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Good morning, everybody.

I would like to start by saying that it is a privilege for me to be here sharing my thoughts with 500 of the nation's top logistics experts. Thank you very much for having me.

When I was asked to speak with you today, a number of topics worth addressing rushed to mind. What I ultimately decided on was the notion of partnership-driven precision logistics.

More specifically, I'd like to focus on where the Department of Defense and industry can partner to dramatically improve logistics to our warfighter. These partnerships need to apply the same focus and technology that was applied to create the precision weapons which are so successful today.

JSOW, JDAM, National and Theater Missile Defense are excellent examples of precision weapon systems. The precision — and the remarkable reliability of those weapons — has been demonstrated in the last 10 years. Why not make logistics the next frontier for precision and reliability?

The fighting force we deploy today is lighter and more agile than ever. The need for precision logistics to support that force is therefore more vital than ever. In other words, precision logistics must replace sheer numbers in terms of enabling what we at Raytheon refer to as, "NoDoubt Mission Assurance."

“NoDoubt” implies a level of commitment that the products we deliver will work — every single time. And again, we believe that precision logistics is critical to achieving the level of Mission Assurance our Warfighters need and deserve.

But reliable precision logistics doesn’t just happen by itself. In order to make it a reality, we must first forge a multitude of strong partnerships — both within industry and between industry and government. A foundation of this nature is an absolute necessity and is built upon our shared commitment to the warfighter’s mission.

So where does this lead us?

It leads to a government-industry mandate to devote the same commitment, resources, and innovation to precision logistics that historically has been devoted to the design and development of precision weapons systems.

Taking it a step further, it’s fair to say that the success of today’s fighting force will depend upon — and will be driven by — these new, sharply focused partnerships between government and industry.

The good news is that the government-industry partnership is growing... But we must not rest.

It is paramount that we build on our progress and momentum through:

- **Performance Based Logistics contracts**
- **Public-private partnerships**
- **And other similar DoD-Industry collaborated contracting vehicles.**

That’s the only way we’ll continue to advance our mission of world-class, NoDoubt precision logistics.

Precision logistics is not complicated to grasp.

It is delivering precisely what is needed, precisely where it is needed, precisely when it is needed.

It is delivering the perfect pass at the key moment in the Super Bowl. For the play to work, the pass route has to be precise. The line has to protect the quarterback. The pump fake has to freeze the safety. And the football has to be delivered at the right time to the right place.

Easy to say, hard to do... And, of course, when it doesn't work... in our business--- lives, not football games, are lost.

Our warfighters must have complete and total assurance— Mission Assurance—that they will have everything they need from every element of the supporting team... exactly when they need it... with 100% reliability.

Otherwise, lives are at risk.

Looking at the continuing evolution of precision logistics, it's easy to see the sharp upward trajectory. For instance, we've made great progress in terms of enriching the logistics chain with information. On D-Day in World War II, there was a virtual information blackout regarding the location and health of assets as they were sent ashore.

By Desert Storm and the Balkan conflicts, we were beginning to experiment with embedded sensors that greatly illuminated the information chain.

Today, less than 20 years later, we're redefined the landscape again. The investments we've made into network-centric information technology will enable us to generate Total Asset Visibility.

We're able to *collect* and *connect* input from a myriad of sensors on the location, health and capability of assets in the logistics tail. We can then place that information in a user-friendly C3 pipeline where it's at the fingertips of commanders.

As an example, the latest model of the Army's workhorse Humvee has roughly 40 sensors installed. When you multiply that by the 125, 000 total Humvees in service ... that equals 5 million potentially important pieces of information flowing in at any given moment.

That's impressive!

For the military, it's not just what the information means to the individual Humvee. What's even more significant is what the aggregate data says about the entire fleet of Humvees. Such information could forecast failure modes and potential subcomponent lifecycles ... thus identifying the need for predictive maintenance. This can also reduce the costs associated with retrograde, reset, and recapitalization based on accurate asset health status.

In addition, we need to think differently about the possible tactical use of this logistics data or information. The ability to predict individual asset performance for a given mission profile will assist the combatant commander's deployment decision making process.

Of course, the Humvee isn't the only military asset equipped with embedded sensors. All of the helicopters in Iraq also have a health monitoring system aboard.

And in future platforms, sophisticated diagnostics will be embedded in the systems. New systems must be designed and existing systems must be upgraded with embedded diagnostics and onboard self-reporting logistics systems.

But, like anything else, this flood of real-time data introduces some new challenges. And one of those challenges is information overload.

It is critical to be able to minimize the transmission bandwidth required to transmit critical information on asset performance and readiness. It becomes a matter of transmitting information versus data and having the right tools to translate that information and data into knowledge.

There appears to be a data→ information→ knowledge→ wisdom spectrum that DoD and Industry, as a partnership, must navigate, appreciate, understand and then act upon in a proactive sense.

In other words, how do we convert this massive new volume of information into actionable knowledge leading to understanding — which is the science of prognostics... the ability to predict when and where failures will occur. And how we quickly distill it in such a way... that it enhanced decision making?

Making sense of what is extracted from that aggregate collection of available information is paramount. Fortunately, it is absolutely achievable.

Like so many of the other challenges faced by the defense industry, the answer lies in technology.

As General Carl Spatz of the U.S. Air Force once said ...

“Science is the dictator, whether we like it or not ... science runs ahead of both politics and military affairs ... and science evolves new conditions to which institutions must be adapted.”

The advancement of technology is yet another reason why solid government-industry partnerships are absolutely imperative.

Again, we must join forces in order to devote the same effort and resources to precision Mission Support that historically has been devoted to weapons systems like Theater and National Missile Defense.

And we’re getting there.

While it’s true that our precision logistics capabilities have increased at an incredible rate — with many amazing achievements to our credit — there’s still much work to be done.

When it comes to technology, we should take advantage of what the commercial sector already is capable of, such as the ability to track critical parts in real time ... wherever they are in the supply chain.

Add to that the sophisticated system health monitoring we need — the type that is capable of producing predictive diagnostics that tell us when critical components are about to fail. And it all comes together as the Total Asset Visibility I mentioned earlier.

As far as investment is concerned, there’s still work to be done there as well. Approximately 75 percent of the total cost of a system is in the sustainment phase. This means that life-cycle considerations must be built into system designs, and taken into account in the overall DoD investment policy. This will drive down this sustainment cost and free up monies to develop better warfare capabilities. The

customer must require and fund the inclusion of these improvements in the design phase.

All these efforts recognize sustainment as the big driver in Total Life Cycle Cost. Therefore, it needs to be brought to the same level of visibility within both DoD and Industry as performance is today.

Sustainment must be on a par with what has historically been an acquisition-only perspective of cost, schedule and performance.

Now let's look at industry. What can we do in the years ahead to guarantee the NoDoubt reliability of precision logistics?

- **For starters, industry must bring more commercial best practices into the equation. We need to learn and use what those in the commercial logistics industry have applied to make their customers more successful and profitable.**
- **We need to continue to develop sophisticated prognostic and monitoring capabilities and embed them in the systems we design**
- **We must develop the data management and assessment tools needed to translate the incoming field data into usable information that can be acted upon quickly... AND**
- **We must work to develop and maintain the Government- industry partnerships essential to this endeavor.**

This carries an inherent need for greater transparency and more trust in our partnerships on both sides of the fence.

The key word here is trust. Trust is a non-renewable resource that cannot be broken..... for it is almost impossible to regain.

And it is ... a most critical ingredient of successful government-industry partnerships.

In conclusion The United States' military manages the most complex logistical system in the world. And with the current trend in defense budgets, contracting that includes total ownership cost as well as reliability will become increasingly essential to economic efficiency and military effectiveness.

So it is our job — to design a business model that:

- 1. Fosters partnerships ...**
- 2. Develops contracting practices that ensure that the right technology is embedded in the systems and**
- 3. Maximizes performance based agreements between contractors and government**

This type of working relationship will ensure that the entire logistics chain is integrated and architected so the required Mission Support outcomes are achieved.

Perhaps one of the most important yet easily overlooked aspect in enhancing this partnership is the need for an educational logistics process common to both parties ...plus a common vision for the “loggie” of the future... be it government or industry. Simply, if you can't speak the same “language” how can either party expect to communicate. I note this is the topic of Thursday's session. Industry looks forward to those results.

In summary, we must create truly integrated government-industry teams with a singular objective — to support our military's ever-increasing needs by delivering the finest hardware in the world to the finest fighting force in the world.

No alternatives.

No excuses.

No Doubt.

A final note to our Warfighters: I can certainly speak for industry in thanking them for not only their service, but the ability to manage the most complex logistical system in the world under circumstances that cannot be compared to anything else. We also recognize that it is the training and discipline of the service member who make this happen. Simply, it is the warfighter that compensates for all the deficiencies in the present logistics processes... Factory to Foxhole.

Hopefully, what this forum discusses in the next three days...this NDIA government-industry partnership...will make significant strides in eliminating those deficiencies...

Again, thanks for having me....