

Transcript – MDAA Virtual Event: Cruise Missile Defense Homeland Israel

Mr. Riki Ellison:

Good afternoon from Alexandria, Virginia, and good evening and shalom from Israel. I'm Riki Ellison. I'm the founder and chairman of the Missile Defense Advocacy Alliance. We built this alliance 20 years ago and I've been involved with missile defense all the way back in 1983.

Our organization is here to educate and advocate for missile defense. We believe that it makes our world a safer place. We believe it protects infrastructure, it protects people, and it deters more conflict or war.

We are on a great panel today, very excited about Israel, homeland Israel, my first opportunity to be in Israel was back in 1984 after I finished my rookie year playing the Redskins and came over and stayed in a kibbutz about 10 miles south of the Lebanon border, and there was conflict during that time.

If you look back 40 years ago, we just celebrated that with President Reagan's SDI speech. The biggest partner, our international partner that we did in the Strategic Defense Initiative was to sign an MOU with Israel, and the development of Israel in the Strategic Defense Initiative and the billions of dollars that we spent with them in developing missile defense capabilities was a tremendous investment but a tremendous return on investment that we're seeing today on that.

I have a chance to have a couple great friends that I've shared with in Israel. I remember Brigadier General Shohat, seeing him when he was a battery commander on the ARW system, and I remember meeting Yair when he was developing and in charge of the IMDO many years ago.

We're coming to you today, because we have a challenge in the world today on cruise missile defense architecture. We're challenged to figure that out. We've been exposed by Russia and Ukraine, and in the Ukraine set, we've had to patch and MacGyver different systems together to try and beat that. We know Europe's trying to figure out how to create a cruise missile defense architecture that fits in, that layers in all the way up to the top to the bottom.

We know in our country that the US Air Force just got assigned to create an architecture for cruise missile defense by the SECDEF and we know we're trying to get that same issue in Guam.

It is a very pertinent problem that the world is working on, and we see Israel, who has perfected point defense better than anybody in the world under combat and proven system, layered system, that can see, identify, persistently all the threats, low and slow speed, and have effectors to be able to take that out and be able to do some remarkable things. I mean, the reload capability is also remarkable in what they're able to do and the amount of volume that they're able to take down. They've protected their people, nine million. They have protected their infrastructure. They have invested with us and they are the forward-leaning country in the world today on missile defense technology that's applicable and combat-proven and out there defending populations from missile attack.

We want to, as an audience, we want to understand what the best lessons are and how those best lessons from Israel can apply to other areas of the world. I know it's point defense but how can we best learn from what is going on in Israel?

Transcript – MDAA Virtual Event: Cruise Missile Defense Homeland Israel

Earlier this month, they experienced a pretty high level five day rocket attack. They were very successful at it. I think they had their very first intercept with the David sling, their cruise missile defense effector. We're going to go through all of that and we're going to start off with one of our own. We have an MDAA fellow in Israel that's been with us as long as I've known ... I think probably 20 years, Tal. Tal Inbar is I believe one of the world's best analysts on missiles. I don't think there's anybody better than him, including think tanks. I'd like everybody to have a listen and welcome Tal Inbar from Israel on the threat situation. Thanks, Tal.

Mr. Tal Inbar:

Thank you, Riki for the introduction and for setting this virtual round table. I do have some slides, so if we can see them, the issue of cruise missiles is getting more and more, let's say, up-to-date in the various theaters in the world.

I think that the best starting point would be a little bit of explanation about what's going on, not just in Ukraine but in our region in Iran, so next slide, please.

Iran is known to be not only a manufacturer of cruise missiles but a proliferator in a variety of theaters like Yemen, those are missiles supplied by Iran to the Houthis, and they started ... This is Quds missile, they started with Quds-1 and today we see two more generations of this vehicle and we already saw operational use of those types of cruise missiles back in 2019 when several such cruise missiles were fired upon Saudi Arabia, Aramco Installations, we saw combined attack of UAVs and cruise missiles in al-Khuras and in Abqaiq and they can actually cause a lot of damage, even though, the reliability, at least, of the first generation of those missiles were not so good, but now the Houthis in Yemen are equipped with large quantities of those missiles, which are manufactured in Iran using a lot of commercial off the shelf technologies, including a Chinese copy of a Czech Republic jet engine.

When you are speaking about international regulations and sanctions, that's a good idea and a fine thought but the reality is much challenging and we can see this all the time. Next, please.

We cannot evade from speaking a little bit about Ukraine and we can see here the remains of an intercepted Kh-55 cruise missile, a Russian cruise missile, which is a very obsolete system but, nevertheless, a lot of those missiles are evading air defense and we saw several types of interceptions in Ukraine using different platforms from cannons to air-to-air missiles and even MANPADS operated by Ukrainian soldiers, so in this picture, you can clearly see the hits that this cruise missile suffered from the interceptor. Next, please.

If you are speaking about Iran, we can see a new line of, let's say, miniature or very small cruise missiles with a limited range but, nevertheless, they are positioned in various underground facilities in Iran. Those are a direct threat to Gulf states like UAE and Saudi Arabia. This type of missile cannot reach Israel from Iran but, nevertheless, we can see the effort that Iran has made to adjust such a missile into a UAV platform. Next slide, you can see this.

Transcript – MDAA Virtual Event: Cruise Missile Defense Homeland Israel

This is a UAV, a long endurance UAV made in Iran. You can see two small cruise missiles beneath and they also incorporated such a system with helicopters, so we can see two types of unmanned vehicles in the same frame, UAV carrying two cruise missiles, so this is something that we saw just in the previous year. This is something new. I am not aware of any operational use of this system yet but, nevertheless, this is a threat. Next, please.

Here you can see another type of small cruise missiles beneath the relatively large UAV and this is not the largest in the Iranian fleet. Next,

Don't forget North Korea, so just recently, in recent months, North Korea conducted several drills. Actually I cannot call them experimentation in cruise missiles, because those systems are already in operational use but North Korea emphasized the fact that those missiles, cruise missiles, are capable of carrying a nuclear warhead and, just recently, they showed the world a miniaturized warhead, nuclear warhead for those types of missiles and other even very large and accurate rockets.

You have to remember that they have a range of several thousand kilometers. Those types of systems are a direct threat to the region as a whole, and not only US bases but also, of course, South Korea and even Japan. Next,

This is a demonstration of the size. This is a relatively large cruise missile, and you can see inspection by Kim Jong Un during the last visit to a nuclear weapons research facility. Next,

North Korea also demonstrated that it could launch those cruise missiles not only from ground-based vehicles like trucks but also from a submarine and this was actually launched when the submarine was submerged. You can see that combining the operational range of a submarine or a UAV with the cruise missiles itself, we can see that as a power projection, this system is very capable.

Just to summarize the statement at the opening of our discussion, we can see cruise missiles in other countries as well and, of course, from countries like China and Turkey and so on. We can see systems that are made by relatively advanced technologies and manufacturers but this is the poor man's or the non-state weapon of choice that could project power for long range.

It is not always easy to say the least to intercept those types of cruise missiles because of the relative low speed but also very low height so it could evade some radar systems like we saw in Saudi Arabia, for example.

This is just to summarize the opening statement and let's hear from the others and we'll have a short discussion later.

Mr. Riki Ellison:

Transcript – MDAA Virtual Event: Cruise Missile Defense Homeland Israel

Tal, I want to ask you a couple questions here real quick. What is the Iranian threat, is it standoff? Is it maneuverable? Is it comparable to what the Russians are using in Ukraine? Is Iran supplying that type of weapons system to Russia to use?

Mr. Tal Inbar:

Well, I cannot say that those are highly maneuverable systems but speaking about supplying weapons from Iran to Russia, it was unimaginable a year ago to think that Russia would need such a system but we know for a fact that, at least, two types of UAVs, loitering munition, suicide drones, whatever we want to call them, the Shahed 131 and 136 are supplied in relatively large quantities to Russia. Cruise missiles, we don't have any proof that Iranian cruise missiles were supplied or, on that note, ballistic missiles but time will tell and you have to also remember Russia is gaining operational experience and Iran is, of course, one of the benefactors from that.

Mr. Riki Ellison:

Okay. If we go left of launch, way left, they're relying on chips, correct? Those have to rely on chips, and that supply chain of chips, we know that we've seen a couple of Russian cruise missiles with US chips inside the missile structure. Is there a way ... Are we looking at that far ahead of trying to block that type of chip capability to Iran and North Korea?

Mr. Tal Inbar:

Well, I think that if you are considering a technological siege on a country like Iran or North Korea, I think that this is a nice idea but our experience and what we saw in Ukraine, for example, shows that it is not so effective, to say the least. I think you could elaborate a little bit about technological siege.

Mr. Yair Ramati:

I would look at it from a different perspective, with your permission, as to whether or not western aircraft helicopters armament are relying on Chinese chips, and the answer is yes, so it's hard to put it as part of whatever we are looking at monitoring such technology. Unfortunately, it's not as easy. Even U-Block 9, which is the Iranian unit for navigation, is available in the market.

Mr. Riki Ellison:

Thank you, Tal. Thank you, Yair. Our next guest is Brigadier General Shohat. He was the commander of all of Israel's missile defense forces. He is well-experienced in the systems. He grew up with the systems. His career has been throughout the growth of Israel's missile defense capabilities. The floor is yours, sir. Welcome.

Brig Gen (Ret.) Shachar Shohat:

Shalom, hello everybody. Good afternoon in the US and good evening in Israel and other parts of the world. It's always a great pleasure to be here among professional friends. I will try to take the conversation from Tal that he wisely said about the proliferation of the cruise missile threats. This is the type of threat that only two decades ago was only in the arsenal of a superpower. The Tomahawk Interceptors in the shock and awe operations and so on and now we see this kind of threat as a common

capability of state actors, non-state actors, manufactured by Turkey, Iran, Russia, North Korea, as Tal mentioned, and used by non-state actors and terrorist organizations as the long range kind of weapon.

That gives the characteristic of this type of threat, the low altitude and the slow velocity, the capability to attack from 360 degrees angle, and the accuracy of the impact on challenging the defender more than ever. We can see an improved system.

Brig Gen (Ret.) Shachar Shohat:

Let's take the Abqaiq in Saudi as reference, this multi-directional. Not only this, but led the LTAMDS project, the Patriot upgraded radar, from directional coverage to 360 degree coverage, because you cannot say anymore whatever the threat is coming. So the detection phase of the process is quite challenging and you need a mix and match of detection array, multi sensor, active sensor, passive sensor, elevated sensor, in order to mitigate this challenge. And of course, everything should be interoperable within the country, and if you are working in an alliance, you need to do it within the alliance. And that's I think one of the challenges for NATO, while you want to protect your system cyber wise from one hand, and on the other hand you must have the right connectivity and the open capability to other allies to work together as an alliance.

And even if we've gone through the detection phase, of course we still need to classify the threat to understand what we need to engage. And then again, we need a mix and match of effectors that can do the job, a kinetic effector, not kinetic effector, ground based, naval based system or air based system. Here in Israel, of course everybody are familiar with our multilayer design of defense.

I can mention the David's Sling system, or the SkyCeptor as it's called in the international market, that was just procured by Finland, as a medium range system that has the capability to deal with this type of threat. Of course, I can mention the Iron Dome, the famous Iron Dome, or the SkyHunter in the international market, that are used by Israel to defeat this type of challenge, and already selected for the interim solution for the US system deployed for a while to Guam as a part of the response. And they selected not only because of its C-RAM capability, but as the Army reported at that time, the capability against cruise missiles. That goes also to the Army and also to the US Marine Corps, and maybe in the future also for the Air Force.

Maybe last but not least, I can mention the non-kinetic capability, the high power laser that are now in the maybe final process of development. This is the type of technology that we are dealing with for a few decades in order to field it. I believe that it hasn't been mature yet as an entire system. And my personal view is that because of the limitation of this type of technology, it can only be a complimentary system to other kinetic systems, but not a standalone one. Either it's a ground based high power laser, or of course the preferred way of airborne laser that also is in the process for a few decades now, which can be more relevant, but has some other operational challenges in order to field it in the right way on the battlefield.

Of course, I would like to take the opportunity to appreciate what Riki just mentioned, the investment of the US administration over the years in the capability of the state of Israel, to defend the state of Israel.

Transcript – MDAA Virtual Event: Cruise Missile Defense Homeland Israel

This type of system not only saved lives, but saved a lot of infrastructure damage. And I think it's a return on investment only in eliminating the damage to infrastructure is a positive ROI. And from time to time, I think it also helped to reduce the aggression between both sides because of the capability to eliminate some damages and casualties from both sides.

So thank you for now, I'm ready for questions.

Mr. Riki Ellison:

Thank you. You mentioned probably the biggest challenge for cruise missile offense was that 360 low, slow, low heat, and we have an aversion over here to the JLENS or to a blimp that oversees and can track fire control. We lost one of them, it landed in Pennsylvania and we never picked it up. And you have done remarkably. I believe a similar version of a blimp can do both fire control and persistent overseeing a wide area of coverage, saving the cost of 4,000 air sorties to do the same thing. Can you talk a little bit about that or can you explain what that is, the DEW system on the sensor as it works for the Israeli cruise missile defense architecture?

Brig Gen (Ret.) Shachar Shohat:

Maybe Yair can do it better than me.

Mr. Yair Ramati:

I will address it with your permission. Yes, no doubt that engaging or intercepting or detecting such birds needs eye in the sky. And how you have eyes in the sky, you need either an aircraft or a blimp, a tethered balloon. And yes, Israel developed with DECOM a large balloon, quite large, 117 meter length, compared to 74 on JLENS or 71, that carries sophisticated radar. Is this enough? Answer is no. You also need ground sensors, electro-optical ELINT radars, you need aircraft, you need all of these sets of sensors to create a single air situation picture that will enable you to engage. The issue is detection.

Mr. Riki Ellison:

Thank you. Thanks for having the confidence and the forthright to go ahead and build something or have that part of your architecture. And Shachar, can you just talk about, because the David's Sling is a pretty special interceptor, I think I was with you as it was developed over the last 10 years. It has a dolphin head, it's got an ability to maneuver like no other interceptor, and you seem to have been able to handle that problem. If you can somewhat talk about subsonic, sonic maneuverability and how effective that interceptor is, because I don't think we have interceptors yet for cruise missiles. We're using Patriots that are very expensive for that mission, we have NASAMS for that mission, but where does David's Sling fit into this?

Brig Gen (Ret.) Shachar Shohat:

So the David's Sling, as you mentioned of course have a unique shape, and that's because the dual seeker that we decided to put electro-optical seeker as long as an active seeker, and that gives the all weather capability to the very agile interceptor, three stage motor that has a lot of speed and maneuverability in order to mitigate the challenge of the variety of threats that it needs to deal with,

Transcript – MDAA Virtual Event: Cruise Missile Defense Homeland Israel

from UAV, to attack helicopters, to five generation aircraft, to long range ballistic missile, you name it. So the need to have a common interceptor to the variety of the threats made us create maybe the highest tech or cutting edge technology in one interceptor.

We also designed the interceptor to be a part of the family of effectors of the Patriot system, in the meaning of the dimension and the capability and the teaming that we have done with the Raytheon company. So the interceptor is also a fit into the Patriot system in order to be one of the family of effectors that the Patriot can handle, either it will be the GMT of Raytheon, or it'll be the PAC-3 MSE by Lockheed, or it will be the SkyCeptor by Raytheon and Rafael. I think it was designed to cost, wisely manufactured so we can make it affordable compared to the other competitors.

And last but not least that I would like to mention is the range capability of this interceptor. This interceptor is designed to intercept targets in the long distance compared to the medium range system, a few dozens of kilometers. And therefore, the state of Israel gives the capability to intercept conventional or non conventional threats beyond our boundaries, which is very important to us as a nation because of the lack of strategic depth that we have in Israel.

Mr. Riki Ellison:

And that is standoff cruise missile platforms that you can go out and reach, if you had to reach those, you could do that with that system. That system sounds to me that it goes all the way from Iron Dome, all the way up to Arrow, and it does subsonic, sonic, supersonic, and that aspect of, so you got one missile system that covers all that. Congratulations on that.

Now, going back to your original question and we'll go right into the Yair, is open architecture. How do you, your country, your systems link into other countries with it? I know we're using Link 16, are you able to put these systems on Link 16, which is our common command and control, not a fire control, to share data on that, or how does this fit into that common system?

Brig Gen (Ret.) Shachar Shohat:

The answer is yes, definitely yes. We designed the interceptor in Rafael in an open architecture, and we already proved that and I will mention a few of the capabilities, that means that you can hook in the interceptor or tailor made interceptor to any other advanced system that you have in the world. We already proved it in a few experiences along the last few years on US soil, while we integrated the Iron Dome interceptor into the Northrop Grumman radar, the G/ATOR. We already proved it by using the Sentinel radar for the US Army.

We hooked it to other command and control shelter. We have done it in Israel in the Iron Dome naval version of the system, hooking the interceptor into the launcher of the vessel and into the command and control of the vessel, because we isolated the capability to an independent antenna, let's take for the instance, the uplink and the downlink. So we are not dependent on the specific rather or on specific C2. And I believe we can do any modification of those systems to any other radar or C2, and even

launcher. We already have done a test for the multi-mission launcher at that time in the US. So the open architecture is not a phrase, it's a fact.

Mr. Riki Ellison:

Thank you for that. I think we lead right now into the developer, the former director of the Israeli Missile Defense Organization. It's similar to the Missile Defense Agency in our country, where they do the cutting edge technology. And Yair can explain the whole bit if you can, the cruise missile defense architecture and how you have layers and how you're able to pick and choose which systems so you can reload, or if something gets damaged, you move it, and how effective you are to play as much of this thing as you can to do it.

So ladies and gentlemen, the former IMDO director, Yair Ramati.

Mr. Yair Ramati:

Well, thank you very much Riki. In five to 10 minutes, I'll try to address some of those points, critical points. The first one is, what is a cruise missile? Are we looking at Tomahawk, Tomahawk like, Kh-55, or scaled down like the Quds, Iranian Quds. Quds by the way is Jerusalem, we know where it's directed to. And the answer is, yes, we refer to it. But what about the Shahed 131, 136, which is a delta wing type of, I would call it UAV, but it is being launched by a rocket, flying 10 to 15 hours to its target 1,500 kilometers or even 2,500 kilometers. No communication, no signature, ELINT signature. It is also a high precision type of long range strike system, a cruise missile.

So air defense, or any other defense that needs to deal with those cruise missiles, needs to handle both the high subsonic, medium, slow, all types of signatures, all altitude, all at remote, and to be able to operate efficiently, and cost per kill should be reasonable. You can't intercept Shahed 136 with a small motorcycle type of engine with a propeller with a \$1 million type of interceptor, that's not affordable. Then the area of defense, how much does it cost you to defend one square mile? And the answer is not as easy as we expect. Most of the CFOs of aerospace companies would love to have each threat have its own weapon systems that deal with it. From the government, I came both from industry and from the government, the government wants one fit all, and that's not always the case. So at the end of my discussion, I would suggest to look what we need to modify as simple as possible, the system, such as Iron Dome or David's Sling in Israel, maybe some improvement in Patriot, to enable them to handle these types of threats.

General Shohat mentioned that in order to engage such threats, you need elevated sensors, ground, elevated, all types, and you have to invest in it, because the key element in interception is to have alert, to have a single air situation picture that fuses all of the data you have. If you are smart enough, you work with the US in interoperability. If you are smarter, you take the entire region sensors and combine them together. Because at the end of the day, everything comes from either Iran or their proxies, from Houthis in Yemen, West Iraq, Hezbollah, and others. And those cruise missiles might fly for a long distance and we all, Saudi Arabia, the kingdoms there, UAE, and even Israel, succeeded to intercept such

incoming threats. Not 100%, but along the way. So first and most important is detection and you have to invest in it.

The second element of course is integration, how you integrate it and how you are dealing with-

Mr. Yair Ramati:

... integration, how you integrate it and how you are dealing with the improvement of the threats, because threats are not constant. It's a kind of cat and mouse type of game. They're improving, you have to improve. Actually, you have to be one step ahead of the other side all the time. What we see in Ukraine is, as I told you, 4,000, maybe more types of missiles, long-range striking. Most of them are airborne launches. They came to Ukraine and just a few of them had been intercepted. Maybe a couple of dozens, maybe more, but we don't have a lot of evidence. The explanation of why so small a number had been intercepted is a lack of a single air-circulation situation picture above Ukraine. We can also choose what happens during the attack of, I think it was September 14th, 2019. It was night, between 2:00 AM to 3:00 AM, a combined simultaneous attack on two sides which are apart, each one, I think, a couple of dozens of miles apart.

The small Kutz-like type of propellers with delta wing incoming, arrived within about one and a half minutes, probably single direction, but 18, 1-8 arrived to the target. Four Cruise missiles, small ones to the other side. One is Abqaiq as one is al-Khuraib but quite synchronized in terms of timing, quite accurate. That was almost four years ago. How did they penetrate the air defense? The answer is pretty simple. There are four layers of what happened. The first one, lack of intelligence and alert. In spite of the fact that one should expect the Iranians to launch an attack directly or indirectly in the region, one and a half months of preparation. No one saw it, or at least no indication, so there was no alert in the kingdom. Second one, the aircraft, they have five AWACS and two, I think it's some type of airborne radars were on the ground.

It means Iranian have very good intelligence. You cannot have it 24/7. The third is ground radars, they have quite, I think more than dozens of FBS 117, Lockheed-Martin type of radars, the same we have in Israel. But if the target is flying slow and low in a hilly area, they can penetrate. And last but not least is that the air defense was sectorial rather than 360 degree. Can the engineers provide better solutions? Answer is yes. Does the Saudi Arabia defense know that? They know it and they know how to handle it, no doubt about it. But the next step will not be 18. The next step might be 36, or 72, or even 100. And yet, we had already engaged 100, indeed the rockets, not this type of threat, but we should be ready for 100 simultaneous attacks in all directions.

And the question is, are we ready for it? And I think Israel, I'm not going into details, but I think Israel's current layered air defense, especially Iron Dome, and David's Sling can handle it and provide the required defense of the country. And yes, Riki, sometimes small is beautiful, I'm sure. And I'm sure that working together with the US on the three levels of cooperation, joint development, joint production, joint exercise, provides the right message in the area. If Israel will be able also to combine force with its allies in France and within the region, I think this will provide the best answer for everyone. And yes,

Transcript – MDAA Virtual Event: Cruise Missile Defense Homeland Israel

there are a lot of solutions, how to integrate system together, US with space assets and other assets with Israel and with our friends in the area. And once again, thank you very much for hosting such a discussion.

Mr. Riki Ellison:

Thank you. I got a couple good questions for you, I think. But you hit it on the money, the attack on Abu Dhabi where they're using \$4 million interceptors against drones because they can't understand what's out there, they don't measure it or record it correctly. Israel has done all this by themselves, practically. Besides us, you haven't had the luxury of other sensors and other things from other countries. And certainly now that you're part of CENTCOM and you said it to me that right now, you would like to do data sharing agreements with sensors with the Arab states to give you better capacity, and also for them to get better capability. Also what you've done, which you didn't mention, is you've connected your ballistic missile defense with the cruise missile defense, which is very difficult to do.

We're struggling in Europe. In Europe, we're not doing that. We haven't done it in the United States yet, either. We're going to try to do it in Guam, we will do it in Guam. You've accomplished some of this stuff, but it seems that where we have to play is to have everybody chip in as your allies and trust, certainly the sensors. I don't know about the fire control yet, but the sensor aspect of it is there. I just wanted to come back to you and say where is Israel in its ability to really open up data sharing agreements with the Arab states or that could help you with stuff coming through? Or is that-

Mr. Yair Ramati:

Yeah, thank you for addressing the question, but yeah, I'm not a politician, rather a diplomat. Any entity relates to it, but I'm sure it's only a question of time. Technically, about the batteries both Iron Dome and David's Sling have been tested and designed for full performance, simultaneously ballistic crews on the same, you don't have to switch. And yes, it can work in 360 degree, depending how you deploy it, what you do. And it is a customer requirement.

I'm sure that the Israeli authorities are eager to be able to work together in the region. And yes, with the joint exercise, joint test and joint development with the US, it works and it is beneficial. I'm sure it sends the right and clear message in the area and we can see it. And yes, both UAE and Saudi Arabia suffered from various types of threats. They're handling it very well and obviously, they can use our equipment. Also, it depends on a higher level decision-making in the area.

Mr. Riki Ellison:

Good, thank you. We now will go to our side of the ball here a little bit. We've got one of our board of directors here with us today, former Major General for the US Air Force, Charles Corcoran, "Corky." And he was, I think, in a pretty extensive exercise recently this year while he was in uniform over in Israel. Very astute on the F-35, F-22. We didn't talk about that, with the sensor platforms and how Israel's been able to apply that vehicle to give them more capability to see the threat. We haven't done that over on our side yet, but those are innovative things that you're doing. Corky, welcome to the discussion on Israel missile defense, specifically Cruise missile defense.

Maj Gen (Ret.) Charles "Corky" Corcoran:

Thank you Riki, thanks for the kind intro and apologize for being late. I was traveling, but really appreciate the opportunity to be a part of this discussion with these other tremendously capable and talented individuals. I tell you, I just dialed in and heard your question there, particularly the last part of it, integrated air missile defense. And I tell you, nobody does it better than Israel, we all know this. They are the model for how to actually, as a nation, a whole of a nation, get after integrated air and missile defense. And as I look at that as a model for us, for our homeland, what we need to get after or for Guam which is part of our homeland, but obviously, it's a standalone island, starting from the top, it's policy. There's got to be that national imperative, there's got to be that push. And too often I think we focus on, we're missing the forest for the trees.

We're focusing, "How do we shoot down this or how do we shoot down that?" And in Israel, it all starts with, "This is an existential threat and we're going to start way left of bang and we're going to try to interdict these things so the archer never even has anything to shoot at you." And you see that, you see the willingness to see that, the policy level and the systems in place to get after that, and that's how Israel starts it. They don't even allow those guys to get the rockets and missiles, et cetera.

I think we as a nation got to start thinking more about that rather than just in-game intercept. From there, there is the integration across all the various threats, the ability to see them, to sense and make sense and act. The sensors, you just brought up the F-35 and F-22. When I was over in Israel in January recently, it was great to see how they're integrating the F-35 with all the ground based radars, with the unmanned sensors they have and pulling all this together so that they have a holistic picture so that they got that, they got the roles and responsibilities right.

They got somebody in charge, not a bunch of different people trying to figure out who's in charge. They got somebody in charge, they got the sensors, they got the operations center and everybody at every level knows what their role is and that allows them to get after this. As soon as the wick is lit on a bad guy rocket or missile of any type coming towards them, they're ready to go. A small UAS, et cetera. So I think there are many lessons that the US can take from this. We got to get the roles and missions fixed, we got to get the policy fixed. We got to get the sensors in place like Israelis have. And I guess at the end of the day, what I'd say is we got to get our ego out of the way. There's a lot we can learn from partners large and small who have capabilities, who have tactics, techniques and procedures that we could put in place.

Just because we're maybe a bigger country or a bigger force, it doesn't mean we have all the answers and know what to do. There's a lot we can learn, especially from a country like Israel, that is the model of how to do this in an integrated fashion against all these threats from way left of launch until endgame if it's required with an inbound missile. I'll stop there, that's my big picture takeaway is we really need to try to learn from our friends and integrate what they're doing and copy what they're doing, mimic what they're doing to get our homeland defense right across the board. Not just Cruise missiles, but across the board. Over to you, Riki.

Mr. Riki Ellison:

Transcript – MDAA Virtual Event: Cruise Missile Defense Homeland Israel

Corky, if you look at what they're doing, they got the JLENS basically up, they steroided that thing up. That's working for them 100%. They're using their F-35s. We got many more F-35s for sensor platforms to help. What's the problem with the US not doing this the way they're doing it? It's got to be more than ego. What is it that we can't duplicate what they're doing or can't share what they're doing, or can't bring them in? It has to be growing here. What's preventing us from having that big time match on our side?

Maj Gen (Ret.) Charles "Corky" Corcoran:

I think it starts with a sense of urgency, Riki. I mean, Israel is in a tough neighborhood and they're scrapping and fighting every day to survive, to stay in existence as a state. They're fighting people who don't want them to exist. We do not have that sense of urgency. We have the two big moats called the Atlantic and Pacific and we've taken them for granted for way too long. So we're starting to get a little bit more of a sense of urgency, we're still out there. And then secondly, we got a lot of area to cover. You talk about JLENS, things like that. We've got to figure out how to leverage those types of sensors that are persistent and are affordable. And you can't have F-35s flying all around your coast all the time, it's just unobtainium, right?

But if you have them stationed in the right places and you have other effectors in the right places and then you have that persistent watch of things like JLENS and other sensor capabilities, then if the time comes, when the time comes, you can scramble F-35s to help them be a part of it. But we got to think differently. We got to think, how can we scale things that Israel's doing that we can afford that would help us with our homeland and to help other partners? You just mentioned the UAE. There's no reason they should be shooting down small, one-way attack UAVs with multimillion dollar or even sometimes billion dollar systems. You're not going to win that in the long game.

Mr. Riki Ellison:

Hey Corky, one more thing here. You've seen what they're doing. Their Air Force runs the whole show.

Maj Gen (Ret.) Charles "Corky" Corcoran:

Right.

Mr. Riki Ellison:

Our Air Force doesn't run the show.

Maj Gen (Ret.) Charles "Corky" Corcoran:

No.

Mr. Riki Ellison:

Our Army runs the show on land, so just help me with that. Is there a parallel or just, that's different?

Maj Gen (Ret.) Charles "Corky" Corcoran:

Transcript – MDAA Virtual Event: Cruise Missile Defense Homeland Israel

Well, I think the parallel is that they have somebody in charge. I don't care if it's the Army or the Navy or the Air Force, really, it's a combatant commander who is in charge in our system, which is great, but we've got to have the C2 structure in place and we've got to have the people organized, trained and equipped to operate the systems and do the mission. So it's not so much about who does it, it's about making sure that there is a single belly button in charge that has the hammer for integrated air and missile defense.

Not somebody for hypersonic, somebody for ballistics, somebody for Cruise, somebody else for this, that or the other. There is a person in charge who has got the authority, got the responsibility and will be held accountable for fails. We've got to have those discussions about, if we're not doing that right, we have got to fix it.

Mr. Riki Ellison:

Thank you, Corky. Alright Dave, you got a couple minutes and then certainly, we're going to probably flow over time a little bit, but you've got a great perspective, Dave, being a former 10th AAMDC commander, I think was over there when you guys were there when our 10th was part of Israel on it. You got Army perspective on the Cruise missile defense thing, so you have a pretty good perspective from a different viewpoint than what's at the table here, so it's yours, sir.

COL (Ret.) Dave Shank:

Yeah, thanks Riki and thanks-

Mr. Riki Ellison:

I'm sorry, Dave's an advisor to MDAA, he's been with us for quite a while. I didn't introduce you correctly. I'm sorry, go ahead.

COL (Ret.) Dave Shank:

No, that's quite all right. But thanks Riki, and thanks for the opportunity and great to see some old friends here. We'll try to go speed round here because, as you mentioned, we are closing in on the timeframe. I really wanted to start off with Yair here if I can, as the former IMDO director. We haven't talked autonomy or artificial intelligence and the benefits that exist as we move into those areas. Yair, could you share some of your thoughts with regards to autonomous operations, please?

Mr. Yair Ramati:

Well, autonomous operation in strike, in counter-attack is one issue and in defense, it's a little different. We do not provide full autonomy to our defense system, we need always an operator. And the operator is the one who dictates. He doesn't push the button actually, for firing, but he's enabling. This is a concept still, we have time. We are trying to intercept a long distance from our border. It's not always feasible.

If you are engaging time critical types of targets that fly to you and you have a couple of seconds, still a human being involved. About AI is, I would not go into details. It's part of the command and control and

it will play a little more importance along with time. And I'm sure as well as we are developing here an autonomous car, then the same will happen with other systems, mainly in strike, less in defense.

COL (Ret.) Dave Shank:

Thank you, Yair. General Shohat, as a former IDF commander and just from my personal experience as a former AAMDC commander supporting the Defense of Israel Mission, Corky nailed it there. There's no better blueprint than what the IDF presents when it comes to integrated air missile defense. The US, I would submit that if I can use the cliché, we have a hole in our swing and it's with Cruise missile defense. What are some of your thoughts, without trying to back into a corner or anything, about improvements with regards to Cruise missile defense for the United States?

Brig Gen (Ret.) Shachar Shohat:

First of all, I would like to echo Corky's statement. I think we need to put a little bit of ego aside, but I also would like to mention for the US favorite, that what we call in Israel National Defense is smaller than regional defense for you. But still I think we can adapt and learn from each other and imitate some capabilities and doctrine in order to work better together in a coalition. And I think we need to be, although the cyber issue, and I'm not naive, I understand the politics of an organization within the armed forces. I see the barrier between the Air Force and Army and Navy all over the world and between a nation. But still we have to be more open-minded and be open to collaboration. I was mentioned during the session, if I take the new generation of command and control for the US, the IBCS by Northrop Grumman, which is going to be the most common and the selected command and control for the entire troops from the battery level up to the brigade level.

So if the US is working on a crisis in the other region, and that's the type of the fight that the US is doing, generally you are not doing homeland defense every day. So you need to open the gate to integrate into your C2 system in order to work interoperably with your alliances, whatever it'll be, NATO and so on. And somehow the direction all over the world, not only for the US, is the opposite. Everybody's closing, everybody is putting up firewalls. And the result is that there is no real interoperability between the system Tal had just mentioned in the Ukraine conflict. The less of capability or the lack of capability in order to work together to have a common picture and so on. And I think this is the direction we need to move forward, reducing a little bit the barrier to do it of course, would be smart and wise. But still we have to be more cooperative and collaborative between friendly forces.

And maybe the last thing I would like to mention is because of what we talked about today about the cruise missile urgency. I see an urgent need to defend the protector or to protect the defender, close-in weapons defense. We see the precise strike in Ukraine. So I believe that there is an urgent need for a new very short range capability in order to do self-defense for strategic installation, to maneuver forces, to critical infrastructure in order and of course to air defense systems in order to ensure the capability to survive in the new battlefield.

Mr. Riki Ellison:

Hey Dave, can you ask Yair that same question? I want to hear from him too.

COL (Ret.) Dave Shank:

Yeah, Yair your thoughts.

Mr. Yair Ramati:

I will prefer standing behind General Shohat's observations.

Mr. Riki Ellison:

Okay. They were great. They're phenomenal. They were very well done. I just wanted to see if you wanted to chip in. Okay, well done.

COL (Ret.) Dave Shank:

Hey Riki, I think-

Mr. Riki Ellison:

You got some time. Go ahead. You can go ahead and open up.

COL (Ret.) Dave Shank:

Okay. Yeah, I want, okay, I've got two more questions if I may, one with one for Tal and then I'll end it with a question for Corky. But Tal, we haven't talked about China. We've talked a little bit about Russia. We've all watched what's transpired in the Ukraine for the last 400 plus days during what I've termed a second or a further invasion of that country. And we recognize, at least my opinion is, Russia has made some mistakes when it comes to combined arms fighting leveraging capability. Because I think, for all intents and purposes, Russia saw a much shorter conflict than what continues to this day. So can you talk about, from an intel perspective, maybe some compare and contrast on what we could expect to see out of China and a potential invasion of Taiwan versus what we've seen with Russia and the Ukraine?

Mr. Tal Inbar:

Well, that's a whole different story, Riki. I think Taiwan and China deserve its own event. But I think that the lesson, at least one of the lessons that China can draw from the war in Ukraine is that it's not so easy even to, let's say, to be on the upper hand against a relatively weak opponent because this opponent is not so weak. And the big issue is intelligence. And we have to remember that without some, let's say, foreign help in intelligence, Ukrainian successes were not as we see every other day. So it will be a much more challenging task if China would think about doing some kinetic effects vis-a-vis Taiwan. But nevertheless, another lesson is that every side that wants to still be operating after several times, several periods of, let's say, military operations, needs to have a good and credible air defense. Air defense and intelligence are, at least in my point of view, one of the best lessons that everybody could learn from Ukraine.

COL (Ret.) Dave Shank:

Yeah, thanks Tal and I know that was a tough one. And surely in the conflict between Russia and Ukraine, the Ukrainians have clearly demonstrated the need for short-range air defense and the successes that they've had on the battlefield. And then the last question there for Corky. And man, it's great to see you again, Corky.

If we could just talk a little bit about the conflict between Russia and the Ukraine. The Russians have launched thousands of missiles in a variety of forms. Somebody mentioned earlier in the discussion, mostly air launched missiles. The Ukrainians have a great deal of capability. Some would argue whether it's integrated or not. I would submit that everything needs to be integrated. The passing of early warning, a sensor architecture that's previously been mentioned and the sharing of early warning is vital to the success of an engagement. But can you talk about just from your foxhole, what the contributions of the patriot system, the NASAMS capability as well as short range air defense capabilities, not just from the US but many contributors and what that's done for the Ukrainian forces against the Russian fleet?

Maj Gen (Ret.) Charles "Corky" Corcoran:

Yeah, you bet Dave. Hey, it was great to see you again buddy. Thanks for being a part of this. Well, like was just said, Tal, I think it all starts with intel. And so what you mentioned, the sharing of intel with the Ukrainians has been a boon for them. And from the get-go before the invasion started, letting them know what we knew or had a pretty good idea of what was going to happen. Allowing them to do some passive defense work to make sure that things were more survivable. And then what you said, I agree with what you said, everything doesn't need to be integrated, but it certainly needs to be coordinated. Everybody needs to be on the same sheet of music. And the Ukrainians have clearly done that. They have taken what we, well, I think we're affectionately calling FrankenSAM's right now. They've pieced together so many different pieces of equipment and capabilities from numerous countries.

And with sheer will, with the sheer force of will and I would say a really capable C2 structure at all tiers, they've done a pretty darn good job of forwarding Russia's attempts to break the will to people to take out their power grids, et cetera, et cetera. They've taken a lot of blows, but they've proven the ability to come back. I guess my big takeaway overall from that conflict is that Russia's inability to gain air superiority over the battlefield due to primarily Ukraine's ability to defend their airspace with all the systems that we've talked about, has just forced Russia's invasion to stall. I mean, Russia is not a very well organized, trained and equipped force, is what we found. They don't do combined arms well, they're not a joint force. And Ukraine has, by Ukraine defending their skies the way they have, they've stalled Russia's attack and we're looking at really a World War I style fight right now. And it's just a grind.

So I think there's a lot we can learn from how they've integrated various systems on the fly and there's a lot we can learn about the need to be able to overcome the enemy's defenses so that we can support our folks on the battlefield if we ever get in a slug fest like this. Because that's how you're going to be able to take the initiative. If you get on the skies and do what you want to do everything else is easy, but it's not so easy on those skies is what the Ukrainians have shown.

Transcript – MDAA Virtual Event: Cruise Missile Defense Homeland Israel

Mr. Riki Ellison:

Okay, all right, let's pull it back to Israel now. Let's pull this thing back because that's the model. I mean, let's be real here. We don't want to fight like we're fighting in Ukraine. No way. We want to fight like we were fighting in Israel with that kind of integration joint force deal. And that's where NATO's got to go. They can't go to a Ukraine model. Taiwan can't go to a Ukraine model. We got to go to an Israel model. That's where we're at. And we're not accepting that. And I think it's both ways. I don't see Iron Dome over in Ukraine. I don't see these systems over there either. So it is a mutual trust here that I think we all hit upon to get us to fight better than we ever can. To have some trust with each other, to do agreements and integration and open architecture with source codes, share everything to get this thing where we want to go.

Yes, you're the ideal part, but you're such a small country, we gotta move that philosophy on how you fight air defense, which is the best in the world to your friends and allies to help keep this world in the right space. We're being challenged by Russia and China. We're being challenged by our way of life and we have to fight as a community to do this. So that's why I have just tremendous respect for what you do in Israel. Everybody does. And we got to be able to take those lessons. We got to be able to take your system, we got to, we have to help take those and make everybody else better. We're not there yet. So that's where we're at. All right, we're a little over time. Would like everybody to just do a closing statement and we'll go around the room on that. So why don't you kick it off, Dave, you're the last one up so you might as well start it off.

COL (Ret.) Dave Shank:

Yeah, hard to follow my esteemed colleagues and great points there at the end. Riki. Again, thanks for allowing me to participate. I think Tal, as Corky alluded to, Tal nailed it with the intel piece.

Mr. Riki Ellison:

Yeah.

COL (Ret.) Dave Shank:

We've all, Corky nailed it with the coordination piece that while we may not be integrated across the board, we definitely have to be coordinated. I think Yair and Shachar Shohat, they both alluded to the cost effectiveness of engaging the right target with the right interceptor capability. And so ultimately it's all about layering and a layered defense. If you can't get left of launch, you've got to have the capability through layering to defend the critical assets in order to be successful and ultimately succeed. Thanks again, Riki, and I'll pause there.

Mr. Riki Ellison:

All right, Tal.

Mr. Tal Inbar:

Transcript – MDAA Virtual Event: Cruise Missile Defense Homeland Israel

Well I think Dave already summarized it perfectly and I think one other issue is that the international dialogue should be continued. And there are a lot of new opportunities in our region, not only within Israel, but this is for another region.

Mr. Riki Ellison:

Thank you Tal. Corky.

Maj Gen (Ret.) Charles "Corky" Corcoran:

Yeah, thanks Riki. And thanks to all the esteemed colleagues. It's a pleasure to be a part of this panel with you. I guess here's what I'll say, Riki, I'll push back on you a little bit. I think Israel is a model and I think Ukraine is evidence of how you can push towards that model in a crisis. I think they're driving towards integration and open coast. They've linked NASAMS and Patriot and all these and former Soviet systems. And when there's a crisis, we've proven we can do it. So I think we should actually say, hey, why does it take a crisis, NATO? Why does it take a crisis for Middle East partners? Let's do it before the crisis. And the next thing we're going to give to Ukraine is the fighters. So you mentioned F35s in Israel, so we're going to get them F16s now and they're going to link that in as well to the integrated air missiles defense. So I think the real lesson is we can do it in a crisis. Israel's the model. Let's not wait for the crisis to do it. Thanks Riki for hosting.

Mr. Riki Ellison:

Yeah, great point Corky, thank you. Yair.

Mr. Yair Ramati:

Well thank you very much. Our hope, it's our pleasure to be here. Keep in mind it all the time we are in an arms race. It's improving the threat and we will try to be one step ahead with our allies and friends in the region and with the support of the US.

Mr. Riki Ellison:

Thank you, Yair. Shachar Shohat.

Brig Gen (Ret.) Shachar Shohat:

Couldn't agree more with Corky's statement. I think our defense operations are a very convenient ground for cooperation because of the basic rights to defend yourself. Attack operations are much more capable, complex, excuse me. So I think this is a common ground to start cooperating. I enjoyed the professional conversation. I'd like to thank you for hosting us and for dealing and raising this important issue. Enjoyed it very much. Best of luck.

Mr. Riki Ellison:

Thank you. Thank you, gentlemen, I thought it was an engaging conversation. It's certainly educational for the Israeli elements that you brought forward on the cruise missile defense and the challenges of getting to where we want to go. As Corky mentioned, as Shachar mentioned, as Yair mentioned, as Dave and Tal on it. So thank you very much. Shalom and peace be with you.