#### Mr. Riki Ellison:

Good morning ladies and gentlemen, from a beautiful day in Los Angeles, we're here with our USC Space and Defense Program. It is a different time in the world, we have a lot of sympathy and empathy for the deaths that are happening in Ukraine today. And, we see and note that our deterrence has failed as a Western civilization to prevent this type of a warfare in Ukraine. Today, we have collected, I think some of the experts in the world, specifically on this theater and on this issue, how critical missile defense is for NATO, for Ukraine, and the ramifications it has in the future to deter Russia from what it's doing as we watch today.

## Mr. Riki Ellison:

I'm Riki Ellison, I'm the founder and CEO of the Missile Defense Advocacy Alliance, it is an entity that we built in 2002, the critical thinking of missile defenses, right here in LA with then president-elect Ronald Reagan at the university here at Southern Cal. where some of that thought process happened in 1980, been part of that for those many years since then.

### Mr. Riki Ellison:

But we're going to start off today with one of our best experts, I think, in the world on this, he's former Undersecretary of Policy, Department of Defense, the last administration. He's been to Crimea, he's been to Ukraine, he's been to Kiev and he's negotiated many times with Russia. He is a phenomenal leader and spokesman on this issue and on many issues on that. So, ladies and gentlemen, I'll give it forward to John Rood.

#### Mr. John Rood:

Well, thank you, Riki. I'll have to ask MDAA to give me a recording of that introduction, send it to my mother, that was particularly good. Thank you very much. But it's great to be with everybody. It's a tough day to watch what is occurring in Ukraine right now with the Russian invasion, continuing to proceed and the fighting and the resistance that the Ukrainians are being offered is... It's heartwarming to watch, but also, tragic to see. As Riki mentioned, I've visited Kiev, I've visited Crimea, and been to Yalta where, after World War II, the famous agreements were reached between the three parties, the United States, Soviet Union and Great Britain at that time. But as I watched that, some of the videos in Kiev and elsewhere, I've been to a number of those spots, I was looking at something this morning, just a few minutes before we came on the air and I think I recognized a street that I walked down there. Beautiful ancient city, and hard to see for people that are friendly to the United States and want a closer relationship with the west to see this.

### Mr. John Rood:

But one of the things is I've read the press coverage about the fighting that has bothered me is, I think there is a sense of shock amongst many in the United States and in the west that this has occurred. And I'm a little shocked that there is so much shock, if that's a way to put that, in the sense that... When I was entering government for my last stint in the beginning of 2018, the end of 2017, part of what we were discussing in getting the National Defense Strategy ready, and I was asked, in testimony of Mark Montgomery here, was there at the hearings, "What do you think the greatest threats are? And what do you see this strategic environment looking like John Rood?", and my answer was, "There's been a return of great power competition and the specter of large scale conflict has re-emerged. And, we can, and may see conflict amongst the world's great powers, and the greatest near-term threat is Russia, the

greatest, longer-term threat is posed by China's capabilities and ambitions, and authoritarianism is returning."

# Mr. John Rood:

And the reason I say that is, I think if you were writing a novel, let's say, a Russian history novel or something, and you look at the arc of evolution of president Putin and the state of capabilities in Russia over the past couple of decades, we really should not be surprised that we're finding ourselves in this situation, so it's frustrating to me that we're not better equipped and prepared, and we're still not, I think, adjusting sufficiently to the realities of the current world that we're in.

### Mr. John Rood:

When I started my career as a CIA analyst, and after the end of the Cold War when we saw the Berlin Wall fall in 1991, there was, I think, a lot of misplaced euphoria that history has changed, I mean, there were even famous books, The End of History, that war and conflict and authoritarianism will be a thing of the past. And I was frustrated at the time as a CIA analyst to hear somebody that seemed well-regarded, but I frankly thought of as foolish. And Daniel Patrick Moynihan, the Senator from New York, arguing that things have changed so much we don't need intelligent services anymore. The CIA should be retired, as he would say in a clipped accent. And I just thought, this is a foolish understanding and a misreading of history, these threats will not go away because there's a long track record of thousands of years that speak to the contrary.

## Mr. John Rood:

So, I think, as we look back on some of these, when in the early 2000s, and actually late in the 1990s, the Western approach to dealing with Russia was largely thinking, "Well, their ambitions were to be a regular country.", think of the Netherlands or somewhere else where people were principally concerned with the economic wellbeing, the integration of that country with the rest of society, the education level, their children and so on, but the ambitions to be a great power and, thinking of in Russian terms, the degree to which you can dominate others and impose your will on others, I think there was a lot of misplaced optimism about a change in basic outlook, and in hindsight, I had a lot of that optimism too, that was not the right approach, where you look at Russian history, either the novels are filled with a, sort of, glorification of the ability of Russia to accept great suffering and Russian people to accept great suffering for the benefit of the state.

#### Mr. John Rood:

And I recall, having dinner with Sergei Ivanov with the secretary of defense, and he was then the minister of defense of Russia, and Rumsfeld asked him, "What's your greatest thing you miss about the Soviet days?", and Ivanov replied, "People truly feared us in those days, and now the main thing I miss is that people don't fear us anymore." and he's a very close confidant of Putin, and I thought this one a revealing comment, and the longer I negotiated or visited Moscow, worked with the Russians, I came to form view, they're more friendly to us now because they believe they're weak, and when they are stronger, they will not be friendly. As an example, I remember saying to the chief of the Russian General Staff, "I thought it was reassuring the United States doesn't view Russia as an enemy, and we don't plan our force structure around you. Our intention is to seek a cooperative relationship with Russia." And this really offended him. And he said, "Mr Rood, why don't you regard us as an enemy? Why don't you regard us as a threat?" He was very angry, he felt offended that we were not sufficiently threatened by Russian capabilities.

### Mr. John Rood:

Well, fast forward 20 years, we're seeing a very different... The results of 20 years of Russian military modernization, and we've been slow to react even though some people have been pointing out some of our deficiencies in those areas. In 2008, you saw the arc of evolution of Putin exploring a friendly relationship with the West in the early 2000s, and by 2008, the relationship is torn and there's an invasion of two areas of Georgia. And then later in 2014, an invasion of Crimea, a strategic peninsula in the Black Sea that is part of Ukraine, and of course, today here in 2022, we're seeing more fighting. But I think you have to understand that president Putin's ambitions are to reassert Russia's sphere of influence around the world, they have new capabilities that provide some military needs to do that. I think one of the things that we have to adjust to in the West is that, Russian style is going to be avoid providing very clear indicators, they want to provide some deception, to use misinformation, to provide some confusion or as a minimum, plausible deniability. And so it's frustrating to me sometimes to see people not learning the lesson from the past about Russian behavior.

#### Mr. John Rood:

But remember, this is one of the principles that the Russian KGB Colonel named Vladimir Putin learned. In that trade, he always maintained plausible deniability, so even when there were photographs of Russian troops in Crimea, you recall, he said, "Well, they are peacekeepers. They are simply patrolling, they're not conducting any hostile actions." I mean, this is plausible deniability, and some in the West said, "Well, therefore we can't impose sanctions or take steps."

### Mr. John Rood:

So, a few takeaways, I think from today's conflict as we look at it, first of all, I think we have to assess and be more willing to understand authoritarianism and a willingness to use conquest, and a lack of fear for the use of violence, whether it's to eliminate his domestic opponents or to use violence against neighboring states, will be there. And so we have to not talk in terms of rhetoric, political sanctions, and believe that will lead to a deterrence of someone that's willing to use violence at force, point one.

## Mr. John Rood:

Point two, our capabilities said he is not well attuned, and so for the purposes of this call, as an example, there's still, I think, too much of a belief by defense thinkers in the United States or our military planners that missile attacks may occur, that this is sort of a lesser included case. And this is just yet another example in the Ukraine conflict that missiles, ballistic and cruise, and eventually hypersonic missiles are a primary weapon of warfare, not an additional weapon, a primary method. That's what we've observed here in Ukraine. That's what we observed recently in the attacks in the UAE and Saudi Arabia, in those conflicts with the Houthi. That's what the United States experienced with Iran. That's what's been experienced in the Syria conflict. That's what the Israelis have experienced. Somehow it's still perceived to be a potential or a niche capability to have missile defenses, as opposed to "This is a capability that will be a primary instrument war.", and what we see China and North Korea and others developing, reinforces my belief. And so, we have to have a much more sophisticated and larger scale ability to deal with missile defenses, and also integrate our offenses more to those areas.

# Mr. John Rood:

The other thing you're seeing, cyber attacks and other things, are integrated into a joint force doctrine. Electronic warfare, the ability to integrate air and ground units in a way that is impressive on a military

scale occurring. And that was what we saw in 2014 invasion at Crimea, the use of electronic warfare, UAVs integrated with fires by Russian forces.

### Mr. John Rood:

And then the other thing that we have to adapt to, point three, is Russian nuclear doctrine. For example, when I was testifying four, five years ago about Russian nuclear doctrine, and Escalate to Deescalate, I would point out in the 2014 invasion of Crimea, this was one of the things president Putin threatened, he threatened the use of nuclear weapons. He gave an interview and press comments where he said the Russian leadership had met to consider the use of nuclear weapon in that conflict. And they have a doctrine that emphasizes the threatened use of nuclear weapons or the potential release of lower yield nuclear weapons early in a conflict in order to dissuade the adversary either from fighting or from others from coming to their assistance. So, I've been surprised, at the surprise in this case when Russian president Putin has threatened the use or implied the use of nuclear weapons here that people have said, "This is some new development." He did the same thing in 2014 and we've been warning about this Russian nuclear doctrine.

#### Mr. John Rood:

Another takeaway is the failure of understanding about deterrence. We've really become quite, I think, slow in our thinking and not accurate in that, and we need to build strategic thought and strategic deterrence. So, one of the frustrations I've had with both our current president, our last president, president Trump and others, is this belief that, I think, we have to be careful in our statements that if they're not backed by force, if they're not backed by a willingness to use force, that it's actually counterproductive. I think, for example, I didn't like that president Biden said the other day, "The United States stands up to bullies and we will stand up to this bully.", it implies that the United States will use force to oppose the invasion in Ukraine, and I don't see any evidence we're prepared to do that.

#### Mr. John Rood:

And so I think therefore when the dust settles, and eventually it will, and I hope it will settle with Russia either being ejected or being limited in their gains at Ukraine, when the United States says it's vital national interest in NATO, is a treaty commitment to the United States that we will use military force to oppose an invasion in Poland or elsewhere. If you look at the rhetoric and Crimea, or you look at the rhetoric here and the invasion at Ukraine, we're not prepared to use force, so I think Putin can draw the wrong lessons about, those were lines drawn and not followed through.

## Mr. John Rood:

I think we've got to be clear about what our national interests are, vital national interests, such that we're willing to commit our sons and daughters to combat. I think Ukraine has been a very friendly country, and I'm glad to see the United States providing military aid there, but I do think we have to be careful about not appearing as though the US forces are going to fight and defend Ukraine, because I think they're not a treaty ally, they've been friendly, they've sometimes been ambivalent about whether they truly wanted to be a NATO member or other things. We should oppose, economically and politically this terrible invasion the Russians are doing, but mostly we need to send a signal, we're reorienting our nuclear doctrine, we're reorienting our capabilities to be firm in defense of NATO.

### Mr. John Rood:

And we need to test our force post. We have too many of our forces, in my view, we've become a very home station, US military in the United States. We don't have... For example, our missile defense forces are principally in the El Paso, Texas area. We should have more of our forces and the bulk of our forces in the Pacific and in forward locations like in Europe to a, provide presence, but also to be able to move to hotspots quickly. And we've got to adjust our capabilities set. I don't mean to be too critical of what president Biden is doing, I mean, I was very critical of what president Trump did in many areas in this area. This is one of the reasons I'm told that he asked for me to resign, when I was there I didn't agree with him withholding aid to Ukraine as an example.

#### Mr. John Rood:

So I think there are capabilities we can continue to provide them, but we also have to think about our own capabilities and how we would fare, and we need to bulk up our missile defense capabilities, we need to bulk up our strategic doctrine, we need to be more serious about nuclear forces and how that plays into our discussions in our doctrine. And then we need to round out our capabilities and that of our allies and things like cyber, space, and that will, by necessity, require less investment in conventional forces, general purpose forces. And the other areas where it's easy to cite the need for improvements there, but something's going to have to give in our prioritization to make room for what I would argue is where we need to go. So, maybe that's just a little bit, Riki, to set the table and I will turn over to others.

### Mr. Riki Ellison:

Thank you, John. It's a great perspective. Even in a little bit more detail, yes we have missile defense capabilities in our country that we can move forward and Europe has missile defense capabilities, why aren't they being moved, is it lack of provoking they're scared of, of provoking a war or is it lack of wanting to understand what the deterrent is? Put missile offenses on NATO-ordering states as soon as possible to stabilize what we see. You particularly pointed out how they attack.

#### Mr. John Rood:

Well, I don't know the specific reason the Biden administration hasn't done that, but I suspect it's a couple of things. One, recall, we have in my view far too small of force to deploy in these areas. This is one of the things we had debates about when I was last in the Pentagon, that we have too small of a THAAD Force, we have too small of a Patriot Force, we are not taking seriously the volume demand and the sophistication that an adversary could perform. So, one, I think there's not as many assets, totals there should be.

## Mr. John Rood:

Secondly, I do think there appears to have been some reluctance to deploy too much or to be seen as responding too heavily from the United States, but I think that would be a very helpful initiative, particularly in areas like Romania or elsewhere, Poland, that are very close to, geographically, where the fighting is occurring, as a reassurance signal. Now, the other thing we've got to consider is these mobile assets are meant for deployments for relatively short periods. If we want to have an enduring presence, operating Patriots there, things that are meant to be mobile and maneuverable, they're not... We learned the hard way in some places when we have them performing enduring fixed missions, that they struggle to do that over long periods of time.

### Mr. John Rood:

But I would like to see NATO much more committed to this, the United States playing a bigger role. I'm glad to see that so far, at least, we have not offered some concessions like getting rid of our missile defense sites in Poland or Romania, and I hope we don't do that. I think it was ridiculous indication by some saying, offering assurances to the Russians, we wouldn't arm these sites with offensive systems, and you do see the benefits of the Russians having violated the INF treaty for over a decade, they're using intermediate range missiles to quite good effect on the battlefield. Now, we in the United States were foolish to stay in that treaty as long as we did, very pleased that was one of the accomplishments I'm proud of, that we got out of that during my tenure, and I played a role in that. And that's another capability that you have to have, both offenses and defenses playing together here, I think to exercise deterrence, but we also have to be careful where we draw those lines, what our messaging is, so that we're more sophisticated and accurate with our deterrent messages.

### Mr. Riki Ellison:

Thank you, John. Thank you. Our next speaker goes right into that theater, Lieutenant General, Retired, Ty Thomas. Ty, was a director of operations [inaudible 00:24:07] for US Air Force, Europe, out of Ramstein. He was charge of strategic deterrence and nuclear integration. Welcome Ty, I'm sure your input is extremely valuable in this conversation Ty.

## Lt Gen (Ret) Jon Thomas:

Okay, great. Thanks, Riki. Good morning to everybody and it's great to be here with MDAA and be part of a very capable and distinguished panel. So, I'm going to orient my comments on this specific question of why missile defenses are so critical, not just in general, I know we all agree on that, but even particular this situation and eventually the policy options that the United States, NATO allies, partners that are interested in the outcome that plays out here in Ukraine, why it matters. Before I dive into that, John, thanks for your initial comments, and reminded me also, that I'll be willing to bet, I think every single one of us speakers have had a meaningful touch point with Ukraine and the Ukrainian Armed Forces.

## Lt Gen (Ret) Jon Thomas:

My example is that back in, it would've been 2016, I spent some time in Melitopol Airbase, we just saw it on the news, big explosion. There's some talk about whether the Russians taken it or not, but the 86th Airlift Wing, which I was in command of at the time, had a sister relationship with the 76th Guards Air Transport Brigade which flew the IL-76 out of Melitopol Air Base. And so that was one of many examples I think where, as you mentioned, over the years, especially as the Ukrainians have become more motivated to professionalize and improve the capability of their armed forces, that there have been engagements between our two militaries.

## Lt Gen (Ret) Jon Thomas:

So, to go to the current situation, we have an idea what's going on, the tactical situation on the ground, much more difficult to kind of understand exactly what's going on, but what's very clear and very encouraging is the Ukrainians have chosen to fight, and they're going to continue to fight, that seems evident, how long and under what circumstances unknown. But at least for me, that was still a question all the way until a few days ago is exactly how much resistance they would put up and they're fighting hard. So I think that's one fact that we can work with in this discussion. The second fact is that if we ever had any doubt about president Putin showing his true colors, they are shown now in the very obvious

case that he's made statements, but now the actions clearly articulate that he's willing to follow up on the statements.

## Lt Gen (Ret) Jon Thomas:

It's an incremental approach. John, you laid out kind of the history of it as it moves forward, but that incremental approach is clearly showing that he intends to roll things all the way back to 1997, okay. Which is NATO Russia founding act. And that allowed the admission of multiple Eastern European, former Soviet satellite states into NATO. Okay. There's a whole list of them. And even 1994, when the Ukraine voluntarily agreed and signed an agreement with the US and Russia to relinquished their nuclear weapons in return for a guarantee of sovereignty, which clearly the Russians are violating.

### Lt Gen (Ret) Jon Thomas:

So my point there is that this is not a... I will make the case that Russia is not stopping here. And what do I mean by that? First of all, he's already had a victory in Belarus. Some commentators have talked about it, but it's worth pointing out. Russian forces have not been able to stay in Belarus for a long, long time. They are in Belarus now. Belarus and governments officials have said, and they're not leaving for a while. And I would submit that it's a reasonable argument that they're not going to leave. They're going to probably rotate. They might not be permanently based, but they're in Belarus. Okay. So situation change now, if you're Poland, okay. The Russians are now on your doorstep again. Okay. They're already on the doorsteps in the Baltics we know that, okay. If Ukraine plays out and Putin's designs are such that Ukraine ends up being a place from once he can operate, guess what?

## Lt Gen (Ret) Jon Thomas:

Hungry, Romania, he's on your doorstep again. And if he has a desire to roll back to 1997, there are more things to come. And so I lay this out, not to be dramatic. I lay it out to simply say, if we look at Putin's words and his actions and his plan, there are continued threats to NATO countries at this point. So all that to lay out, to go, okay, so then, bring it back to where we're at today and what can we do besides the very intelligent, important things that we've done, whether it's economic sanctions, adjustments to how we treat Russia and international institutions, all those kind of things, but there are not any form of significant military spots. Yes, we've given them arms. There's a discussion about Javelins, and other things that the Brits have given some weapons and others.

## Lt Gen (Ret) Jon Thomas:

But what I want to do is, and it leads to the missile defense importance, is there a possibility of some form of third party military intervention that doesn't necessarily lead to the conclusion, which right now is certainly an element of holding us back. Which is that, well, if somebody else gets involved, third party, military intervention, Putin's response is going to be consistent with their nuclear doctorate escalate to deescalate. Okay. Got that at the big level. Well, we had to kind of decompose that. And so I propose a thought experiment, not necessarily saying that this all could work out. Okay. I'm saying it's a possibility. Okay. But let's just say, Ukraine stays in the fight. Maybe they don't hold Kiev. Maybe they get forced back into some Western Ramstein, but it kind of stagnates there. Ukrainian air force fights real hard. Okay. A bit of it, eventually they're thin they don't have the depth, they'll get worn down. They can't maintain air sovereignty, at least over the portions of Ukraine that remain free. And so the free Ukraine government asks for assistance with the sovereignty of their airspace.

## Lt Gen (Ret) Jon Thomas:

Can we say yes to that? If we say yes to that, does that then drive us to nuclear war? Well, okay. Let's ask ourselves that. So what does it take to support that? There's a lot that goes with it. I don't want to discount that at all. Okay. You got to have air force from when to operate. That means allies have to say yes to it. You got to have tankers. You got to have intelligence surveillance and recon assets to make sure that you understand the airspace, which you may be asked to do air sovereignty operations over. You got to have airborne early warning to command and control to be able to battle manage the situation. You got to personnel recovery assets. If you lose aircraft and you got to go get the pilot and this is important, you're going to need some time critical, offensive strike capability, whether it's air to ground or whether it's surface to surface, you're going to need that to respond.

## Lt Gen (Ret) Jon Thomas:

I'll get in as I walk through the scenario a little bit more deeply on it. But let's say that we do that. And so now we got F-15C or F-22 or F-35. And I point that out because quite frankly in EUCOM, the US has the far minimal amount of F-35 compared to the Italians, compared to the Brits, compared to the Dutch, who have a pretty robust F 35 capability, the Norwegians. So anyhow, their assets in doing air sovereignty operations. Russian air force, yeah, they're good. We've seen them in the skies over Syria. They're not that good. They aren't going to win that fight. Okay. So then Putin is not able to maintain and leverage the air superiority that he's had over Ukraine. And he's going to want to do something about it. Either he just lets it go.

## Lt Gen (Ret) Jon Thomas:

And then you've got a clear example of third party intervention that was successful, or he has to do you so about it. What can you do about it? We can try to engage in the air, just address that situation. I don't think they went in the long run. Maybe we take some losses, but the Russians are going to take more. He also has said clearly the Russians have good surfaced air assets. Okay. And so tactical SAMs, they'll be in Ukraine. They're in there now, that's a threat. They got to be addressed. And then there are the strategic SAMs, like the S-400 system, very capable. So tactical SAMs, we're going to have to find them or we're going to have to engage them. And if they're in Ukraine, they're not in Russia. And so I would submit that there's an element of this escalation chain that is significantly different, if you add third party intervention, engaging Russian forces that are in the Ukraine versus Russian sites and forces that are inside Russia itself.

### Lt Gen (Ret) Jon Thomas:

The more difficult question I think is, if the Russians decide the way they're going to contest that air sovereign operation is through an S-400 that is launched from Russia proper itself, or Belarus as a secondary example. And then we have to choose to do something about it. They'll take a few shots. Maybe we can ignore them, but if it's consistent, we're going to have to do something about it. And there's a way that we can engage the S-400 kill chain and we can make it ineffective, it's hard. It's hard, but it can be done, but it requires some form of offensive strike. Okay. There's some non-kinetic things we can do, blah, blah. But eventually you could have to get to non-kinetic strike or kinetic strike, and then you got to do it from somewhere. Okay. That's where it then becomes an interesting question.

## Lt Gen (Ret) Jon Thomas:

And that's where it becomes a discussion about missile defenses and why they're so important even now in the near term tactical situation. Is that, so Putin could then go, okay, well, I'm also going to go after your airfield from what you're generating fighters. I think that's a pretty big step for him, or if we

have to go against S-400 do some kind of offensive strike that he would go after the sources of that. Smaller target set, probably a more amenable response to him. Our ability to defend both, the airfields from which we're generating the air sovereignty operation, as well as if we have to do a very limited strike operation, to be able to sustain that air sovereignty operation defended by missile defense assets, capable ones, the things you're talking about John, present better options to us, policy makers. Meaning that if you can limit the amount of damage that the Russians can inflict, then your response to it can be much more measured.

## Lt Gen (Ret) Jon Thomas:

If they inflict a lot of damage in a lot of casualties, political options get constrained very quickly, but the role of missile defenses to produce stability in this particular situation, I think is not to be forgotten. And then the other element of it, which is, let's just say that we're still concerned about escalate to deescalate and the idea that an ISCA missile or a caliber cruise, middle ISCA SRBM or a caliber cruise missile might have a nuclear warhead on it. Well, we sure want to be able to intercept that thing just in case that were to happen. And so there's also an element of insurance policy. Let me be very clear as I kind of walk through this thought experiment. My point is not to say, to discount the possibility of a potential escalation that could get to some kind of tactical nuclear exchange, the idea that this scenario leads to an exchange of ICBMs between the two nations.

## Lt Gen (Ret) Jon Thomas:

It's going to take a lot to convince me that, but the tactical element, I mean, our allies, that matters a lot it's on their territory. Let do not discount that, but my point here is that, the type of things, the steps that have to go through, just even to convince yourself that Putin would respond with a nuclear response, just because we did an air sovereignty operation, that's legal because Ukraine has a dual elected government, you got UN charter, all these things that would say it's a legal request for them and a legal response for us to do it, I think is a bit of a stretch. And so what I would encourage is that, first of all, we got to get missile defenses in place, not only for now, but for going forward for the future, in which all of those Eastern European states now have Russians on the doorstep.

## Lt Gen (Ret) Jon Thomas:

But second, we need to have them in place to increase the number of policy options that we might have. Should we ever consider seriously, some form of limited third party intervention to keep the Ukrainians in the fight? Because if they stay in the fight, eventually this does go against the Russians and eventually Putin doesn't achieve his objectives. And that's what needs to happen here. So I'll stop there. I hope everybody was able to kind of track through on that whole thing, but I think it's really important to put the... At the operational tactical level, the importance in the missile defenses into context as we go forward, over.

## Mr. Riki Ellison:

Thanks, Ty, if you look at your command there, why aren't we putting NATO missile defense capabilities, which your Germany, a lot of our allies have that, right away, not for your scenario, but even more for the deterrence of NATO countries, because that's the same thing. We're going to have to have air superiority and demonstrate that. Why is that not happening in addition to what you're saying. That seems to be very logical and going back to John's point, why aren't we putting stuff in this theater to stabilize those options for air sovereignty over Europe?

## Lt Gen (Ret) Jon Thomas:

Well, I think a couple things in the near term, you do see that us moving additional forces into the Eastern European NATO states, that's happening, I'm saying missile defenses, you're right. And they need to be. And I think that there's... I mean, logistically they're not easy to move. Okay. So we had to get them in place and there has to be a political will to do it. If you don't have it in Germany, then you're not defending Germany, you're defending forward in Poland. So German government for you use that example has to agree to that. Riki, I think it's going to happen. I mean, that's why I kind of walk through the, what is Putin done? What is Putin said? What is he articulated as his goals and plans? And so I think you will have a real manifest threat to the Eastern flank of NATO because he's chosen to use force to change things and is likely to continue to do that. So I think it's simply a matter of time, over.

### Mr. Riki Ellison:

Thanks, Ty, and you lead right into Dave, because Dave is the guy, Dave was the former 10th AAMDC command, which is the army air defense for Europe that reported to us air force EUCOM on that strategy and what we're doing there. So Dave, we welcome your comments as this discussion gets deeper and with more breadth.

## COL (Ret) David Shank:

Yeah. Thanks Riki. And to my esteem, colleagues, always a pleasure and thanks for the opportunity on a Saturday no less. Hey, what I'd like to do Riki is just bring down at the tactical level and highlight three areas over the next few minutes. And as stated, former 10th AAMDC commander, army air missile, defense commander, organic to US army, Europe responds and answers to the EUCOM commander, European commander who also was dual hatted as the Supreme allied commander of Europe. At this time, general Walters. In addition to that, in fact, where I met Ty Thomas Lieutenant general, retired at the time, was our relationship with USAFE and today USAF Africa. And so while there was no organic or any type of doctrinal relationship, we as a AAMDC worked just as much with US air Force's Europe as we did with US army Europe.

## COL (Ret) David Shank:

So I say all that to highlight, what's already been mentioned by both John and Ty is, within the realm of air and missile defense systems and capabilities. There's that proverbial high demand, low density. And the question remains, is not only for a US perspective, but now talking NATO large is... And not just NATO, let me back that up and say the partners also, Sweden, you've got Austria and a few others in Europe that are also contributing, but how do we contribute more and how do we gain that greater capacity and capability. As John said, how do we forward position these assets? Their continued desire to maintain them, mostly at, Fort Lewis Texas, but at other continental us locations.

## COL (Ret) David Shank:

So the three points real quick, wanted to talk about the Russian threat, many, many reports out there since the invasion began on Thursday. And as I look at my watch, the sun's going down right now in the Ukraine. So it's getting dark there. And there's probably a great potential for even additional unmanned man, cruise missiles, short range, medium range, ballistic missiles, targeting specific areas. And for those watching the news and reading over open source, Kiev, obviously the capital, which is in my opinion, would be the center of gravity for Putin. You take the capital, you take the country, but not just Kiev, but military installations, intelligence agencies, military bases, power projection, those are the areas that are being targeted with these Russian threats. I know we saw in 2014, the importance of the, what I call a

hundred killer with unmanned capability, full motion video, and then long range rocket on artillery strikes.

## COL (Ret) David Shank:

So I would not be surprised if that's not continuing as well. So the BDA, I think, I use the term battle damage assessment, but if my numbers are accurate, it's 200 plus of these cruise missiles and ballistic missiles that have been fired into Ukraine. We've heard a little bit about cyber, a little bit about electronic warfare, but I haven't heard a whole lot. In fact, I heard on the news this morning that the power grid, internet still functioning and most of Kiev at this time. So I'll stop right there on the Russian air to ground threat. Second point, I want to talk about quickly is, NATO and the Eastern flank. And as you mentioned, Riki, what a great opportunity as a former commander to participate in numerous exercises with every one of those NATO countries.

## COL (Ret) David Shank:

And again, not just NATO, but some of the partner nations were also involved, which included the Ukrainian representatives, if only in an observing capacity, but the opportunity, as mentioned, I think Ty mentioned some of these countries that possess, for example, the Patriot weapon system, the Dutch and the Germans. We know the Poland and Romania have recently begun to receive Patriot systems. And it will take time to get those systems in place and operational, but they have other capabilities. Now I say that because some of those other capabilities of course, up into the Baltics as well, are former Soviet union capabilities. I say twos, threes, fives, and so forth. And in addition to that, there are commanding control nodes also that were built by the Soviet union. So there's a challenge there, but as Ty mentioned in his talking points, if Putin is successful and he is able to occupy Ukraine, you now have the Russian on several NATO nation doorsteps.

## COL (Ret) David Shank:

So, how do you plus up those numbers when it comes to NATO, as well as partner air missile offense capabilities. And that brings me to my third point, is so 10th AAMDC is the theater enabler in Europe. You have the 94th and the Pacific, you have 32nd AAMDC in the United States. And that'd be remiss if I didn't talk about the 263rd, who is responsible for the national capital region and truly Homeland defense. But with regards to 10th AAMDC, going back to one of my original points, you have this high demand, low density. Well, we know they are small in numbers, one Patriot battalion, one short range here, defense battalion, some of which are for deployed and supporting some of those formations that have also come over from the continental US, with regards to establishing a larger footprint along the NATOs Eastern flank.

## COL (Ret) David Shank:

In addition, I think John mentioned the five THAAD batteries that are currently in CONUS, is there opportunity there to move some forward? That there. Is there opportunity for Patriot battalions also in the continental United States who are on prepared to deploy orders? There are always a number on a variety of timelines, whether it's 24, 72, 96, two weeks prepared to deploy orders. So there's opportunity there. You've got the Navy and the Aegis, cruiser destroyer capability, and that SM series missile that they also bring to air missile defense fight. And then of course bringing all the way to the lower level, talked a little bit about shore, but counter UAS. So the counter UAS capabilities have deployed. So there are some of those capabilities as well. Riki I'm going to stop right there and answer any questions you may to have, and then turn it over to Mark.

#### Mr. Riki Ellison:

Thanks, Dave. The big question I have is, the missile defense philosophy is you have to be in place before the fight. Not when the fight's going on, it's too late. So why, and what's the difficulty of getting these things in place with what we've got in Eastern European border states right now, and you know the logistics with moving the limited stuff we have, we still need to move it and maybe talk through the 24 hour, I don't know if it's 24 hour, 72 hour capability to flight that and Patriot over there, but we also have all those assets that's from the... Why aren't we moving these things forward before the fight to deter the logistics of that? I'll leave it with you on that.

## COL (Ret) David Shank:

I can't answer the why Riki, but as you recall, and one of our previous virtuals, we talked about putting, deploying THAAD to Romania to offset the scheduled maintenance for the Aegis ashore site. And it takes numerous C-17 or C5 aircraft to move a THAAD battery and not just the THAAD battery, but also the interceptors for ammunition. So it does take time, but again, commanders get paid to make decisions and that Patriot battalion in Germany, I'm sure was being postured long before the EUCOM commander, any four star level echelon made that phone call down to 10 MDC and every being postured. Now, again, it goes back to what are the resources that are required as Ty mentioned, it is resource intensive. If you put them on the road and they're conducting a line haul, that takes time.

## COL (Ret) David Shank:

If you put them on a rail, a training that takes time. If you put them in the air, well, now you're taking aircraft away from other moving other resources, whether it's logistics, whether it's additional combat troops or what have you and equipment. So it does take time. You're right. Did we lose the initiative? Possibly. I'm not one to... I mean, it's just an opinion, but we didn't put troops there, historically and traditionally air missile, defense forces, they go in early and they come out last. I mean, you don't have to look very far, 1990 desert shield. 2002, 2003, the invasion of Iraq are two great examples.

## Mr. Riki Ellison:

Yeah, David, and for the last decade, at least that's all we've been doing over there. It's been practicing, moving these logistics. Arm, rail and planning. I mean, you've been part of all those exercises that have been doing, and yet we've been doing it bilateral or not everybody at the same time. And that's one of the faults that I have that NATO has not done a fully integrated air missile defense exercise across the whole gambit to be able to place those things and integrate those things in play. But, again, I'm just bringing that up and urging having those capabilities forward to stabilize this environment as soon as possible. So thank you, Dave. Our last speaker here is Mark. And Mark was the former EUCOM deputy plans and strategy director there. Well, qualified to speak on this, and Mark's been a big driver of the lack of cruise missile defense capabilities on our bases, our critical bases in Europe. So I'm going to pass it over to you, Mark.

# RADM (Ret) Mark Montgomery:

Thanks, Riki. I'm going to go ahead and just go straight into answering a couple of the questions that came in from the audience, and then I'll pass one out for, I think probably for John Rood to tackle, probably the most prolific question asked was, what more do US military forces need in their air and missile defense capabilities to protect our critical infrastructure, our forces in Europe, based on what we're seeing in Ukraine. And I think that's a great question. I think it's one the Congress started tackling

in 2017 asking noticing these gaps in our cruise missile and offense systems in Europe and the Pacific and asking the army to tackle it.

## RADM (Ret) Mark Montgomery:

I mean, the irony of course, is the problems gotten even worse over the last four or five years. And for a good reason, which is that we did the European deterrence initiative, which was a fantastic effort by the Obama and Trump administrations to get about \$26 billion worth of forward investment into Europe using overseas contingency operations funds, which meant services didn't mind and as a result... But of that 20 billion, about 14 billion was equipment. It's equipment that stowed in Germany, in Luxembourg, in Belgium and Poland. All throughout Western Europe, it's a nearly a division of tracked and wheeled vehicles that support two brigade combat, an ARB brigade combat team, and another brigade combat team. That's a significant amount of capacity. It's also largely undefended today against the exact type of attacks we've been watching for the last 48 hours.

## RADM (Ret) Mark Montgomery:

And it obviously, it could be attacked by IRBs, SRBs or cruise missiles, your take. Now we do have limited capabilities and capacities in Europe at the 10th AMDC with some Patriot. But when you think about the defended area, each Patriot battery can do, we're talking about less than a percent of the European theater can be defended at any one time right now. That's because we have not built cost effective cruise missile of defense systems. And we had these throughout the [inaudible 00:53:59] In the 1980s or 1970s or 1980s, you went into Europe, you saw more than a dozen battalions with 20 plus batteries of Hawk rapier systems spread throughout Europe owned and operated by the United States and our allies and partners, ubiquitously. I mean, quite a bit of that equipment.

## RADM (Ret) Mark Montgomery:

Since the 1990s, we've decommissioned those systems and basically failed to replace them. And it's been an acquisition, kind of black hole for the army with SLAMRAAM, MEADS and now IFPC kind of really struggling and eventually being canceled, except for IFPC, still going. I've given up on the idea. Congress asked the army to do a gap filler. I've given up on that. The army has successfully rope-a-doped Congress for five years now, pretending to buy an iron dome, to fill the gap and such. And we now are at the position where we really just need IFPC to get to maturity quickly and then produce it in large numbers. And IFPC being the integrated fire protection, I'm saying the complete acronym incorrectly, but if short range, air defense system for the army, we need that out there. In the meantime, Riki, and both you and Ty or John and Ty had great points, our allies do have some of these systems. Our allies have NASAMs, the same system that protects the national capital region.

## RADM (Ret) Mark Montgomery:

Portugal, Spain has, Norway has, Denmark, the countries have this, Lithuania buying it. Pretty soon Lithuania is going to have better short range air defense systems than the US army, not something I'd put on a bumper sticker, but we really need to get around on these systems and get these procured and out there. In the meantime, the air base is going to have to be defended by mobility. The air force is going to have to be able to maneuver rapidly between air fields. They've done some good investments on this in Europe, but those fixed logistics sites I talked about are at risk. And we may have to commit our whole Patriot force to just defending those. And even that, I'm not sure would be enough. So my point on this is there's a real...

## RADM (Ret) Mark Montgomery:

This Russian action. Once again, demonstrates that both Russia and China have the capability to place as its serious risk, where their advanced greater than mock cruise missile systems. And we should be very concerned about that. Hey, Riki, if I could move to another question, one that was for, I think John's probably a great guy to take a look at it. We were asked a good... And is two or three questions. I'm going to combine into one here. How would this conflict affect the current acquisition strategy and focus of MDA and will acquisition in certain industry areas be prioritized over others in response to this conflict? And then finally, how could we maybe get in change policy or eliminate bureaucracy in order to accelerate the acquisition process in the missile defense area? Over to you John.

### Mr. John Rood:

All right. Well, thank you, Mark. I mean, first of all, I think at the starting at the top level, and then working to levels of detail below at the top level, this conflict needs to be a wake up call that what some of us have been talking about for years, that we have to transition away from thinking about counterinsurgency, a small scale to large scale combat against very capable adversaries. That needs to be the primary planning mechanism that we use. For example, during the, during the cold war and the time period that Mark Montgomery company was mentioning, we typically did that now. It was a little bit simplistic in the United States where we started off planning against the Soviet union or Soviet capabilities, and pretty much everything else was a lesser included case because we just sort of assumed we're going to plan for very high end capabilities.

### Mr. John Rood:

Now that worked out pretty well when we fought an adversary like in Iraq, that happened to employ Soviet hardware largely and Soviet equipment. But then we went through period where there was an explicit view. We will not plan for high end capabilities. For instance, secretary of defense Gates talking about during the Obama administration, that the primary planning effort will be against counterinsurgency against situations like what we were facing in Iraq and Afghanistan. And so our high end capabilities and our ability to do things at large scale against a capable adversary declined.

## Mr. John Rood:

And so, number one, we have to make sure that is our planning horizon, and also shed our thinking where the brilliance of the way that we've done joint military operations in places like Iraq and Afghanistan, in some ways the success hasn't allowed us to fully translate to, if we're fighting against a situation like what China could do or what Russia is doing today, we tend to break those capabilities into individual parts, a missile attack, which is met by a missile attack from the United States or release a nuclear weapons or cyber attacks that is sort of their own stove pipe, but there's not enough of an integrated view.

### Mr. John Rood:

And you're seeing an integrated application of those forces. So again, this attack being seen as a lesser included case, as opposed to a primary method of warfare today. Dave Shank talking about perhaps 200 crews and ballistic missiles being fired. So our acquisition capability needs to be, as Mark Montgomery said, focused on less expensive solutions that are more rapidly deployed and tailored to those needs and integrated with our offensive forces and things like electronic warfare, cyber attack. We have to break down some of those stove pipes. Now where that, I think as a practical matter means, unfortunately, over the last 20 years, roughly we've made MDAs authorities into what we see traditionally in the

services, the special authorities to move rapidly, with rapid acquisition to set requirements on their own have been rolled back to essentially they very similar to the rest of the department.

### Mr. John Rood:

So what I served in government, for example, in the white house and the president instructed MDA to deploy for the first time a national missile defense system to protect the United States against long range attack, that was 2002. In 2004, the system began operations. Now it was a limited deployment and it had limited capabilities that had to be improved over time. But that's what rapid act position authorities can allow you to do. There were no JROC sessions. There were no unique requirement sessions that lasted 18 months. This is moving out at the pace of technology development. So we have to do more of that. We also have to get away from, I think, some of the way that we're thinking about our air defense capabilities, isn't recognizing the volume constraint. And so Patriot as an example has been prude, very capable system here and its 50th plus year of existence, but it's oriented around a very large missile pounds equal cost typically for the missile, larger missile, larger cost.

## Mr. John Rood:

Secondly, we're still about 70, 80% of the cost of the missile being in the seeker in these unique capabilities. So one of the approaches that we have to think about is much smaller missiles can be produced and that's being done in places like Israel. They're typically more adapted from air to air weapons and using airborne platforms for activities like that, but then using radars and other things to provide terminal guidance with a dumber, if you will, less sophisticated seeker at dramatically lower costs. We've got to look at some acquisition approaches that allow for that. We have to have a much more integrated approach between ground-based to air defend and airborne air defenses. We're not taking full advantage of the synergies that can be found there that would enable you to effectively defend against something like what the Russians are doing and offenses have to be linked to that.

#### Mr. John Rood:

It can't be just a defense only activity. Offensive forces today are still sort of kept separate as opposed to an integrated rapid fire capability where you're both suppressing and defeating attacks and defending at the same time. And some of the other principles of what warfare have to be more applied to missile defense than they have been in the past. Things like maneuver, fire power volume, some ability to sustain damage and continue to fight. Those are not yet really things that we've incorporated into our acquisition approaches, and they need to be. In the short term, we would have to fight with what we have, but acquisitions about what's in the future. And we've got to really, I think up our game in that area,

## Mr. Riki Ellison:

John, just on that direct question though, does MDA assume cruise missile defense or does MDA assume these? We got a bunch of services doing this. What's your thought process on what MDA should you do? Should there be the lead on this or not, or?

## Mr. John Rood:

I personally would like to see them [MDA] as the lead. I think that makes a lot of sense for ground based cruise missile defense, for things like defensive airfield, defensive of fixed assets. And I think they can be the integrating agent. And they've shown when empowered, when led well, when fully sufficiently funded, the capability that the United States can do, but we have to change the way that we're doing

that today. If we just maintain the current MDA structure with the current MDA authorities, current MDA approach, I don't think you're going to get a substantially better approach than the services. If you power of them to be a more rapid, a free flowing acquisition system, where you're looking at the rate of technology that can be fielded and operated successfully and improved. And then as you go finalizing and harmonizing your future plants and making it more of an evolutionary approach, we still operate with an idea, let's get the requirement exact right.

### Mr. John Rood:

Let's set the requirement 10 to 15 years in advance, and let's execute a very diligent program over the next 10 to 15 years where we have somehow divine exactly where the future war field will be 10 to 15 years later, and developed a capability as opposed to an evolutionary approach. And sometimes I get pushback from people in the defense sphere or say, "Well, that could be very dangerous. We could have capabilities that don't work," but reach in your pocket, take at your cell phone. That's exactly the approach that's applied there. Why do you have to constantly update the software and your iPhone or your Samsung every couple of months, because bugs are found in issues are found, it's the same sort of evolutionary approach there for commercial reasons, deploying key capabilities that are rapidly upgraded.

### Mr. John Rood:

Why is there a new iPhone every year? Same situation. They're not estimating 15 years in advance. Exactly where cell phone technology be and let's plot intercept and develop that exactly. So we've got to have a more rapid evolutionary approach to the way that we're doing missile defenses and cruise missile defenses. And I would be in favor of MDA taking on that mission, but they'd need to be empowered to do it.

## RADM (Ret) Mark Montgomery:

Riki we got just a few minutes left before you wrap. Let me ask Ty and Dave, the same question one minute each guys, and this is a question that came from three different people. It's a good one. What would you recommend to improve meaningful NATO integrated air missile defense in Europe, in the face of this Russian capability they're demonstrating? So one minute, Ty, you go first.

# Lt Gen (Ret) Jon Thomas:

Yeah. Thanks Mark. I would say, we need to recognize that things have changed. Things have changed in a meaningful way, in the sense that we intentionally didn't sense the battle space over Russia for policy reasons, right? There's a reason why each shore Romania and each shore Poland don't sense into Russia. We made commitments not to do that. Putin's actions have changed that, okay. The first step in being able to defend is you have to sense even before us start sensing the battle space over Russia, every day until this changes. And it's not going to change for a long time. So I'm talking about tippy two's looking into Russia and soon and stay in that way. That's the first step. We can go a lot further, but in one minute, Mark, that's it. Over.

RADM (Ret) Mark Montgomery:

Thanks, Ty, David, over to you.

COL (Ret) David Shank:

Yeah, real quick. And Ty took part of my comments there and that's okay. I see it as three points. One you got to see it. And I'm talking NATO collective efforts, meaning you got to see it and you got to be integrated. Two, you got to share that information. So you got to have that shared early warning through a number of command and control nodes and passing data, timely data. And then number three is you got to defeat it. And so we haven't talked too much about the integrated battle command system, but really a layered approach we have talked about from, IFPC as you mentioned, Mark, all the way up to Aegis, THAAD and really we can get into space as well. So see it, share it and defeat it. Thanks.

## RADM (Ret) Mark Montgomery:

Hey, thanks guys, Riki, over to you to wrap us up.

### Mr. Riki Ellison:

Yeah, we'll wrap it up. I'm just going to ask everybody to make a closing comment on the effect of what's happening with... And the importance of missile defense with that. So I'm going to start with John to close it.

### Mr. John Rood:

Well, one, I think we have to recognize the moment and learn from it and it will take us time to change our capabilities, to change our orientation. We got to store our ability to practice effective strategic deterrence. We got to take seriously the need for our planning horizon to be that we're facing large scale adversaries that authoritarian governments willing to use conquest to advance their aims are back. And we should not be surprised. That's actually been the historical norm and we should be prepared for this in the Pacific theater with China. And we should work with our NATO allies to address it. And we've got to have much larger scale missile defense capabilities that are more tuned to a very advanced threat. And we should explicitly plan for missile defense operations against countries like Russia and China.

Mr. Riki Ellison:

Good job, Dave.

## COL (Ret) David Shank:

Yeah. Yeah. Two points, Riki. And thanks again for having me in the middle of a move no less. Two points. One as mentioned previously, we got to forward some of these capabilities speaking US initially get them forward deployed, whether it's in the Pacific, whether it's in Europe. Recognize what's going on in CENTCOM is while there's still a threat in the US central command area of operations there are multiple nations down there that possess a layered air missile defense approach to provide that capability. And then the other point is just highlighting again, the need for more greater capacity and capability of air missile defense, again, not just US, but across our ally and partner nations. We need to speed through the development testing and experimentation and get the capability into the hands of the war fighters. Thanks again, Riki.

Mr. Riki Ellison:

Thank you, Dave, for participating. Ty.

Lt Gen (Ret) Jon Thomas:

Riki again, thanks for including me. The first thing I would say and I may be a little bit alone on this one, but I do think that we need to make sure that we've really thought through how this particular situation Ukraine plays out and do we really have no options on third party intervention and the implications as we work through that of missile defenses, like now, what does it mean? And should we be moving things to even enable those options? So that's point one. Point two is really echo what John said, is that we should not delay in recognizing the change in the strategic environment and those implications for operational and even tactical level activities. It's time to start looking into Russia. It's time to move missile defenses into Eastern Europe in a meaningful way. And the same thing in the Pacific, even though we don't have that tactical stimulus that we have on what's going on inside the Ukraine.

## Lt Gen (Ret) Jon Thomas:

The world has changed. And when the world changes, our security posture has to change with it. And the longer we delay in recognizing that, and then enabling other activities and recognition of it, the further we're going to be behind. And that goes from operational tactical activities in Europe to John's points about MDA. We've got to get them moving and they got to have the authorities and the resources to do it. Over.

### Mr. Riki Ellison:

Thank you, Ty. Appreciate it, Mark.

## RADM (Ret) Mark Montgomery:

Hey, we have to make sure that we don't walk away from this when it's over kind of wipe our brow and not take the necessary actions. After 2014 in Crimea, three straight administrations really failed to provide the basic lethal aid that Ukraine needed. We did do some fits and starts, but they don't have sufficient javelin, stingers. They don't have a naval strike missile or harpoon. There were definite capabilities and capacities that we could have made available that could have made this a much different situation right now, might have served as a deterrent might not have, but we are not that good after a crisis debates, immediately taking up the lessons learned from the crisis and to make sure that it doesn't happen again. Over to you, Riki.

### Mr. Riki Ellison:

Yeah. Thanks. Thank you guys for taking the time on Saturday to explain and to articulate how critical this is. It is from our point of view, this offense is critical for every nation in the world that has security issue. I mean, look at this. It is ridiculous that they don't have capability or capacity to stop missiles coming and killing people. We have that, we've got it, and it can deter. This has got to be led at a much higher level and demanded to be put in place by the populations of these countries that are on Europe. Why would you not want to invest in missile defense right now? I mean, we're already late, but that is so viable. Not only because it deters, but it gives you life protection and that's what we're... It's a shock. It should be a shock to the world of what's happening in a big country like this ripping apart a small country like Ukraine.

### Mr. Riki Ellison:

Yes, the world needs missile defense, and we better get a better, cheaper, faster, quicker... Like we discussed today. It's got to happen. That's we're going to be responsible for thousands and thousands of lives and may be responsible for a world war that we could stop by putting this stuff in front and shutting this thing down a little bit. So I'm a little passionate about it, but I appreciate the intellect that

was behind the discussion today on this critical element. And I don't think many people in the world are talking about missile defense. They're not, we are, and this needs to get out. So thank you for taking the time and effort to move this message forward. Thank you very much. Ladies, gentlemen, thank you. Have a great weekend.