive 5230.11, Disclosure of Classified Military

Information to Foreign Governments and International Organizations, seems to lay the

groundwork to synchronize the efforts. The directive states understanding the potential

of possible future foreign procurement should start automatically at the beginning of the

system acquisition process to aid in anticipation of, and enable more timely decisions on

the disclosure of classified information[56] However, most foreign disclosure and access

requests are done after procurement by a country, on a case-by-case basis, for a

limited duration.

An April 2014, Government Accountability Office (GAO) report identified several

additional cases where ballistic missile defense operations specifically, have been

hampered because of policies. Patriot batteries deployed to Turkey in support of North

Atlantic Treaty Organization operations were not able to integrate with partners, that

possessed the same equipment, because foreign disclosure requirements were not

submitted or approved before Patriot units arrived in theater. This resulted in a lack of

data sharing between U.S. and partner forces.[57] In the GAO report, auditors found that

"not completing implementing arrangements and procedures for how to work with allies

before deployment…put a strain on (the) Army's limited existing resources."[58]

Further, U.S. Patriot forces have deployed into the CENTCOM AOR since the 2006 Doha Asian Games. These units work closely with U.S. regional partners, most of whom have already purchased Patriot through FMS channels. Despite nearly a decade of deployments, air defense forces are not interoperable. The Department of Defense has not been required to carefully recognize and develop solutions to implementation issues prior to deploying ballistic missile defense forces.[59] All actions are reactive in nature. Policy issues continue to prevent interoperability with nations that possess U.S. equipment…the same equipment that was sold to increase interoperability.

Former CJCS General Dempsey describes the issue in a 2012 interview with the Carnegie Endowment for International Peace when discussing alliances and building partners. He says, "we have to reform some of our processes that actually tend in some cases, maybe even in many cases, to somewhat hinder our ability to build partners."[60] The 2014 Quadrennial Defense Review echoes his sentiments concerning building partner capacity, "We will emphasize building defense institutional capacity, increasing interoperability with the United States and other likeminded partners, and supporting a system of multilateral defense cooperation."[61] Furthermore, the Fiscal Year 2016 National Defense Authorization Act requires that the SECDEF provide:

> An assessment on opportunities for the integration and interoperability of covered air and missile defense capabilities of the United States with such capabilities of allies of the United States located in the area of responsibility of the commander, particularly with respect to such allies who acquired such capabilities through foreign military sales by the United States. Each assessment shall include an assessment of the key technology, security, command and control, and policy requirements necessary to achieve such an integrated and interoperable air and missile defense capability in a manner that ensures burden sharing and furthers the force multiplication goals of the United States.[62]

This approach by Congress matches the language within the NMS regarding future challenges and the mission of the force by deploying secure, interoperable systems between services, and allies.[63]

Three strategic options are available to counter the AMD threat. The first option is to maintain the status quo. That is to say that the current level of risk is acceptable and to sustain the high operational tempo of AMD forces against a growing threat. This option means that the United States would fight either unilaterally, or with independently acting partners. In the current strategic environment, facing a large ballistic missile threat, this option poses the greatest risk to U.S. forces. Strategic guidance from the President down through the Services is consistent in the view that interoperability reduces risk to U.S. forces during hostilities, and that multilateral approaches to achieve common security goals are preferred.

The second option is for the United States to purchase more systems to mitigate the risk. This option is unfeasible given the environment caused by sequestration, and the associated drawdown of the Army. Additionally, the Department of Defense would likely be forced to cut modernization funding to support procurement, which does not meet the intent of remaining adaptable and flexible to future threats. Any cuts to current modernization fund allocations will prevent the United States keeping up with the speed of technological change and meeting the demands of the future threat

The last option is to change policy to allow the integration of U.S. and partner systems. The United States "must encourage partners to participate and contribute to the extent practical, leading to a networked, layered defense of key strategic centers

that strengthens deterrence and increases our collective ability to defeat a ballistic

missile attack."[64]

A cost-benefit analysis weighed against risk helps inform a decision between

these three choices. The analysis provides what level of risk exists, and whether the

risks associated with data and information sharing are greater than the risk of

technology transfer, already assumed by approval of an FMS case, and the risks posed

to U.S. personnel and interests by the threat. A national policy decision can then be

made to determine if it is in the best interest of the United States to enable IAMD with

partners, or fight unilaterally or autonomously.

There are several benefits to pursuing IAMD. First and foremost, a policy change

does not require a change in financial priorities, making it an appropriate option given

the fiscal impacts of the current strategic environment. Next, current Army Chief of Staff,

General Mark Milley, in his article "*In a complex world, winning matters*," speaks to the

benefits of integration and draws a correlation between integration and readiness.

> U.S. Army readiness is related to the readiness of our allies as we
> integrate to achieve shared security interests across the globe. It is
> imperative that we continue to train, develop, and fight alongside our allies
> because our combined efforts strengthen resolve and enable deterrent
> effects. Operating by, with, and through our allies and partners is a reality
> and necessity, and it is likely to grow in the future.[65]

U.S. readiness against the ballistic missile threat can be increased exponentially with

the addition of integrated partners. The QDR states that steps are being taken now to

optimize "the use of multilateral, joint training facilities overseas in order to increase

readiness and interoperability with our allies and partners."[66] Interoperability can be a

force multiplier by creating additional forces, through multinational operations, to meet

the increasing demand for AMD capability. [67] Increasing the supply of available forces

provides commanders additional flexibility when determining the disposition of forces against the given threat, provides greater partner capacity, and strategic access for potential operations.[68]

At the tactical level, sensor and shooter integration provides better track fidelity, reduces the risk of fratricide, preserves missiles by preventing over-engagement, and provides earlier warning of ballistic missile threats. This additional situational awareness can lead to a longer window in which the engagement authority can make engagement decisions. The integration of partner sensors actually can provide a greater benefit to U.S. operations than to our partners. A prime example of this is UAE's recent purchase, through FMS, of the Terminal High Altitude Air Defense THAAD System. The THAAD radar, when operational, will be the most capable radar in the region. Currently policy restrictions on sharing of data prevent the United States from access to that data which decreases potential situational awareness (limited air picture). Further, if data sharing were authorized, the United States could potentially reallocate, an already limited supply of U.S. THAAD systems, elsewhere. Integration of U.S. and partner AMD systems supports the policy priorities laid out in the Ballistic Missile Defense Review by strengthening deterrence regionally in recognition of changing and uncertain 21st Century requirements.[69]

Potential costs of IAMD are directly associated with the risk involved in FMS, foreign disclosure, and access and security. FMS poses a risk for technology transfer, or the sharing of "technology, goods, services, and munitions, which could prove detrimental to U.S. security interests"[70] to unintended parties. Additionally, there is a risk that an adversary could come into control of a piece of equipment that was sold as part

of an FMS case. A recent example of this is the Islamic State terror group capturing U.S.-made equipment purchased by the Iraqi Army. Disclosure of data over a network is a cyber risk. It is difficult for U.S. officials to know exactly what computers or networks the data may be transferred to on the back end. This is applicable to AMD because of the large number of bilateral agreements to which the United States is party. Most of those agreements do not authorize release of data to other partners or allies, making establishing regional networks difficult. Oversight specified within either the FMS agreement or foreign disclosure authorization mitigate these risks. Physical access to and security of U.S.-controlled equipment is the easiest risk to mitigate, given that either security personnel or operators control access to installations and other sites where the equipment is located.

Regional IAMD architectures with partners and allies do create risk that can be mitigated several ways to make it acceptable. First, risks associated with FMS are already underwritten when an FMS case is approved. The vetting process that a potential customer goes through is based on CIA analysis of the customer, and a cost benefit analysis of the risks entailed. Risks associated with FMS and foreign disclosure underwritten when approvals are granted.

Access and security policy concern risks are also mitigated by the same processes, but still lead to foreign disclosure request disapprovals. Once a customer has a U.S. system in its possession, it assumes responsibility for the protection of the equipment and associated data and information that it provides. Essentially, access and security policy prohibits a partner from obtaining U.S. data and access that it can inherently obtain itself through the use of the system already purchased through the

FMS process. One noted exception is that the U.S. systems have access to a greater amount of data through the large number of bilateral agreements to which it is a party. More often than not, partners prefer bilateral vice multilateral sharing agreements. To prevent the unauthorized release of data that is either too sensitive to share, or prohibited because of a bilateral agreement, a technological solution can be applied to prevent this from occurring. The bottom line is that there is no greater risk of sharing data and information with partners and allies than the risk already assumed by the approval of an FMS case.

Conclusion and Recommendations

> As we look to the future, the U.S. military and its allies and partners will continue to protect and promote shared interests. We will preserve our alliances, expand partnerships, maintain a global stabilizing presence, and conduct training, exercises, security cooperation activities, and military-to-military engagement. Such activities increase the capabilities and capacity of partners, thereby enhancing our collective ability to deter aggression and defeat extremists.[71]

Interoperability, or lack thereof, is not a new issue. "The challenge of information sharing in the global environment has shown its complexity and the inability to share information has remained one of the principal problems affecting the military organizations."[72] IAMD is imperative given the current strategic environment and the threat that ballistic missiles pose to U.S. national interests. The benefits of a multinational IAMD system greatly outweigh the costs, by increasing deterrence, improving relationships, and serving as a force multiplier in the event of hostilities.[73] Missile defense is expensive and eventually acting unilaterally becomes cost prohibitive. The risks that exist by creating this architecture and sharing data are far less than the risks posed by approving an FMS case, or the United States operating unilaterally. Given the options that are available to strategic leaders, changing policy costs the least,

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and mitigates risk to a level that is acceptable. It is essential that the U.S. government make national-level reforms to processes and policies that inhibit interoperability between U.S. and partner forces. U.S. policy and behavior must be synchronized and in support of this national interest. In the 21st Century operating environment, sharing of relevant data is inherently vital to unity of effort and unity of action, as demonstrated by lessons learned in coalition warfare over the last two decades. Lastly, interoperability shows the commitment of the United States to regional partners, improves strategic access, and helps build the necessary trust that is required for successful joint and multinational operations.

The QDR emphasizes that the "Department (of Defense) is committed to finding creative, effective, and efficient ways to achieve our goals and assist in making strategic choices."[74] The current strategic environment and expanse of current threats provide an opportunity for the United States to move away from a willingness for unilateralism and seek partnerships and alliances that will make achieving common interests possible.[75] Two sequential lines of effort (LOE) are recommended to enable IAMD between the United States and its partners and allies, and to support strategic guidance.

The first LOE is educate the force, identify needs, and develop technical solutions to protect critical information and data. The Department of Defense must develop doctrine and provide training to commanders and policy makers on the foreign disclosure process. Commanders must lay out critical sharing requirements to enable integrated operations, but also prevent the release of data that is deemed too valuable for release to a partner or ally. This will help inform developers of what hardware and software filters are required. The specific data requirements for sharing are imperative

because technical solutions will vary between platforms, as will versions of the given platform. Interoperability and integration requirements, if laid out in geographic combatant command campaign plans, will inform policy makers of requirements involving multi-national forces.[76] Current geographic Concept of Operations Plans and Operations Plans must reflect partner capabilities and integration opportunities, with systems obtained through the FMS process. This will help enable implementing arrangements while also communicating those requirements throughout the DoD prior to operations.[77] A simultaneous effort to review foreign disclosure requirements against previous FMS sales will identify existing interoperability issues that impact geographic combatant commanders' campaign plans. LOE 1 will enable streamlined requests from commanders requiring foreign disclosure approval. This proactive stance will help set the theater to ensure forces are integrated and prepared prior to the potential onset of hostilities.

The second LOE is to inform policy reforms. Synchronizing the three main policies that currently inhibit multinational air and missile defense is a key step to reforming the policy approval process. A review and update to NDP-1 to include access and security policies will result in recognizing the impact of changing technology on military operations. An addition of a representative to the NDPC that can speak to the potential impact of disclosure decisions based on network and access policies will help recognize and adjudicate potential risks. Export policy needs to ensure that future FMS potential is reflected in acquisition schedules for every U.S. system. The benefits of LOE 2 will make the disclosure process more proactive, vice reactive, and ensure that decisions are based on the current strategic environment and not on precedents that

existed before the promulgation of FMS sales to partners. Additionally, these reforms will provide commanders solutions that are more permanent and less temporal in nature. Currently, approvals are only for a limited amount of time and for specific training events. To truly build partner capacity and the trust required within coalition operations, approvals need to be more long term to establish true readiness.

Implementing these two lines of effort in Phase 0, Set the Theater, of Theater Campaign Plans will allow regional coalitions to form and also help shape future force posture decisions before the onset of hostilities. Interoperability, a capacity to 'plug and play' with partners and allies, provides commanders strategic flexibility with limited AMD forces; builds trust and partner capacity; but most important, serves as an implementation plan, through policy changes, that can enable the success of the current IAMD strategy.

Endnotes

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