

**Remarks for Lt. Gen. Larry Dodgen, USA (ret.)
Northrop Grumman Mission Systems
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- Our panel title calls on us to address “technical and operational challenges of international missile defense.”
- But there’s a more fundamental set of challenges – geo-strategic and geopolitical challenges – that I’d like to discuss.
- Because I believe that facing up to those higher-order challenges will illuminate many significant technical and operational *opportunities* for international missile defense.
- The most fundamental geo-strategic challenge we face is preparing for the inevitability of shifting, unpredictable threats.
 - Our efforts to date have focused on limited threats from North Korea or Iran.
 - But shouldn’t we be measuring our capabilities against the possibility that we might confront unexpected threats, from unexpected directions, and perhaps driven by unanticipated motives?
 - If nothing else, the dependence on massive, fixed infrastructure of our principal system for defense of the U.S. homeland – GMD – invites adversaries to devise countermeasures to thwart these fixed defenses.
- A further geo-strategic challenge is the possibility that the limited threats we’ve been planning for may become complex threats faster than we anticipated.
- These prospects suggest to us that the “next big thing” in missile defense should be to thicken up our initial capabilities, based on GMD, by adding layers of capability that respond more flexibly to a shifting and unpredictable strategic environment.
- What would this entail? We would need to invest in capabilities with these attributes:
 - Global – because only a global system would be able to respond to threats emanating from anywhere, even unanticipated or unpredictable directions.
 - A global sensor network is a key enabler of “birth-to-death” tracking capability against missile threats – probably best achieved with a satellite system.
 - One such capability – the STSS or Space Tracking and Surveillance System – will be demonstrated in a two satellite test launch in July.
 - Mobile – because only a mobile capability can be flexible enough to be positioned wherever needed.
 - Last week’s successful intercept of the inert, decaying U.S. satellite by an SM-3 interceptor launched from the USS Lake Erie Aegis destroyer in the Pacific is a concrete demonstration of the value of mobility.
 - Positioning mobile sea-based assets to intercept threats gives us wider options for “consequence management” for both the attacking and the defending missiles, in terms of ensuring that booster stages and intercept debris fall in open, uninhabited places.

- Layered – Adding truly global and mobile capabilities to our initial missile defenses would enhance strategic options during times of crisis and allow for creating a more robust, layered defense when and where needed.
- Allied Collaboration – Global, Mobile, Layered capabilities offer our allies a wider scope of opportunities for collaboration.
 - A nation’s ability to contribute or participate would not depend on its geographic location or geopolitical situation.
 - Every ally would be welcome to bring whatever capabilities and assets it has to contribute to the project. It should be our commitment to integrate these contributions into these global, mobile, layered additions to our missile defenses.
 - Deployable, mobile missile defenses like these would provide defense for forward-deployed coalition forces, facilitating out-of-area operations by allied forces – for which there seems to be increasing European interest.
- Greater operational flexibility; capabilities to respond to unpredictable threat developments; wider opportunities for Allied collaboration – these are just a few of the reasons that building out our global, mobile, layered missile defense capabilities deserves to be our “next big thing” in missile defense.
- But if global, mobile, layered missile defenses are, indeed, missile defense’s “next big thing,” how do we make this a coherent, alliance or coalition defense? Let me offer some thoughts.
- One thing we must do is to break down the “stovepipes” or silos into which we’ve separated ourselves when it comes to thinking about defensive systems.
 - We in the U.S. – and probably most of our allies – have incubated separate defensive system communities – one that thinks about “big missile” defense; one that thinks about tactical and theater air and missile defense; one that thinks about fleet defense; a radar community; a satellite community; a laser or “directed-energy” community, etc.
 - At the same time, the reality is that we increasingly rely on systems for missile defense that have other purposes.
 - Last week’s AEGIS/SM-3 satellite interception eloquently punctuates this point — a system designed for fleet air defense adapted for ballistic missile defense.
 - So if we’re really going to be effective, we’ve got to get beyond these separate communities – and their separate, individual technology projects and ambitions. We’ve got to think and work in a more integrated way. On the government acquisition community and industry side of this point, we have to find ways to work together in a wide-ranging, cross-domain systems engineering approach that effectively addresses coalition warfighter needs.
- Another, related point: we can no longer afford to have tightly coupled weapons and sensors. This hampers the warfighter’s flexibility and forces inefficient use of scarce resources.
 - We need open architectures and common standards.
 - We need to be able to take advantage of all the sensors we have to achieve complete situational understanding, and then have the flexibility to utilize the weapons that we have at the time and place of our choosing, to achieve our desired strategic, operational or tactical end-state.
- These last few points have briefly summarized some of the key challenges facing the U.S., in achieving a coherent, integrated air and missile defense.

- So what about the technical and operational challenges we and our allies face trying to achieve such an integrated defensive capability together? Let me mention five key challenges for alliance cooperation that we'll have to surmount if our efforts are to be effective.
 - First, we're going to have to be able to integrate legacy systems – so often in our rush to the future we forget that which we have today will be with us for a very long time.
 - Second, we're going to have to surmount the challenge of building real international partnerships as we develop, produce and field defensive capabilities.
 - These challenges relate to the different, disparate capabilities different partners might bring to the effort, as well as different R&D and industrial partnerships that will have to be forged.
 - Third, on a closely related point, we'll have to surmount more effectively the security challenges of defense collaboration on at least three levels.
 - Most elementally, we face foreign disclosure policies that are cumbersome and in need of modernization – we must be able to share efficiently basic information with allies to explore whether there's a basis for possible collaborative projects.
 - Next, we face export control and ITAR -- International Traffic In Arms Regulations -- restricting what technologies and technical data we can share – and these will need to be smoothly functioning for real in-depth collaboration to work.
 - Finally, we face the operational challenges of fighting together while protecting our sensitive data. This requires multi-level security systems that provide information assurance – systems in which the level of trust and access of different users with different levels of clearance are automatically recognized and enforced.
 - A fourth big challenge for alliance defensive efforts is to integrate air and missile defenses in a global, collaborative manner.
 - Coalition air and missile defense is already here. Evidence Operation Iraqi Freedom. Planning must be collaborative and support the parallel efforts and varying concerns of multiple echelons.
 - We must focus on capability development and resist the urge to let enablers of capabilities diverting attention away from what our warfighters need. The pursuit of a Single Integrated Air Picture (SIAP) is a case in point.
 - We've concentrated much effort in pursuit of common algorithms and common software.
 - So far the results have been unspectacular but the focus on SIAP — the enabler — has drawn attention away from what warfighters really need.
 - Achieving the reality of a SIAP doesn't mean we'll have integration. Much more is needed. Both the Army, with its Integrated Battle Command System and the Navy's DD(X) program will open new horizons for joint and coalition integration.
 - The final challenge I want to mention is the need to pay more attention to the importance of the integrated battle management aspects of the capabilities we are building.

- Specifically, here's what I have in mind: I believe we'll achieve better overall results if we were to elevate battle command to its rightful preeminent place at the center of integrated air and missile defense — and stop treating it as a lesser included activity of sensor and weapon management.
 - Because systems are increasingly complex, battle management decision aides and other such control tools are necessary to ensure the warfighter knows and understands the consequences of his intended actions. Too often, our command and control systems (which were actually designed to marginalize the human) are a hindrance to realizing our full combat power.
 - The lessons learned from net-centric warfare are replete with the clarion call to build systems that adapt to our warfighters, not the other way around. Our systems should support the way the warfighter wants and needs to fight rather than having the system essentially dictate his combat decisions.
 - To meet these challenges and achieve this vision, governments must enable industry to more fully interact internationally. Industry in turn must directly interact with the warfighters to obtain a better understanding of how they fight and how they might want to be able to fight in the future.

- These remarks highlight several important conclusions:
 - For all the progress we've made in missile defense in the last two decades – and specifically since deciding to deploy an operational system – we need to do much more to achieve a system that's robust against the one predictable feature of the future world: that is, unpredictability.
 - The challenges of achieving an integrated coalition air and missile defense system that is global, mobile, and layered, are legion – at a national level and, even more so, at the alliance level.
 - Truly effective defenses – integrated defenses – need to be alliance or coalition defenses. And that means we're going to have to work harder and work smarter precisely to surmount those challenges in order to realize the defenses we need for our alliances.

- Let me close with a quotation from President Franklin D. Roosevelt cited in our US Joint Pub 1 *Doctrine for the Armed Forces of the United States*

“We have learned that we cannot live alone, at peace, that our own well-being is dependent on the well-being of other nations. We have learned that we must live as men, and not as ostriches, nor as dogs in the manger. We have learned to be citizens of the world, members of the human community.”

*President Franklin D. Roosevelt
Fourth Inaugural Address*