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Teleprompter Script for Mr. Daniel Newman, Program Manager,
Tactical Technology Office**

IMAGINE: Operate Without Restrictions

» **DANIEL NEWMAN:**

I'm glad you could all join me here, today.

No conflicts.

No obstacles.

No problem.

I will share with you my perspective on moving
at will – on our forces maneuvering freely in and across the battlespace
– and on doing so against enemies that we may not yet conceive.

The US has the best trained and equipped military force in the world –
on the ground,
in the air and at sea.

We have it all:

incredibly capable weapons,

a formal and stable command structure,

a large force of professional warfighters,

well documented approaches in
Field Manuals and training,

and a broad and deep infrastructure.

We generally move and maneuver our forces
with low risk.

Nowhere is this more evident than in the air.

We have become accustomed to air supremacy, and are only rarely
challenged,
and then only by
ground-based threats.

Recent enemies have buried their jets instead of facing us.

We've planned and equipped our war fighters to operate and win
against enemies that arm and equip and fight like us -- and we have
been winning.

The issue, though,
is that the future includes a different kind of threat -- different than the
kind we envisioned.

The threat now is
hard-to-identify, localized para-military teams – engaging us in brief,
surprise encounters.

Disparate non-state actors band together into highly mobile ad hoc

groups using distributed networks.

These threats are difficult to identify before an engagement, operate close to non-combatants during a fight, and they are equipped with easy-to-use, lethal, tactical weapons such as IEDs, MANPADs and RPGs.

These weapons don't need a large organization or footprint, they are easy to emplace, and they are difficult to detect.

Our ability to safely operate and maneuver at-will is at serious risk.

We react by evolving new approaches and countermeasures to maintain our freedom of movement.

With no hard infrastructure and no unifying structure, future opponents will be able to adapt rapidly, and experiment and develop counter-countermeasures with alarming speed.

The enemy will get more sophisticated and lethal each day, acquiring more sophisticated weapons and inventing more creative ways of limiting our operations.

Note that such an enemy is not configured to "win" a traditional military battle.

This enemy is working to obstruct us -- to delay us, deter and disrupt us, and attrite our forces.

These threats seek to keep us from moving at will, like mine warfare.

We are a lion,

up against bees that are very effective when they swarm.

These adversaries limit our freedom to maneuver, in a way we never envisioned.

In many ways they are more dangerous than anything we've faced in the past, due partly to our long-time focus on a traditional enemy, and mostly due to their unanticipated objective.

My objective at DARPA is to prepare us to defeat these adversaries as they evolve, and to deter new ones that may emerge.

If we can't envision the future threat, we need to develop technologies and systems that provide capability and flexibility to counter any threat strength, and turn it into a weakness.

To this end, I'd like to see dramatic improvement in four specific capabilities:

- * knowledge advantage,
- * survivability,
- * faster response, and
- * reduced footprint

The first is significant knowledge advantage over our adversaries:

We can leverage situational understanding with an extensive and timely knowledge of the environment – terrain and weather and obscurants and noise across the spectrum.

We need to know status and health of all our assets.

We need to know about all the non-combatants.

We need a thorough database, enriched and updated in real-time, that we all can access seamlessly.

These capabilities are among the objectives of IXO, the DARPA Information Exploitation Office, who will brief you tomorrow.

A major part of knowledge advantage is the enemy knowing less.

We will be unpredictable, as we appear and disappear at will.

I envision smaller, faster rotorcraft and watercraft with unprecedented flexibility, and signatures that make them virtually undetectable.

Consider how vertical delivery provides no warning of which way we'll go next.

I envision agile, multi-terrain autonomous tactical systems that can operate across land and air and water.

Platforms need to leverage hybrid operation and reconfigurability – morphing wings and active rotors for aircraft, and advanced morphing hull forms for our boats and ships.

Second is survivability:

We need to move in new directions.

We need to proactively disarm and defeat threats, using off-board sensors and countermeasures.

Again, observables are critical, but up to now we've focused on sophisticated threats, and have not spent much effort against the unaided eye and ear – the first links in the kill chain for these asymmetric threats.

Our platforms need to be robust, so when they are hit and degraded they continue to operate effectively.

I firmly believe that we do not now truly understand what a system would look like if designed for continued combat operations after extensive damage.

We need to know.

Third, faster response:

We need to enable immediate, effective and appropriate reaction.

We need to really make strides in decision aiding and autonomy and autonomous systems, to optimize the performance of pilots and operators “on” the loop.

We need to use unmanned systems for much much more than just ISR.

We need to explore and exploit all opportunities in “unmanning” a system – extreme maneuvers and load factors, unique orientations, and infinite loiter endurance.

We still apply a manned system paradigm in every project, and we do not yet understand what a system could look like if we really abandon this constraint.

We need to know.

We need our systems to be effective alone and in clusters, without supervision.

We need systems to collaborate, to leverage weapons and sensors and information of nearby assets, instead of each one alone at the end of a command and control tether back to the rear.

I see cohesive teams of highly qualified, specialized and multi-mission systems -- manned and unmanned -- accomplishing what none could do alone.

We can virtually eliminate collateral damage, using non-lethal effects and using very pinpoint warheads directly onto the correct target.

And fourth,
reduced footprint:

Our vulnerable and costly sustainment tail limits our flexibility.

We need extraordinary availability,
so assets spend all their time on station.

To get there we need long endurance (as Dr Pulliam will address next) -

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new technology in energy delivery and storage, propulsion and materials will lead to ultra-endurance platforms, able to stay for unprecedented time and survive adverse conditions.

We need systems with capability when degraded.

And we need what I call 'reset during refuel' where the systems are made like-new again in the time it takes to fill up the tank.

As Steve Welby alluded to, we must move aggressively to equip our service men and women with the technologies, systems and knowledge that enable them to maneuver at-will, unconstrained by terrain, the environment, the battlefield infrastructure or our adversaries.

We can't ensure this freedom to operate if we wait to discover new enemies.

We need to be proactive.

Policy and planning are based on the perception of what can be done.

New technologies enable and inspire new visions and ConOps, just as the first news of a UAV firing a weapon changed a paradigm, literally overnight.

I ask you to work with us to identify, to develop and to demonstrate the platforms and technologies that enable and inspire new capabilities and concepts.

As we all know,
our adversaries are becoming more determined and sophisticated each
day.

I hope you now understand my vision,
and that you will join with me to ensure our Forces' freedom to operate
at will;
to survive and win on future battlefields;
wherever around the world and whatever the tactics may be.

Thank you.

And now I welcome
Dr. Wade Pulliam.

He will provide a vision of "Operating with Persistence"