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**Teleprompter Script for Dr. Larry Stotts, Deputy Director, Strategic
Technology Office – Networks Presentations**

Bridging the Gap Between Strategic/Operational Warfare and
Tactical Warfare

» **LARRY STOTTS:**

**“The Congress makes Generals; Communications makes
Commanding Generals.”**

General Omar Bradley's words ring true even today!

Bridging the gap between “strategic and operational” warfare, and tactical warfare, requires the seamless integration of all levels of warfare.

In particular,
it demands integration with the cognitive processes employed by battle commanders.

The DoD Enterprise and Tactical Warfare Networks can no longer be viewed as separate and disjoint, but rather seamlessly blended into one harmonious entity called Network Centric Operations.

This integrated entity has the potential to provide information advantages to the battle commanders -- thus enabling what we call “Joint Battle Command” -- but only if the system is Commander-Centric as well as network-centric.

This is easier said than done and fogs up the roles of the Commanders at the various echelons.

After Scott O'Grady went down in Bosnia, it became apparent that his PRC-112 Search and Rescue Radio was helping the Serbs locate the downed pilot just as well as it helped the US Forces locate him.

The European Command wanted a solution to this problem and other situations occurring in Theater.

The Combatant Commander, or COCOM, wanted to be able to locate people in trouble sooner and without a beacon like the PRC-112 had for geo-location.

Let me give you my personal experience on this.

When the US began patrolling the Macedonian border with Serbia, V Corps / 7th Army sent out a urgent requirement for a emergency report-back system, which would be activated whenever our patrols were about to be captured or in trouble.

Their requirement said:

When activated, the emergency report would be sent to the nearest observation post, and then forwarded to the Platoon Commander via a separate radio.

The report then would go to the Company Commander via a different radio,

and so on and so forth, until the word reached the COCOM, who at that time was GEN David Maddox.

OSD asked DARPA to respond to this situation and we developed a technical solution.

When I briefed the V Corps Chief of Staff on our proposal, he chewed me out for being non-responsive to their urgent requirement statement.

When I showed him what the urgent need statement had said, he replied,
“I know that’s what we wrote, [but] that is not what we meant.”

As it turned out, what General Maddox actually wanted was direct control of the situation.

Specifically, he wanted the communications network directly alerting him of the situation – with no interruptions or delay!

He then could light up the Blackhawks or MEDIVACs, and send them out to get his soldiers before they might be captured and taken away.

So, even though standard operating procedure was to run the message “up the chain,” GEN Maddox wanted direct communications to the lowest echelon.

He wanted a blended network between his echelon and the lowest echelons.

Based on this new guidance,
we modified our system to meet the general's vision; known as Soldier
911,
it operated in Macedonia for over five years.

The point of my little story is that, although the Pentagon, Combatant
Commander and Component Commanders would like to have direct
command and control over the lowest echelons, the strategic and
operational network and processes are not designed to support dynamic
tactical operations.

To enable this oversight, specialized networks would need to be
created.

Although the intent is good, specialized networks are not really a good
idea for a number of reasons.

In general,
a Combatant Commander, or Joint Task Force, Commander has many
tactical elements under his command and cannot have special links for
everybody given the limited RF spectrum available to the Force.

He would take all the available bandwidth and more, and the tactical
forces would be left without any communications capability other than
potentially talking to him.

In addition,
he certainly does not have time to support each and every individual
operation directly.

His part of Battle Command is that of the Architect, not the executor!.

Unfortunately,

some still believe that the upper echelons are there to directly help the Tactical Commander put metal on target.

For example,
at the strategic level,
they think the supreme commander fights the “war” itself by directly allocating missions and the appropriate resources to the operational commanders.

The operational commanders, in turn,
fight campaigns by directly allocating missions and the appropriate resources to their tactical commanders.

Then, at the bottom,
or rather the front,
the tactical commanders fight the actual battles under direct supervision of the Three- and Four-Stars.

This may have been true in the past, but it certainly cannot be done today.

This is the wrong model for conducting warfare!

Today,
our Soldiers and Marines are confronted with
“The Three-Block War,”
a term first coined by General Charles Krulak, the 31st Commandant of the United States Marine Corps.

On the first block,
the Soldiers and Marines can be delivering humanitarian aid or assisting others in
doing that.

On the second,
they can be conducting stabilization or peace support operations.

On the third,
they can be engaged in a high-intensity fight.

Our Ground Forces must be ready to conduct these operations
simultaneously and in very close proximity to one another.

What is important here is that today's operations are being lead by
Master Sergeants and Sergeants rather than Captains and Lieutenants
in
World War II.

More importantly,
they must operate within the enemy's Observe, Orient, Decide, Act, or
OODA, loop that is
far faster than in
World War II.

The Three- and Four-Stars cannot directly supervise all of the 100s of
tactical activities going on simultaneously in the Theater.

The upper echelons cannot respond quickly because of their inherent
infrastructure and bureaucracy.

Is all that really necessary?

We think not.

Tactical Warriors do not need direct supervision and support from the
upper echelons!

They need dynamic access to the enterprise resources that will increase their effectiveness in battle.

They need this access without interfering with upper echelons' primary jobs.

The Strategic and Operational Commanders just need to make sure that their intent is well understood by the echelons below and that is it!

Those Commanders are making the big muscle movements within the Theater and that is where their attention should be.

So here is the operational problem.

Existing Tactical Warfare programs do not clearly address how to connect our full resources for C4ISR -- the National Enterprise -- effectively with its tactical warriors.

More importantly, these programs also fail to recognize battle commanders as managers of their forces rather than simply as targeteers and shooters.

In short, they ignore the art of battle command and how the network enables it.

Let us outline the situation more clearly.

All the Strategic and Operational Commanders should to do is to provide intelligence, Commanders' intent, and information among

all the various echelons
to enable the force multiplication of common situational awareness,
collaboration and synchronization to occur.

The upper echelon has lots of data rate, infrastructure and security to do
this with, down to the Division/Corps and Brigade levels.

They rarely experience time urgency in their actions.

In their normal jobs,
they do not have to worry about the enemy's
OODA loop.

But the Tactical Commanders at below Brigade and Battalion levels
have the opposite situation.

They have limited data rates available to talk to the upper echelons and
also all their troops engage in the fight.

In other words, they have a large number of users that must share that
limited resource.

They also have very little protected or controlled infrastructure.

Their echelon is likely to encounter large amounts of jamming,
intentional or otherwise; and there is always the threat that uncleared
people will gain access to the network.

Time is of supreme importance because the war fighter must truly
operate within the enemy's OODA loop in order to be successful and
survive the day.

How can we create a transition network that will seamlessly interface

between these two incompatible entities?

First, our Networking must address the unique aspect of mobility within RF and optical environments.

It must operate seamlessly using the various network protocols and communications standards that inhabit the enterprise and tactical warfare layers.

Second, we must generate more useable spectrum for military use.

New routing techniques are needed for changing topologies that are robust, scalable, and bandwidth efficient.

The capacity to address the interruptible behavior of RF and optical links in a network also needs to be investigated.

And Third, we must develop intelligent gateways to enable multiple physical, network, and Quality of Service instantiations for a network of networks architecture.

Finally, because of the natural incompatibility between resource-rich wired networks and resource-poor wireless network, we must accelerate technology development that will improve communications efficiency.

These technology challenges cannot be addressed by single techniques or the development of a new device.

These problems need new insight into the problem space, through both the understanding of the science and the unique attributes of mobile networking.

Although much can be borrowed from the understanding of problems and solutions within other domains like the internet, new initiatives must capture what is new and what is unique in our understanding and approach to “bridging the gap’ between Enterprise and Tactical Networks

These are the challenge DARPA is looking to you in industry and the universities to solve.

We have worked the network centric enterprise and tactical warfare layers very well, but independently.

We need to now view them as an integrated entity.

This integration is the hardest part.

We look forward to hearing your ideas.
Thank you.

And let me introduce Preston Marshall who will talk about the tactical side of networking.