LTG Shields Speech
(as prepared for the)
JIDA Joint Lab Board
Alexandria, VA
Feb 19, 2016

Good morning, and thank you for being here today.

I appreciate the opportunity to host this exchange with distinguished government scientists such as yourselves to discuss technology threats and solutions that U.S. warfighters need to counter improvised threats.

Your diverse expertise allows us to gain a balanced perspective on how technology can be applied across our unique mission.

A special thanks to DTRA for being here today, too.

For those of you who may not have seen the recent news, the Department is folding JIDA under the authority, direction and control of the Defense Threat Reduction Agency. Since March, we have been in a period of transition and will achieve realignment under DTRA by October 1st.

As we work toward that goal, JIDA's support to the combatant commands and deployed forces will continue unchanged.

Our core competencies have proven to be mission enhancing. We will retain these capabilities to leverage in future conflicts, supporting the warfighter at the speed and scope of the modern battlefield.

Let's talk for a minute about this modern battlefield.

Today's fight is a combination of conventional and hybrid warfare. It is highly complex and with much ambiguity making it tough to distinguish legitimate targets.

The field is flooded with proxies and surrogates for state actors, while entrenched threat networks like ISIL and al Qaida remain adaptable, innovative and evolving.

These nefarious groups are well-funded, migrating and merging globally. They are fed by foreign fighters and the ease of communication in our ever-connected environment.

Our enemies use readily available tools, materials and technologies to create a broad range of simple, yet highly effective improvised threats. And while doing so, they rapidly adapt at the speed of information on the Dark-Net, across the web, in clandestine chat forums, and on the same social networks as us. Their propaganda is effective, too. Just look at channels like their glossy, well-produced magazines Dabiq and Inspire.

One important lesson we've learned is that the battlefield today is not the same as yesterday.

We are all too aware of how the IED became our enemies' weapon of choice as they executed insurgent tactics in Iraq and Afghanistan. The impact of these crude weapons changed how we fought. Not only was the IED the cause of the vast majority of our casualties, IEDs decreased our agility and maneuverability, hampering our combat power and raising the uncommon possibility of failure. This quickly made the IED a tactical weapon with strategic effect.

In response, the military had to rapidly develop and deploy new tools and tactics to increase force protection and improve maneuverability. This challenged us to change how we anticipate threats and react to warfighters' immediate needs; the greatest lesson learned from those fights. While today's battlefield and mission are different, we must carry forward that lesson.

We no longer think of our adversaries as simply "terrorists" or "insurgents." Today, ISIL has the signatures of a well-organized army.

They are manufacturing and employing IEDs like never before. In Iraq, we no longer go after the lone bomb maker using captured biometrics because we now face IED factories on an industrial scale, with supply chains and funding lines that rival Fortune 500 companies.

The adversary is employing IEDs differently, too. Today, in Iraq, IEDs have become the basis of their combined arms campaign, executed with precision at an operational level of war, helping our enemy gain and keep terrain.

Tunnels have been used effectively in Syria to attack with IEDs from below, while remote-controlled aircraft have been used in Iraq and Afghanistan to attack from above. Waterborne IEDs have changed rivers into a delivery system to take out bridges, while up-armored vehicle-borne IEDs have been used to deliver massive bombs with precision. We have seen each of these threats synchronized to take ground in well-planned operations, creating a multi-dimensional improvised battlespace.

As an agile, rapid-response mechanism for improvised threats that requires a temporal, near-term solution, JIDA has been given the latitude to focus on emerging challenges and improvised threats like these.

Our intelligence analysts will give more specifics on this global threat. And, later this afternoon, we will do a deeper dive for you on homemade explosives and the threat from advanced wireless signals.

In addition to a changing battlefield, our mission is also different. We have fewer troops in contact today. Instead, we serve as advisors and trainers from behind the wire.

In this capacity, how do we access information to stay ahead of the threat? Information has been and always will be the fuel that allows us to be anticipatory and rapid in our response.

Our enemy is continuing to advance his tactics and techniques. And with fewer U.S. boots on ground, our visibility into these advances becomes more uncertain. We are keeping our eyes out on the technologies that will matter in the future and preparing accordingly.

It's imperative JIDA maintain an awareness of the state of technology that supports our mission. I'm constantly looking for insight into technology that could be advantageous. Even if we don't know what a future improvised threat may look like, we need the ability to quickly react once we do.

As I said, our mission has expanded to look at these kinds of improvised threats, but at the same time our resources have been reduced. JIDA's budget is an order of magnitude less and our footprint is smaller, too. This required us to relook how we do business so we can anticipate warfighter needs and help them adapt. While JIDA still makes monetary investments toward urgent needs, it now more heavily relies on collaboration to seek solutions.

Which brings me to why you are here today.

At last year's Joint Lab Board, we received 45 papers against the topics of Mesh Networks, Explosively Formed Penetrator Detection, Tunnel Detection, and Understanding Virtual Personas. From those 45 papers, we are funding 8.

This year, we are asking you to look at helping us:

- Leverage artificial intelligence to improve human analysis
- Provide context to social media video as we track people and activities
- Exploit and defeat advanced wireless signals, and
- Increase our ability to neutralize homemade explosives from remote platforms.

You'll get in-depth briefings on each of these topics and a call for papers will follow with more specifics, but if you'll indulge the tech geek in me for just a moment, let me touch on each of these endeavors.

Two activities regard helping us improve intelligence analysis as we work to fuse it with operational data for use against threat networks.

Last month, I was in Boston where we stopped by Google, Boston Dynamics, In-Q-Tel, MIT, and even the Boston Police Department. There, I gained perspective on ideas, concepts and technologies for military applications.

At one of my stops, we talked about the nexus for machine learning and database architecture. JIDA currently struggles with precision entity extraction, and we are very interested in better leveraging artificial intelligence on our big data sets to help inform human decisions.

This presents a number of questions. How can raw computational power be applied in a more systematic manner to big data problems? And how can we perceive data differently to discover the story it's trying to tell? I don't expect answers to either of these hard questions, but we will solicit related ideas to help break down this problem set into manageable increments.

Another effort I discussed in Boston regarded macro connections that visualize large amounts of open source information in a manner that is simple to understand.

The second problem set you'll discuss today relates to that as we need help providing context to open source material. I want to be able to visualize this material differently. Specifically, we want to look at social media video, which we use to gain insight into threat network activity.

As I mentioned before, these networks use social media for recruiting, influencing, coordinating and misleading followers. With hundreds of hours of video uploaded every minute, my analysts are challenged with efficiently determining relevancy. How can you help us gain insight into this treasure trove of information by tracking video creation and movement online?

The other two solicitations we will discuss today regard solutions toward specific threats. One is very real to today's battlefield, and the other is an emerging threat.

Threat networks have used wireless signals for IED triggers as low tech as garage door openers for decades. But today, we face the widespread commercialization of advance wireless signals like 3G and LTE. Every day, people thrive on their need for increased speed, which is making access to such technology cheaper and cheaper.

When we were in the thick of it in Iraq, radio-controlled IEDs were virtually obliterated by CREW systems, but with this new technology, their defeat is no longer a foregone conclusion. We will ask you to help mitigate this problem across the electromagnetic spectrum before this emerging threat becomes a reality.

And lastly, homemade explosives have been a difficult challenge for the course of the war. HME is derived from very simple recipes you can make in your garage with ammonium nitrate, potassium chlorate, or other chemicals. These are common and readily available in the marketplace. A-N is derived from fertilizer and P-C is a common ingredient used to make matchsticks, and also used in the textile industry.

While we have made significant progress reducing HME on the battlefield through effective coordination among the interagency, industry, and international partners, we will never be able to eradicate it from the battlespace. Therefore, we need your help detecting and neutralizing it during the production process, preferably from afar to keep our troops safe.

Investing your time here today allows us to collectively stay informed. Our Joint Lab Board is meant as an exchange of ideas and information, but also as an opportunity for us to network. Another lesson we've learned is that it takes a network to defeat a network. The personal connections established here, and the creative ideas discussed will be crucial to solving some of JIDA's most difficult challenges.

I hope this forum fosters an open and frank discussion and inspires your future participation in this process. I look forward to seeing the results of today and our continued, close collaboration in the future.