INCIDENTAL PAPER

Seminar on Intelligence, Command, and Control

The C4ISR-Enabled Warfighter
Gary L. Salisbury

Guest Presentations, Spring 2002
Robert B. Brannon, Gregory C. Radabaugh, Robert A. Rosenberg, Gary L. Salisbury, Roberta E. Lenczowski, James B. Plehal, Dean W. Cash, Patrick F. Kennedy, Warren B. Rudman, Joseph K. Kellogg, Jr.

November 2002

Program on Information Resources Policy

Center for Information Policy Research

Harvard University

The Program on Information Resources Policy is jointly sponsored by Harvard University and the Center for Information Policy Research.

E-mail: pirp@deas.harvard.edu URL: http://www.pirp.harvard.edu
ISBN 1-879716-81-X **I-02-1**

November 2002

PROGRAM ON INFORMATION RESOURCES POLICY

Harvard University **Center for Information Policy Research**

Affiliates

AT&T Corp.
Australian Telecommunications Users Group
BellSouth Corp.
The Boeing Company
Booz Allen Hamilton
Center for Excellence in Education
Commission of the European Communities
Critical Path
CyraCom International
Ellacoya Networks, Inc.
Hanaro Telecom Corp. (Korea)
Hearst Newspapers
Hitachi Research Institute (Japan)
IBM Corp.
Korea Telecom
Lee Enterprises, Inc.
Lexis–Nexis
John and Mary R. Markle Foundation
Microsoft Corp.
MITRE Corp.
Motorola, Inc.
National Security Research, Inc.
NEC Corp. (Japan)
NEST–Boston
Nippon Telegraph & Telephone Corp (Japan)
PDS Consulting
PetaData Holdings, Inc.
Samara Associates
Skadden, Arps, Slate, Meagher & Flom LLP
Sonexis
Strategy Assistance Services
TOR LLC
United States Government:
- Department of Commerce
  - National Telecommunications and Information Administration
- Department of Defense
  - National Defense University
- Department of Health and Human Services
  - National Library of Medicine
- Department of the Treasury
  - Office of the Comptroller of the Currency
- Federal Communications Commission
- National Security Agency
- United States Postal Service

Upoc
Verizon

The C4ISR-Enabled Warfighter

Gary L. Salisbury

March 7, 2002

Brigadier General Gary. L. Salisbury, USAF, is director of command, control, and communications (C3) systems, Headquarters, U.S. European Command (EUCOM). He provides policy, plans, and systems for C3 and computers in the European theater and works closely with the Joint Staff, the Office of the Secretary of Defense, and defense agencies to ensure operational readiness and modernization of all elements of the Global Information Grid. He has commanded at the detachment, group, and wing levels. He has held key jobs in the acquisition and operation of command and control (C2) systems in both communications and space and has served on the Air Staff and in joint service positions at U.S. Transportation Command (TRANSCOM), U.S. Space Command, and the Joint Staff. From 1994 to 1996 he commanded the 38th Engineering Installation Wing, Tinker Air Force Base, Oklahoma, and from 1996 to 1997 served as director of the Joint Transportation Corporate Information Management Center, TRANSCOM. Immediately prior to assuming his current responsibilities he was deputy director for engineering and interoperability and commander, Joint Interoperability and Engineering Organization, Defense Information Systems Agency. He has received the Defense Distinguished Services Medal, Defense Superior Service Medal with oak leaf cluster, the Legion of Merit, the Defense Meritorious Services Medal, and the Meritorious Services Medal with three oak leaf clusters. He holds a bachelor of science degree from the University of Pittsburgh, a master of science degree from the Air Force Institute of Technology, and a doctor of science degree from George Washington University, all in electrical engineering.

Oettinger: I'm delighted to introduce our speaker for today, General Salisbury. He will provide a somewhat different view from those of the earlier speakers, in that he is responsible for intelligence infrastructure rather than collection of intelligence. We are delighted also to welcome Captain Betsy Hight of the U.S. Navy, who in private life is General Salisbury's spouse.

Salisbury: So I'm the mouthpiece. Thank you for the invitation. Dean Clemons, your Air Force national defense fellow, and I met six years ago. We were doing some activities down at headquarters, EUCOM, in Stuttgart, a year after the Bosnian war started. He and I had the opportunity to put in a communications capability that was supporting one of our unmanned

aerial vehicles [UAVs]—the Predator system. We struggled through that for three months. I guess we succeeded, or he succeeded. I came back; he didn't. It's good to be here.

I'm going to talk about a lot of things. What I'd like to do is take my lead from you. Colonel Clemons' comment to me was, "You will not make it through all of those slides," so we have a beer bet on this and I will keep you here until five to do so. It's important to me to have a Clemons-bought beer, so that's a big deal.

I'm going to talk about C4ISR [command, control, communications, computers, intelligence, surveillance, and reconnaissance]. Do you know what that means? I don't. We use that term and don't explain it. It tends to be hardware stuff. We tend to view ISR as U-2 platforms and UAVs; as things you can kick and feel. I've gotten to believe, though, that my business is not necessarily fielding boxes and putting in communications pipes, but it's thinking about information and trying to optimize the way we capitalize on the hardware and software out there and turn it into actionable information for our warfighters. That's really my job.

I am the J-6, the head communications guy, at headquarters, EUCOM. EUCOM is one of our nine CINCs [commanders in chief]. It is one of the oldest of the CINCs; in fact, we were headquartered in Paris right after World War II, and then I think the United States had a falling-out with the French so we were asked to leave. We subsequently worked our way down to Stuttgart, Germany, in the early 1950s. Since then, EUCOM has been headquartered there, and we live in Patch Barracks, right outside Stuttgart. It's a great assignment, with good location and lots of opportunity.

EUCOM is a pretty big command. We have about 110,000 people in our theater, and I'll show you a picture later of what our theater is. About ten years ago we had 400,000 people in EUCOM. This had nothing to do with contractors or all the other people who support a major military activity; these were uniformed people and Department of Defense [DOD] civilians.

I don't have a slide on it, but CINCs are unique in their makeup, their responsibility, and their authority. We have one heck of a lot of responsibility, we have one heck of a lot of authority, but we don't have any money. If you want to get something done at the CINC level, you've either got to tell people to do something or you have to twist their arms or coerce them or appeal to Congress and let Congress beat up our armed services. I guess this is my fifth joint assignment in my career, and I think I know the system well enough to figure out how to make things happen in the theater. To a large degree, it means influencing our service components—the Army, Navy, Air Force, and Marine Corps—to do the things that we think are right and that need to be done to support the CINCs' overall mission.

For the services to do that, they have assigned us what we call service components. We have five service components physically resident in our theater. The air forces are USAFE [U.S. Air Forces, Europe], stationed up at Ramstein Air Force Base [AFB] in Germany. It's a large organization, 40,000 or so people. That's where all the airplanes are. We have an Army component, about 55,000 people, over at Heidelberg, Germany. Those are the guys who drive all the tanks, obviously, and do Army kinds of things. We have our Navy component, U.S. Naval Forces Europe [NAVEUR] which is stationed principally up in London, but they have a secondary location down in Naples, Italy, and all the activity in NAVEUR is really done in the Naples area. We have a Marine organization. It's fairly small. We rely to a large degree on

deployed U.S. Marine forces, but right near Patch Barracks in Stuttgart we have our Marine Forces deputy commander; that's a three-star command. The others are four-star commands, by the way. Our final component is the special operations organization, SOCEUR [Special Operations Command, Europe]. It's a one-star command, right in the Patch Barracks area. So we have organic special operations people assigned to our theater, and they have their own assigned forces. We have Navy SEALs [sea-air-land components], for example; we have Air Force special operations people; and we have Army special operations folks in our theater carrying out the CINC's real-time mission.

That force structure, by the way, gives us the ability to provide immediate response to crises. We can't do long-drawn-out campaign-level activities. In that case, we normally would rely on rotational forces that come in and out of the theater.

Oettinger: Let me just make a comment on this. This may appear to some of you to be a strange structure. It's deeply embedded in the National Security Act of 1947, the organic legislation that establishes the military. If you want more background on it, you have some in the reading in Allard.[1] In the course bibliography there are a couple of books by General John Cushman that go into more detail on this.[2] The whole history of the creation and aftermath of the Goldwater–Nichols Act of 1986 goes deeply into these issues, and there's a book by Gordon Lederman that you'll find in the bibliography that deals with an evaluation of the Goldwater–Nichols Act and its effect on the relationship between the service components and the CINCs.[3] For those of you who are interested in pursuing these brief remarks of General Salisbury's in greater depth, those are some resources.

Student: I'm not in the military, but did I read recently that Russia has been added to one of the CINCs?

Salisbury: I'll talk about that. Traditionally, and really until today, three countries have never been assigned to a CINC: Russia, Canada, and Mexico. For the last two, it's principally because of the close relationship the United States has had with Canada and Mexico. That's all changing through our new unified command plan [UCP]. The reason Russia has never been under a CINC is because it's too big and strategically important. So our Joint Staff back in Washington, D.C., has really had operational and engagement planning responsibilities for Russia, Canada, and Mexico. That's changing. I'll show you how it's going to change, I think on October 1. The president hasn't yet decided. We've got a lot of political issues associated with assigning a

---

[1]C. Kenneth Allard, *Command, Control, and the Common Defens*e, rev. ed. (Washington, D.C.: Center for Advanced Concepts and Technology, 1996).

[2]John H. Cushman, *The Role of the Major Operational Commands in the Evolution of Command and Control Systems* (Bedford, Mass.: The MITRE Corporation, Nov. 1, 1980); *Command and Control of Theater Forces: Adequacy* (Washington, D.C.: AFCEA International Press, 1985); *Command and Control of Theater Forces: The Future of Force Projection* (Cambridge, Mass.: Harvard University Program on Information Resources Policy, P-95-1, March 1995), [On-line]. URL: http://www.pirp.harvard.edu/pubs_pdf/cushman\cushman-p95-1.pdf

[3]Gordon N. Lederman, *Reorganizing the Joint Chiefs of Staff: The Goldwater–Nichols Act of 1986* (Westport, Conn.: The Greenwood Press, 1999).

country such as Russia to a particular CINC. But it's headed to EUCOM unless the president decides otherwise.

The value of assigning responsibility for a country to a CINC is, first, that the CINC does wartime planning for that particular country. In our case, in Europe, for example, let's choose Italy. Italy is in our area of responsibility [AOR], so we have the responsibility of doing the war planning for things that would happen in Italy. Second, we also have a responsibility for doing what we traditionally call "engagement," so each of the CINCs has the responsibility for working with the ambassadors in the various countries. My theater has ninety-one countries, so we deal with ninety-one ambassadors. Those ambassadors come though our headquarters at least once a year, and the general officers get a chance to sit in what we call briefings and discussions, so ninety-one times a year I'm engaged in Bs and Ds. I am giving you the same briefing that I have listened to so many times!

Here's what I'm going to talk about (**Figure 1**). I'll try to give you a little bit more detail on who we are and where we're headed.

Figure 1

I do want to talk a bit about current operations. It's a very active theater, if I can use that term. It's been active for a long time. It has ramped up significantly in operations tempo since the global war on terrorism kicked off on September 11. I'll get into a few things we're doing, but this has turned from a full-time job into a more than full-time job on that basis. We're not unique in that context.

If you've had a chance to read Secretary Rumsfeld's priorities, transformation is a big priority for him, so I'm going to show you a few things on transformation.

We chatted a little bit at lunch about UAVs and communications systems. I want to talk to you about that in a slightly different context, and that is networks. I don't know if you're going to have a briefing or discussion on network-centric warfare and what that's all about, but I'm going to show you where we're headed within EUCOM, how we think about networks, and how,

ultimately, we're trying to weaponize those networks. That is, we want to treat our networks the way we treat fighter aircraft, tanks, and destroyers. Configuration control, operator training, and live-fire exercises are critical to maintain our warfighting edge. These are thought processes we need to bring to our networks.

Finally, I have some thoughts on C2 in general, both about organization and about some of the tools we have in place and how we're trying to integrate them to support the warfighters' requirements.

You mentioned Russia. What is shown in blue on the slide (**Figure 2**) is what's in our region of responsibility today. The striped blue ultimately will be in EUCOM. You can see some of the statistics. Our AOR is pretty big. Do you know how many countries there are in the world? About 180, so half the countries in the world are under EUCOM for engagement and wartime planning, and it's a big deal. Every one of these countries requires tender loving care. Every one of those ambassadors over there, either as a political appointee or as a professional State Department representative, requires a lot of attention. We spend a lot of time with ambassadors, and rightly so, because I think in the longer term military people forming military-to-military and military-to-political relationships really have done phenomenal things to civilize the world. So we have big responsibilities in Europe.

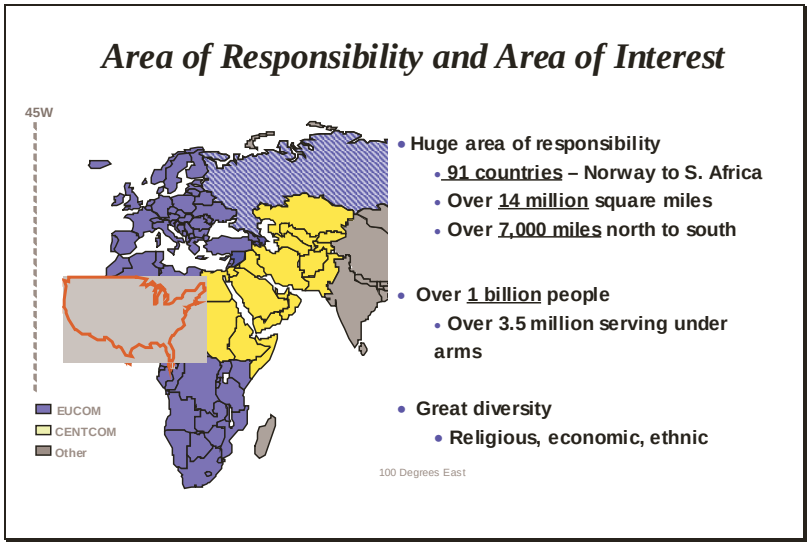


Figure 2

You can see that parts of Africa are in our AOR. Just to show you relative size, there's the United States sitting on western Africa.

There are lots of people. We have countries in our AOR that probably have the highest per capita income anywhere in the world, and we clearly have some that have the lowest. What a diversity in economic posture! We have countries in Africa, for example, where the HIV [human immunodeficiency virus] rate is at 40 percent today, so the challenges of dealing with these various countries are phenomenal.

You asked me about the UCP. Let me talk a little bit about how we parcel out countries. These are big decisions. Presidents draw these lines. Russia is coming into our AOR on October 1. Russia borders eight of the European countries under European Command's responsibility. The strategic importance of Russia to the stability of Europe is paramount, probably more so than it is to Pacific Command's [PACOM's] or Central Command's [CENTCOM's] regions. If we decide to parcel out Russia to a CINC, it's gone in the right direction. It's tied into the European partnership.

Student: Sir, is EUCOM having to broach that to the Russians diplomatically, or is that being done by the State Department?

Salisbury: It's President Putin and President Bush. State's working it, and we're working it. We expected a lot of pushback on it, especially since Russia has been one of the lofty countries that has never been assigned to a CINC, but President Putin is very positive. To a large degree, very candidly, it's because of the relationship he's trying to establish with the ex-Soviet countries, as well as with greater Europe. So this unionization of Europe, the EU [European Union] concept, has really turned out to be a pretty good unifying activity even for Russia. NATO [North Atlantic Treaty Organization] has historically been a threat, by the way. The Russians have historically backed away from Europe, because NATO was put together for one reason: to counter that Soviet threat. Now that Soviet threat has gone away, and I think it's the economic issues that are bringing Russia closer to Europe. So we, the United States, are going to capitalize on that through our unified command planning.,

PACOM has responsibility for the countries in gray on the slide, plus everything all the way, basically, to the west coast of the United States. CENTCOM is responsible for these countries in yellow. We're obviously fighting in Afghanistan today. Pakistan is right beside it and is in CENTCOM's AOR. CENTCOM, by the way, is the CINC down at MacDill Air Force Base in Tampa. If you haven't seen General [Tommy] Franks, the CINC of Central Command [CINCCENT], on TV you're not watching TV; you're doing what you should be doing, which is studying. He lives and works out of Tampa.

I have some thoughts about why we drew the lines as we did. To a large degree, they are drawn on the basis of political decisions. Obviously, for example, we always hear about Pakistan and India and nuclear exchange kinds of stuff. They're not friends. Therefore, a conscious decision was made to put India in PACOM's AOR and keep Pakistan in CENTCOM's AOR. Even though there is a natural tension, there seem to be more ties between India and some of these countries farther east. Many times you lose objectivity by putting countries under a single CINCdom.

We had the same problem in what we call the Levant, if you're familiar with that term. That's Israel, Syria, Lebanon, and Palestine. Israel, Syria, and Lebanon are part of EUCOM's AOR. Palestine, though, belongs to CENTCOM. Palestine is really more aligned with the Saudis and the Egyptians and the entire Muslim influence. Israel clearly has a disconnect politically between it and the Muslim influence. So a conscious decision was made to separate those two countries, and a way to do that is through the way we separate the CINCs and their regional responsibilities.

There's the same issue, by the way, with Africa. Why did we carve out this northeastern section? It turns out that the countries that we left under CENTCOM's AOR are really tied to the Suez. The Suez is the unifying factor probably in this whole region, so that's the common theme within CENTCOM.

Student: Why is Syria in EUCOM?

Salisbury: Probably because of the French. You sometimes have to go way back in history to learn why these decisions were made.

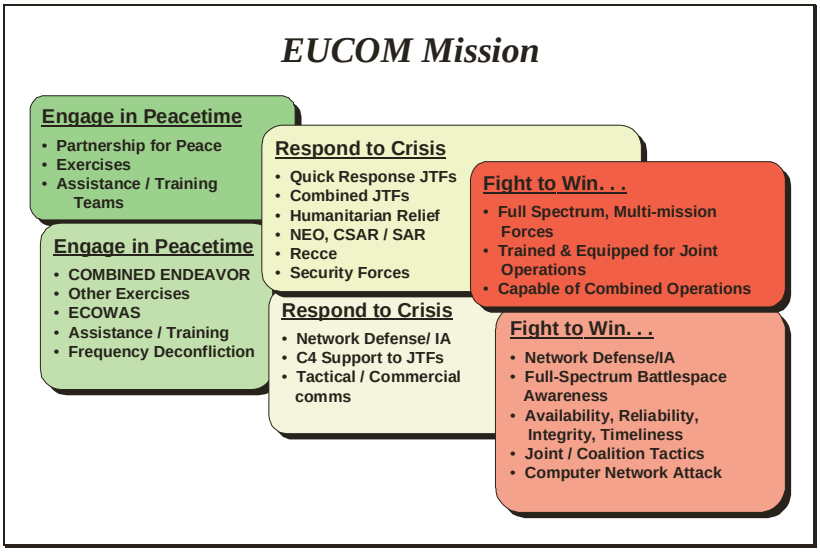
Student: Is Madagascar in PACOM?

Salisbury: If my diagram is correct, it belongs to PACOM. (How am I doing on time? I'm on my second slide already. Do you plant these questions?)

I don't want to belabor this, but there's another big change happening in our theater. Actually, it's happening in the restructuring of the entire DOD for the homeland defense discussions. The secretary of defense has decided to stand up a tenth CINC. It's called Northern Command. It will be headquartered somewhere; that will be a political decision. The force structure, to a large degree, is going to come out of one of our other CINCs, called U.S. Joint Forces Command [JFCOM]. JFCOM has responsibilities for testing and experimentation. They also have regional responsibilities. As a matter of fact, today its responsibility is all the way out to 4^{o} west, right along the coast of the United States. Captain Hight runs all the communications flows for this. What's going to happen with the restructuring of the UCP is that JFCOM will lose its AOR, so we will move that 4^{o} west line all the way to 45^{o} west, and she's going to start working for me.

EUCOM is picking up Russia and a lot more territorial water, plus all the countries and islands that have historically been assigned to JFCOM. The Azores and Iceland, for example, will come under our AOR. The way we look at that anecdotally is, "What does that mean as to numbers of ambassadors?" because my metric on that is how many briefings and discussions I sit through per year. We're going to pick up two more, so that's okay.

The missions of the four geographic CINCs are consistent—at least, in the functional areas identified in the boxes at the top (**Figure 3**). There are geographic CINCs, and there are not geographic CINCs. The four geographic CINCs are EUCOM, PACOM, CENTCOM, and the one I didn't reference on the other chart, U.S. Southern Command [SOUTHCOM]. It's predominantly the drug business that keeps them busy in South America, south of Mexico. Those four geographic CINCs really have the same responsibilities. The only thing I've added here is a little bit of the communications stuff that my people in EUCOM do. I didn't mention that, of the 110,000 in the command, about 11,000 are doing communications and information systems, so about 10 percent of the command is involved in the kinds of actions shown in the lower layer of boxes.



CSAR = combat search and rescue ECOWAS = Economic Community of Western African states IA = information assurance JTF = joint task force NEO = noncombatant evacuation operation SAR = search and rescue

Figure 3

My view as a professional military guy is that this is our most important responsibility. We do these engagement and crisis-response things to keep us from having to fight. If we do that job very well, we'll never get to that red box, but, rest assured, if we get there, we're ready to go. We focus a lot of time and energy on the green boxes, so we don't have to do the red and orange ones. Again, some of the bits and bauds come into the discussion of how we do that in various levels of crisis response assigned to a CINC.

Student: In light of the UCP moving Russia into EUCOM, do you see a decoupling as we do engagement and the Partnership for Peace [PfP], in the Baltics particularly, recognizing the historical animosity between the Baltics and the essentially repressive Russian movement into the Baltics? Would that engagement be conducted in parallel? How do you see that engagement being conducted, or aren't we mature enough in thought to have got there?

Salisbury: NATO is as strong and relevant today as ever. We continue to get a lot of goodness out of NATO. We have nineteen countries in NATO today. We have a group of nine more countries that are called NATO aspirants, so the NATO leadership, basically the presidents of these nineteen countries, are meeting in Prague in October or November of this year to decide which of those nine aspirants will be made NATO member nations. Three of those turn out to be Baltic countries. My sense is that the Baltics are a high priority for this administration, I think to a large degree because the Baltics have historic ties to Russia, and our president is doing a lot to try to bring Russia, if not into NATO, at least into the European influence. My view is that the Baltics are a very important NATO issue, not only because of who they are but also because of their strong ties to Russia.

I want to go around the world (**Figure 4**). We basically break up our responsibilities into regions, and it's really how we focus attention on what's most important. I have a slide on each of these.

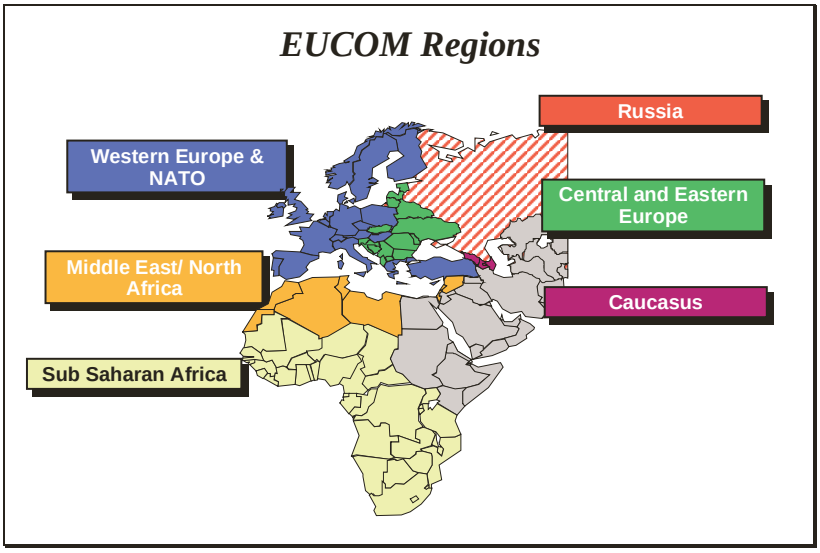


Figure 4

As I mentioned, the large area that we have historically focused our attention on is Europe (we call it the central region) and NATO (**Figure 5**). NATO really has continued to be a linchpin for stability throughout Europe and into Africa, surprisingly.

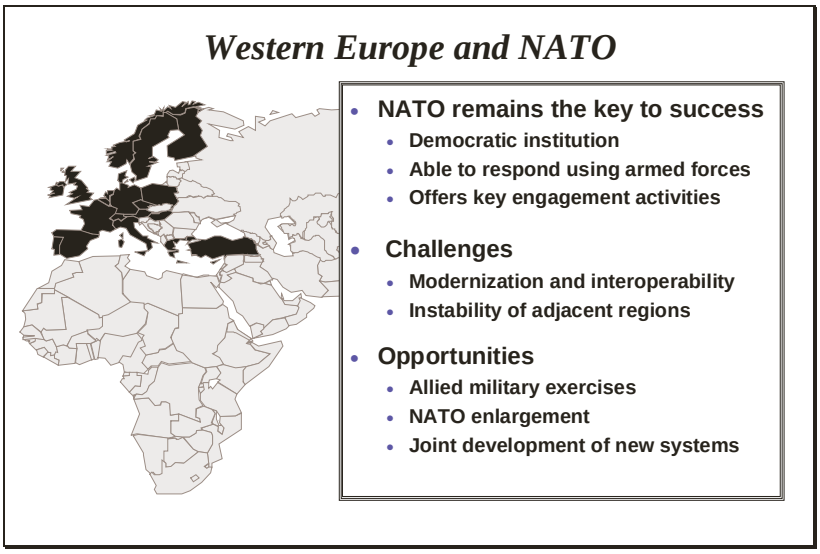


Figure 5

One of the unifying themes that has always been central to NATO is something we call Article V, which is that an attack on one of the NATO members is an attack on all of them. It had never been invoked in NATO's fifty-three years until September 13. NATO has historically looked east, worried about the Soviet threat and all the potential threats that were building out in the east. On September 11, with the bombings in Washington, D.C., and the World Trade Center in New York, NATO looked west. The invocation of Article V is a big deal. It surprised me when NATO did it. We immediately had eighteen very close allies the day that Article V was invoked.

Probably two or three days later we started flying AWACS [Airborne Warning and Control System] missions over the continental United States [CONUS] to protect U.S. interests. NATO deployed seven NATO AWACS to the United States. Crews from eleven of those countries are still flying overhead today, burning holes in the sky, watching over the Olympics, watching over the Super Bowl, watching over high-density locations.

I've come to have a lot of pride in this NATO structure. I'll tell you what the word is: "If NATO will do that for the United States, guess what they'll do for Latvia or one of these other aspirants?" My sense is that NATO's stock went up over the last four or five months, and I think it will continue to be a unifying organization for the entire European area, now getting more into Russia. I would not be surprised, as we continue our careers, to see Russia as part of NATO. It may be sooner rather than later.

Student: I've had opportunities to take part in allied military exercises. I just returned from over there as an Army person, and even doing joint exercises within the theater we had a lot of problems with our communications systems talking to each other. I'm on the intelligence side of the house and our AEF [Air and Space Expeditionary Forces] system couldn't talk to the Air Force's equivalent. What is EUCOM trying to do in those joint and allied military exercises to address the problem of interoperability between the communications systems?

Oettinger: While he's preparing his answer, let me suggest that that's the single most continuous item in the twenty years of this seminar. You will find almost every speaker in every year deals with interoperability, because it's an intractable problem. I'll let you explain why.

Salisbury: I'll give you my personal views. I see it almost daily, and it continues to bubble up in global war on terrorism kinds of things. I want NATO partners to participate in U.S. efforts, and if we can't technically make the bits flow then I know we can't share information.

Two points. Number one is the releasability of information. I personally believe, having done this as long as I have, that there are only two things that destroy interoperability. There are a number of things that make it difficult, but only two that make it impossible. One is security: that is, what's releasable. I'm never especially concerned about connecting the pipes; I am concerned about connecting the content. Particularly in the intelligence business is where we continue to see it. Do we have information that is inherently U.S. produced that we can share with eighteen countries in NATO? That, at times, is a bridge too far. Can we share intelligence information with the United Kingdom? France? Italy? Yes. But nineteen total? Generally not. So, many times we put security boundaries in place that make interoperability almost impossible.

The other piece, which I wasn't going to talk about too much, is free enterprise. Remember the guy up in Redmond, Washington, who took on capitalism—Bill Gates? If you get everyone to buy the same operating system you can achieve interoperability. What's really happened in the United States today, and has happened a lot with other partners, is that many times one of those nineteen member countries has its own desire to sell products. If we're lucky, they'll buy a product that's interoperable with a U.S. product. NATO, though, is not a corporation. Nineteen bodies make decisions based on the best interests of nineteen countries. The United States gets one vote. I don't know how to get through that. We have tried it for years through standards and practices, and that's how we've gained whatever successes we've seen.

The real way we do it, by the way, is that we decide there's a requirement to share a certain kind of information. For example, I'll talk about the common operational picture and real-time situation awareness. We're all going to war together, sometime, and we all want to share the same picture. The only way to make this work is that you take a single-country-developed piece of software and give it to everybody. Don't get everyone's blessing on it, because they'll never agree to it, but put it out there in the operational commands. You almost have to work around the system to achieve interoperability. This has been a constant challenge. It's worth a promotion if you solve this.

Oettinger: By the way, it is just as true among the U.S. services.

Salisbury: Yes, let's get back to our business. Let me talk about the Army, Navy, and Air Force. Compound that problem by eighteen nations that, very candidly, have the same reasons for doing business as the Army, Navy, and Air Force. Jointness is interesting, and combined is interesting, but it's not as important in my personal view as the revenue generated by such-and-such a software developer or hardware developer. There's always that competition.

Student: Are LOCE [Linked Operations Intelligence Capability–Europe] and Cronos systems that can help solve these problems?

Salisbury: Yes. The two systems he's referring to are the NATO-approved systems. We are able to run NATO-classified information over Cronos. Without giving you too much technology, Cronos turns out to be the Internet of NATO. If you want basic interoperability through the communications pipes, you use this Cronos capability, which is based on the Internet. You subscribe to it much as you do to an Internet service, but it's classified. If you've got a Cronos terminal, everything that's been released to NATO is available to every one of those NATO partners. Then it comes back to the content discussion. Does the United States, or France, or Italy, or Germany want to put its unique stuff that it doesn't want to share with eighteen other people on that particular network?

The answer to your question is yes, Cronos and LOCE have helped us. They do not solve the problem, but they're a lot better than having nothing.

Central and Eastern Europe means Bosnia and Kosovo—countries that percolated up over the last few years (**Figure 6**). We're seeking new democracies. We have a lot of activities ongoing with each of these countries. The Balkan conflicts have been going on since 1991. Since 1995 there's been a NATO and U.N. involvement in Bosnia, and there was one in Kosovo in 1998/99. A big concern is weapons of mass destruction [WMD]. That's always an issue.

Student: Could you tell us a little more about that? Do you mean the nuclear material or the expertise?

Salisbury: I mean the actual material itself coming out of one of the former Iron Curtain countries, such as Ukraine. Those are the old Soviet nuclear fissionable products. We're always concerned about control over those, so if they turn out to be sources of WMD that could move into terrorist hands it gets everybody excited. That's a NATO concern.

Figure 6

Organized crime is a continuing issue in the Balkans. This is the reason we're not out of Bosnia today: because we haven't figured out how to solve the organized crime problem. Our exit strategy in both Bosnia and Kosovo is to get the organized crime under control and get the local police to take over this responsibility. We have NATO military people, in fact, the military forces of thirty-some countries, sitting in Bosnia and Kosovo today doing police work. That's about where we are.

Oettinger: Have we thought of letting our organized criminals run theirs?

Salisbury: Sorry. I'm out of my lane on this one.

The Caucasus is a big deal, with lots of opportunity (**Figure 7**). There are three countries: Georgia, Azerbaijan, and Armenia. They have significant ties to Russia. There are lots of ties to the east through the Caspian sea. In Georgia, we've had terrorist concerns with the Chechens, the Chechen extremists, very specifically. Our strategy in EUCOM is basically to try to find some allies in a particular country, train them either to defend themselves or to be aggressive in eliminating a particular problem, and then try to back out and hope they will take care of their own problem. We have something called a training and equipping mission that I think has just been approved by the secretary of defense to go into Georgia. We are going to send eighty to a hundred special forces in to do training and equipping in Georgia, much as we did last year in Nigeria. The problem in Nigeria turned out to be internal strife in Sierra Leone. The U.S. response to that through the United Nations was to send in about eighteen months' worth of people to train the Nigerians and let them help take on the problems with Sierra Leone.

If you saw the beginnings of the Afghanistan war, we did the same thing. We found some northern Afghans whom we could trust, so for some period of time we had OGAs [other governmental agencies] training some of them. I'll show you some slides on the level of support we were giving. We went in with very few U.S. soldiers, but a lot of Afghans, to overthrow the Taliban. That's our typical strategy among the CINCs. It's good for engagement. It gets these

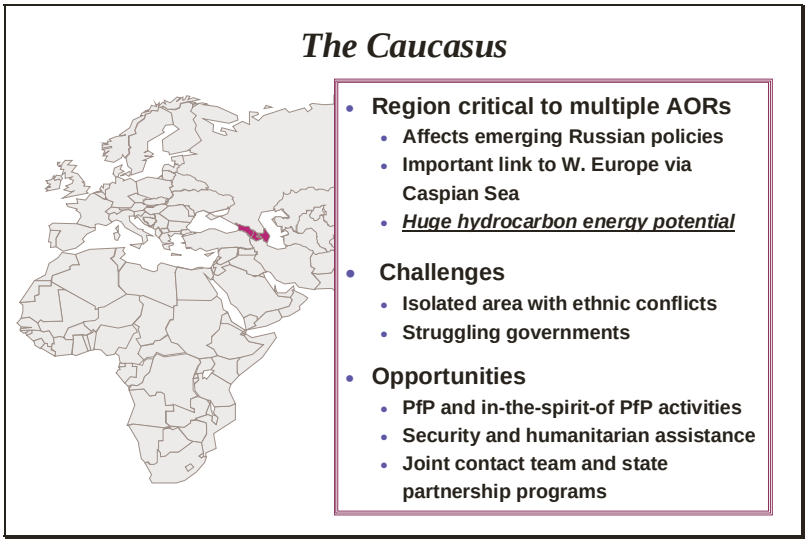


Figure 7

countries untethered from many of the bad guys, and it clearly gives us a way of capitalizing on access to those particular countries.

Oettinger: There's a curious corollary to this, which I'd appreciate your commenting on. You speak about briefings to ambassadors. It seems to me that the CINCs sound more and more like the regional proconsuls with responsibilities that used to be the State Department's. Is that a mistaken impression?

Salisbury: I don't think it's mistaken at all. My personal view is that it involves resources. I had more people working for me when I was a colonel than Secretary of State [Colin] Powell has working for him today. That may be a bit facetious, but it's probably not too far from the truth. Every one of these countries has a U.S. ambassador; there are country teams associated with the ambassador, and a very light staff back at the State Department. I think the focus flow is based on the relationships the CINCs have with our secretary of state. Today that relationship is excellent, so our CINC spends a lot of time doing traditional State kinds of stuff. We argue that military-to-military is our responsibility, but I find myself doing military-to-people outreach that we traditionally called political. When I visit some these countries, doing some of the things I do, I always meet with the ambassadors and always talk about things that aren't purely military. Maybe it's changed; I don't know.

I talked about Russia (**Figure 8**). As I mentioned, eight of our countries border Russia today. As on the previous slide, WMD is a concern.

Russia has been in SFOR, which is the Stabilization Force in Bosnia, and the Kosovo Forces [KFOR] since the beginning—since 1995 and 1999, respectively. As a matter of fact, in Bosnia they're in our sector, so one of our battalions is Russian. We really do have a great working relationship with Russia at what I'll call the tactical level. The president, in my view, has a great relationship with President Putin. So, at the strategic level we're great. There is a void, though, between the strategic and the tactical, so we've got a lot of rhetoric but not much action.

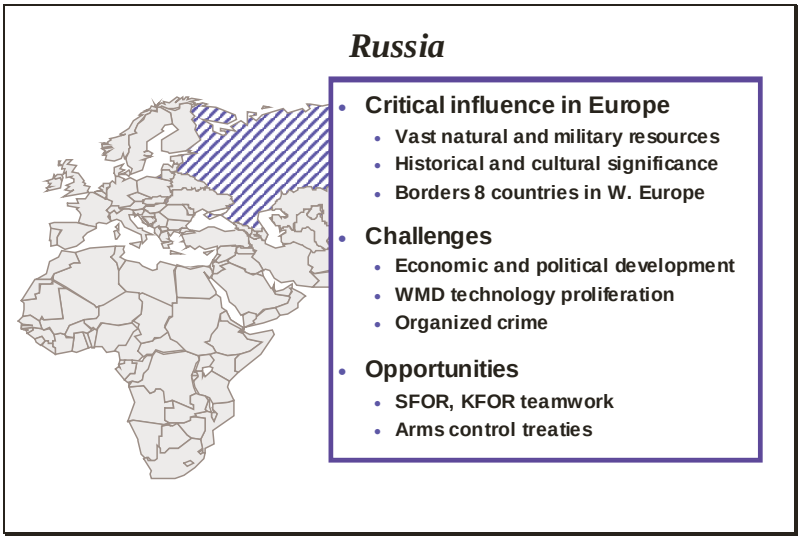


Figure 8

The challenges within Russia to establish relationships with the EU, with NATO, and with the United States are going to be significant. It's that second tier. It's the same thing I always say about a number of lieutenant colonels: they've been around too long and they think they're in charge, and you can't change their minds. That's what we have with Russia: too many lieutenant colonels.

Student: Just promote us; we'll take it.

Salisbury: They do grow out of it. So it's something you want to get behind you as rapidly as possible.

Student: Is there anything short of NATO admission that you could suggest for Russia? I just can't see ever bringing Russia under Article V protection. They have too many enemies. Is there something that you could do short of membership that would still get Russia to accept the Baltic states going into NATO? Won't you have to offer Russia something?

Salisbury: I think the Baltic states will probably come into NATO. This is getting a little out of my realm here. Let me back up a minute and take you back to Georgia. The Russians have had a long-term desire to clean the Chechen extremists out of Georgia. When we (the United States with one or two coalition partners) proposed to go in to do some training and equipping in Georgia, the first flag that went up was, "What the hell are the Russians going to say about this, because Georgia is one of the countries on their border?" It took one day, and President Putin came on line and said, "This is the best thing we can do, because the United States/NATO is on our side. They're trying to help solve the same problem we're trying to solve. It's those people in Georgia who are giving us a lot of trouble."

I don't think it's going to be a problem. It's now pretty much at the presidential level to the extent that the closer association of Russia with NATO is an issue. There will be some three-stars, two-stars, and one-stars called in on the military and political sides, so there will be a lot of pushback, but President Putin is very supportive of doing a better job of integrating Russia into a

better association with the EU, not necessarily NATO. I sometimes use them interchangeably. I think we're going to get there.

Oettinger: My guess is that September 11 had a lot to do with this, because these are all traditional Russian enemies. Who in the United States before September 11 gave a good goddamn about Afghanistan, Georgia, and other central Asian republics? All of a sudden we are facing the same enemy as Russia, which is an odd position to be in.

Salisbury: I don't want to trivialize this. I think you're right. September 11 has changed the relationship we have with every one of the countries I see in our area.

Student: I agree with you, particularly about Putin. I know Foreign Minister Ivanov was against it, and Putin slapped him down again. But what I was thinking of was, from our point of view, would *we* really want Russia in NATO? Then we'd have Article V obligations to Russia.

Salisbury: I think so. Our long-term objectives in Europe are stabilization and peace, and I think we have realized that the best way to do that is to go after the problem we used to have. So it's clearly in the United States's best interests to expand NATO and to see if we can ultimately bring NATO and Russia into a closer relationship. Whether that's NATO membership or not, I don't know. But if we get economic ties between Russia and the EU, knowing, by the way, that eleven of the countries in the EU are NATO countries, we're going to go a long way. I don't like to use the labels, but the concept is pretty good. It's a strong economic tie. They clearly have political ties.

If Russia becomes part of NATO, would the United States respond? You're damn right we would. That's the baggage, or that's the presumption that we have when you become a NATO member. That's what countries want, by the way, and that's what we would give. If the vote came today, my personal view is that the president would say, "Yes, let's go do it."

In the Middle East (**Figure 9**), I already talked about Syria and Lebanon. There are strong ties between some of these countries and Libya. The United States has no military presence in any of these countries. To a large degree we rely on our Navy component. They're down in Gaeta, north of Naples. NAVEUR has responsibility for freedom of navigation, as we call it, in the entire Mediterranean. To a large degree, the stability of this region of the world is really based on the U.S. Navy's ability do port visits, surveillance, show presence, and those kinds of things. Again, there's the same list of challenges and some opportunities.

Earlier, I mentioned challenges with Africa (**Figure 10**). You can spend your career in Africa. There have been a lot of engagement activities going on in Africa. By the way, to a large degree, these are funded by the State Department. State has every one of these initiatives. When I want to do something in Africa, my folks are leading this bottom bullet under "Challenges." Africa is regionalizing from an economic perspective. Much as NATO has turned out to be a unifying organization for central Europe, Africa is standing up four organizations that are based on economics. One of them is this Economic Community of Western African States [ECOWAS]. It involves fifteen countries and is headquartered in Abuja, Nigeria. It turns out that from our perspective (and I can speak from NATO's perspective) a lot of those countries have pretty

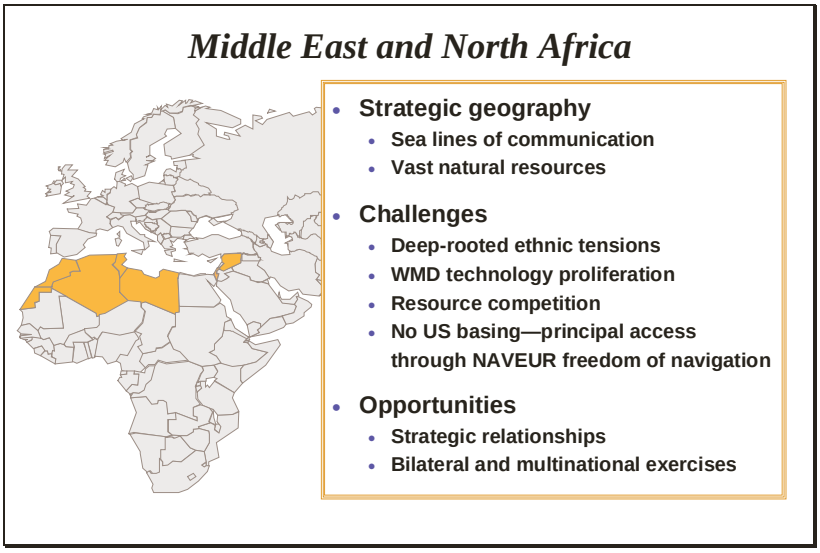


Figure 9

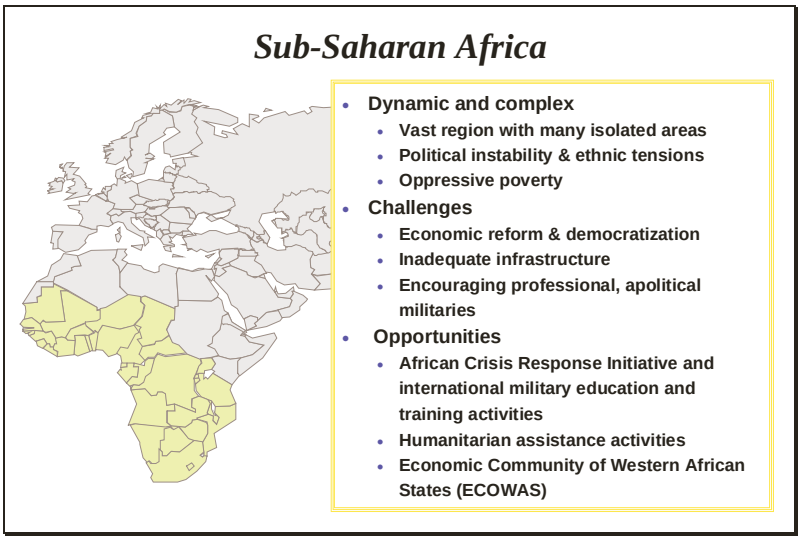


Figure 10

good ties to counterterrorism concerns. Establishing a partnership or relationship with these economic organizations is a good way to influence stabilization, at least, in those regions of Africa.

We have no U.S. presence there full time. Going back to our earlier discussion, we have a lot of special operations folks who spend time in and out of Africa doing training. Basically that's been our recurrent theme for a long time, and there's a long way to go in Africa.

Student: Has any consideration been given to taking sub-Saharan Africa out of EUCOM?

Salisbury: Yes. We won't look at it this year, but we'll look at it in two years. One of the problems that we're having right now is just the size of our regional responsibilities. When you throw in Russia, we don't have enough brainpower (I shouldn't say that). Speaking as one of the people who has to do this, that's a big resource commitment. The counterargument turns out to be, "Do we want to stand up another unified CINC to keep an eye on Africa?"

My professional view is that after Russia comes over we will look at this for two years, and if it makes sense to realign Africa somewhere else (I don't know exactly where we'd realign it) we will do that. From a resource perspective, keeping Russia with the Joint Staff has always been a good thing, because we didn't have to worry about it. Now that it's being given to us it will force us to redraw the lines.

Student: Sir, would you consider at that point keeping Saharan Africa in EUCOM?

Salisbury: I could only speculate. As we draw the boundaries of these countries, as I mentioned early on, Africa is not just Africa. Saharan Africa is closely tied to the Levant area in terms of their politics, their heritage, their religion, and their economies. If we use that same argument, we could carve out pieces of it. I wouldn't take the entire continent of Africa. As we work through this, we'll continue to draw lines in the sand. It is not now a U.S. national priority. The U.S. national priority is homeland defense.

To answer your question, yes, I think so, but not yet. It will be inevitable. We've already seen pushback on the EUCOM staff about what the hell we're going to do with a country that will double the size of the land mass of the world that we'll be responsible for and is so important. Where are we going to come up with the resources?

My boss, General [Joseph] Ralston, lives in Mons, Belgium. His regional priorities, just to frame the rest of the discussion, are the global war on terrorism, NATO, the Balkans, and transformation (**Figure 11**). These are some of the specific actions and taskings, and I'll leave the slide up here for a couple of minutes as a focus. I'll show you what we're doing with this maritime interdiction operation [MIO] in the Mediterranean. The situation in the Levant is ugly. NATO continues to be a key priority.

I'm not going to talk too much about Balkans rationalization, other than to say that we've been there for a long time. I'll show you some numbers on a subsequent slide. We have gone from a very large number of U.S. military people in the Balkans down to a very small number. The president has said, "We went in with NATO; we're going to come out with NATO." We're continuing to draw down. Transformation I'll talk about.

Let me talk about some current operational stuff (**Figure 12**) and tell you what I'm not going to talk about, although we can if you want to ask. We've been doing Operation Northern Watch over Iraq for eleven or twelve years now, flying north of the northern no-fly zone. We're going after targets of opportunity, which turn out to be SAMs—Saddam Hussein's surface-to-air missiles. We're doing very well. We have never lost an airplane or a crew, which I think is amazing. I have no idea how many missions we have flown, but it's been about eighteen per month for twelve years, so our guys have been doing a good job.

Figure 11

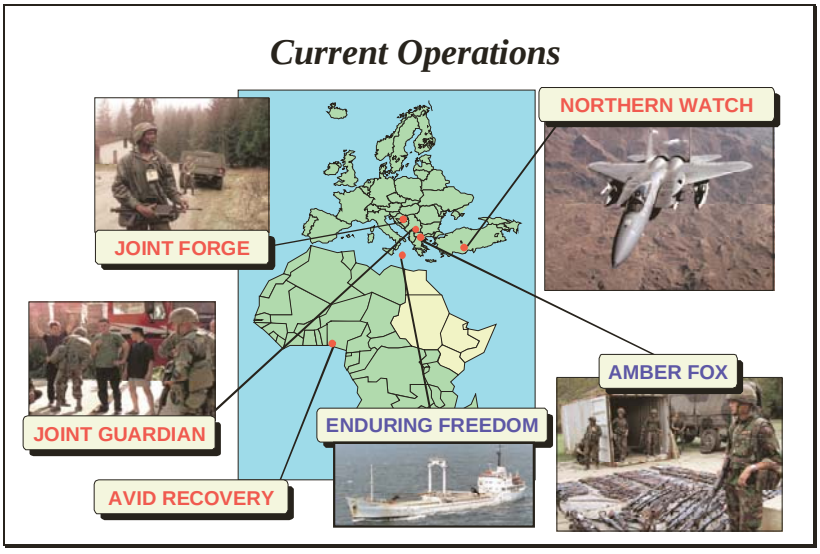


Figure 12

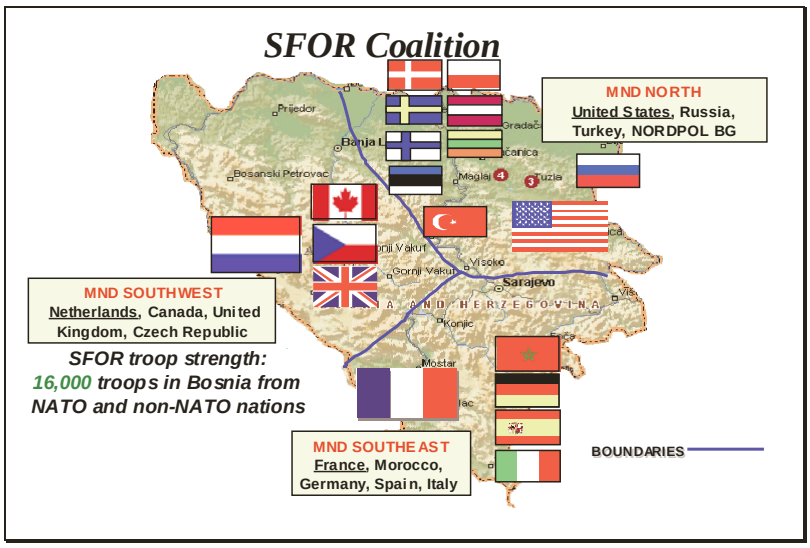
Amber Fox is really a follow-on to a weapons collection effort in Macedonia. We're doing that in conjunction with NATO.

Joint Guardian is the U.S. component of the KFOR operation in Kosovo, but I don't intend to talk about Kosovo. I'll give you a couple of slides on what we're doing in Bosnia to bring you up to speed.

I'll talk a little bit about Avid Recovery, which you saw in the news about a month ago. This happened in Lagos, Nigeria, where a weapons manufacturing plant exploded. A thousand people died; it was just terrible. The ambassador asked us to go in, right in the middle of our global war on terrorism. It was a big decision in the State Department, but the president said, "Go do it." So

we have soldiers doing weapons collection kinds of stuff today, dealing with this terrible issue that the Nigerian government got itself into.

SFOR is the Stabilization Force (**Figure 13**). We did the IFOR—the Implementation Force. The longer term strategy, and we hope we'll see it fairly soon, is MFOR: the Monitoring Force. That's the role we hope to get into from a NATO–U.N.–U.S. perspective, because we're still poised to do warfighting and stabilization. The word "stabilization" implies we're not there yet. The United States has responsibilities for the northeast and the north sector; MND is multi-national division. Here are some of our partners. I mentioned that Russia is with us in MND north. The entire operation is headquartered out of Sarajevo, a beautiful city. Our headquarters in the U.S. sector is in Tuzla, and you can see the other MNDs. France runs MND Southeast, and The Netherlands is currently running the MND in the Southwest.

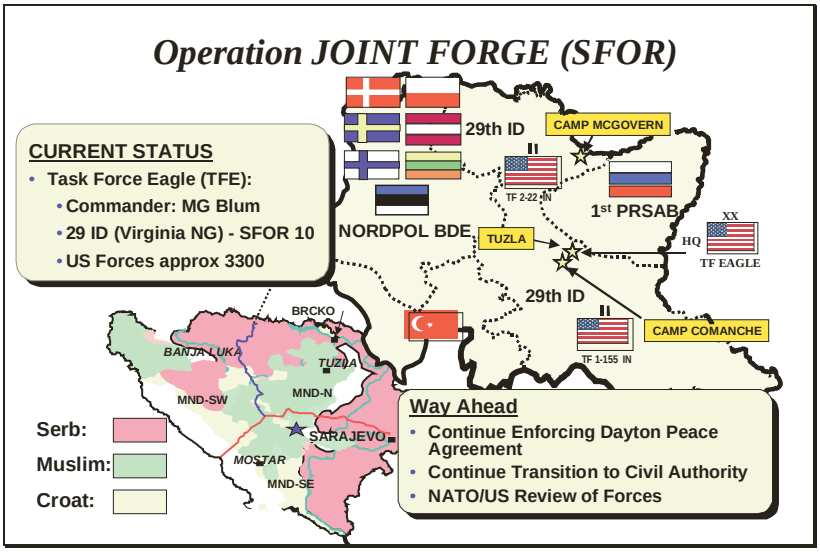


NORDPOL BG = Nordic-Polish brigade

Figure 13

I wanted to show you this chart for two reasons. I'm going to drill down into this just a little bit more. The Balkans rationalization initiative is that we've got three two-stars, a lot of civil engineers, and a lot of communications. The current thinking by our CINC is, "Let's rationalize this. Why do we need three of everything in Bosnia?" Looking at all these support activities from a Bosnia perspective gives us the ability to reduce troop strength. As the slide shows, we have about 16,000 military troops stationed in Bosnia.

Let me drill down here (**Figure 14**). As I mentioned, Tuzla is where the command is being run from. The Air National Guard is running the operation in Bosnia. It's the second Air National Guard organization that we've had in SFOR. The number, by the way, represents the number of rotations, so we are on our tenth rotation of a very large number of soldiers who have come in to do the stabilization operations in Bosnia since 1995.



BDE = brigade ID = infantry division NG = National Guard PRSAB = Peacekeeping Russian Separate Airborne Brigade

Figure 14

The exit strategy is shown at the lower right. Let's help train the police forces; let's help the local people run their own show. Unfortunately, we're still broken up as is shown on the map at the lower left, so there are basically three governments. Guess who's in charge? This guy down in Sarajevo, unfortunately, because we can't get our act together with the various countries. This situation is what caused us to get into Bosnia. Stabilization of Bosnia to a large degree is going to be, "Can we get a better relationship and a better fixed, firm government in Bosnia among those three sects, and can we get the U.S. military to quit doing policing?"

Student: Could you give us your assessment of training capability of the Air National Guard in the implementation of SFOR? Do they roll in on existing C2 structures within the U.S. sector?

Salisbury: The Guard is doing well. They do what the active duty personnel do not do. The Guard has time to ramp up, so as a unit they will know ahead of time when they're coming in and they will spend more time than a traditional active-duty unit would preparing for this mission. They have done wonderfully.

Do they come in on fixed infrastructure? Yes. To a large degree, we've had to commercialize the communications and ask them not to bring in their tactical communications capabilities. We've got a pretty good process going with Bosnia today.

In 1996 we started with 20,000 U.S. military people. That number is down to 3,300 today. We're on a glide slope to bring it down to about 1,800 by this October, with acceptance by the various commanders.

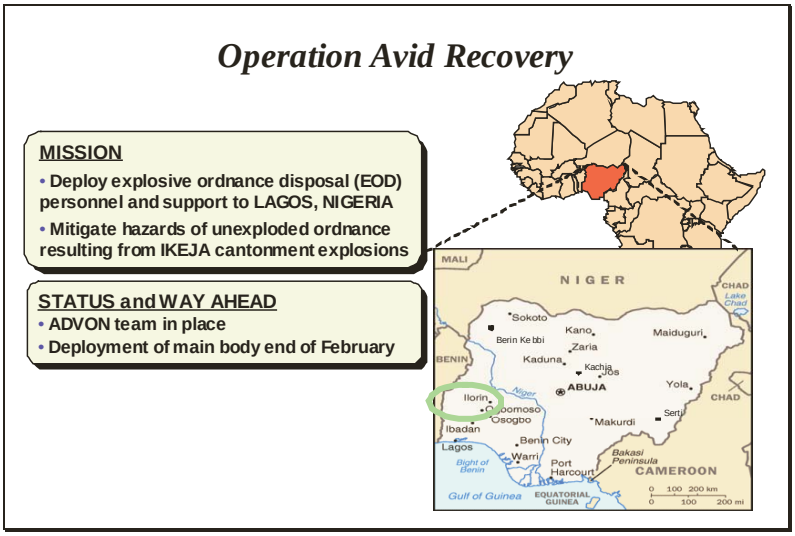
Student: It also has an effect on the out years for SFOR with the number of units there. One of the things General Blum and his predecessor were tremendously concerned about was Guard units that were given deployment orders and then, at the last moment, we decided to take the

numbers down and said, “We don’t need XYZ Battalion.” These are people who had told their employers they were leaving and in fact had left their jobs, and suddenly came back.

Salisbury: That’s tough. We’re going to have to work that. That’s going to be a continuing challenge.

Another dimension to this, by the way, is the global war on terrorism. A lot of the units that were tagged to come in and do rotations in Bosnia, predominantly Army, are currently in Afghanistan, so this is going to be a significant demand on the Army. Even the reserve forces are having a problem here. What support we’re getting for the global war on terrorism comes from some of the NATO countries that agree with Article V. They’re offering their forces, and, if they cannot use them in Afghanistan, they can use them here so we can free up some of our own forces. I would not be surprised if over the next two rotations you’ll see the number of U.S. forces draw down significantly, because we, the United States, need those forces, as does Germany, as does Russia, to help with global war on terrorism stuff. We do have other countries that have already offered to bring in their forces to do stabilization, not to do the real warfighting stuff that we’re having to do. There are a lot of dimensions to this.

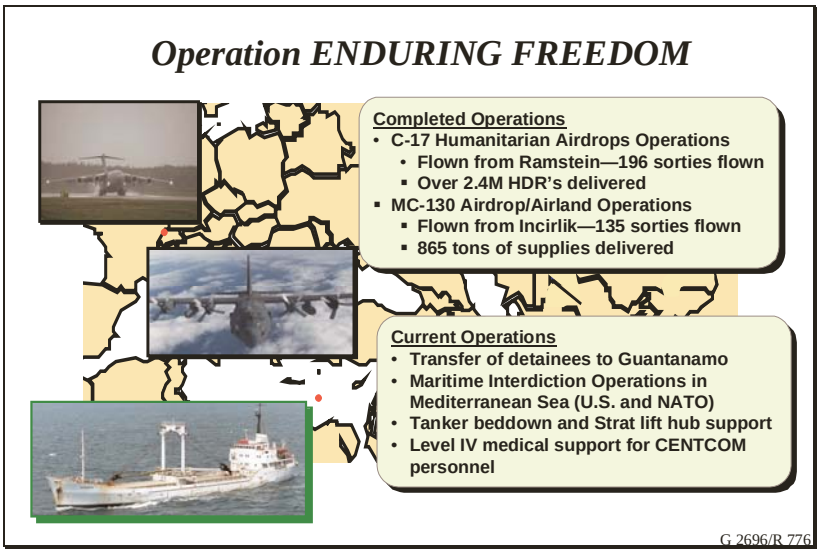
I mentioned Avid Recovery (**Figure 15**). (The circle on the slide is in the wrong place.) About six weeks ago, we were asked by the ambassador of Nigeria to come in and help the ordnance disposal folks clean up. We have about eighty people down there working in 100-plus degree temperatures about two hours a day with these munitions exploding around them. It’s just pathetic. A thousand Nigerians were killed, not because of the explosion but because, thinking they were under attack, they stampeded and ran into a large swamp and drowned. So, besides the global war on terrorism, we, like all the other CINCs, are still responding to the day-to-day humanitarian crises that always pop up.



ADVON = advance echelon

Figure 15

Obviously, we've been doing Operation Enduring Freedom [OEF] since September 12 (**Figure 16**). The predominant role of EUCOM is supporting CENTCOM operations. The most obvious things we have done are these humanitarian airdrop missions. We were flying them in these big C-17 airplanes out of Ramstein. There were about 200 missions, and they dropped about two and a half million of those little yellow packets you saw on TV from about 22,000 feet—pushing them out of the back of the airplane and the things would spin and scatter everywhere. It was a great effort to show that the United States was indeed concerned about the Afghan citizens.



HDR = humanitarian daily rations

Figure 16

At the same time (the time we were doing it was classified) we were supporting OEF operations with other airdrops. These were things like wheat, blankets, and humanitarian supplies. A lot of that equipment was flown in from our theater. The route was from Ramstein down to Incirlik, Turkey, and from there to Afghanistan. These were seventeen-hour missions for these guys. Pilots normally don't fly that. We do with B-2s traditionally, but these were demanding missions for the U.S. Air Force and the special operations forces who were flying these things. They went from 20,000 feet to 200 feet; we got it right down to the deck when we were flying. I'm surprised we didn't lose anybody.

We're still doing detainee transfers. We've picked up six detainees in Bosnia. You probably didn't hear about that, but we had some terrorists who were lifted. We sent them to Guantanamo. We are opening up bigger hubs in our theater, because we are the gateway into CENTCOM's AOR. Level IV medical support is Landstuhl Medical Facility, right outside Ramstein. Level V means that you can do anything; Level IV is pretty high. We are providing all the medical support, even major operations such as heart transplants, up there. So there are lots of activities going on in the theater.

I don't know if you've seen this quotation (**Figure 17**). Maybe I shouldn't show it. I wish I could tell you what we're really doing, by the way, but I have to keep this at the unclassified level.

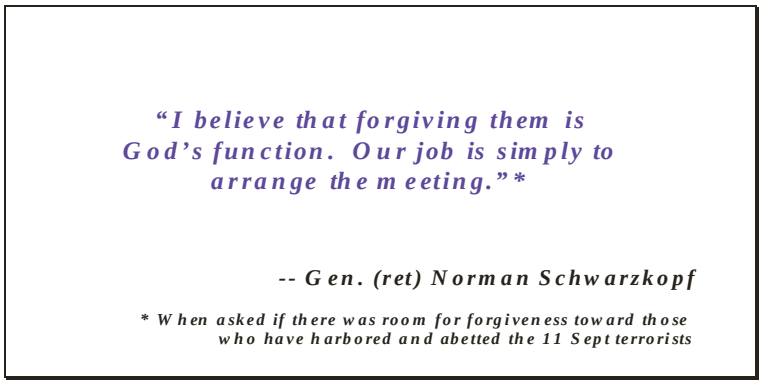


Figure 17

One of the things we've been doing, as has CENTCOM, is boarding ships (**Figure 18**). The reason we board ships is that we originally thought—and we still think—that Osama bin Laden may be on one of these kinds of carriers at the top of the slide, or was at one time. (That's not a U.S. Navy ship, by the way.) Second, a major resupply of terrorist activities comes through shipping. We have boarded four ships. There are so many ships available on the free market today that you can own one for a couple of hundred dollars, because it's too expensive for the people who built them to run them. So terrorist agencies and activities are buying ships and they don't care about them. If they have a problem with a ship, they'll sink it. It turns out to be a pretty lucrative target, for starters.

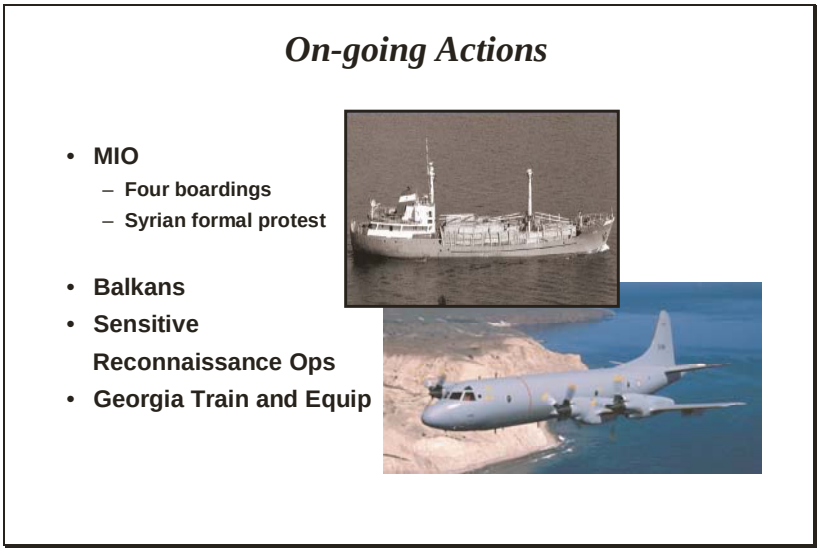


Figure 18

They have to be formally flagged by a country. Did I tell you about lieutenant colonels before? A retired Army colonel started this flagging operation, so we fixed that problem, but one of the values of having a properly flagged vehicle is that at least there are some credentials that can be reviewed. It's like getting a proper driver's license. A lot of the ships we've run into in the Mediterranean are Togo-flagged. That already sends up a warning balloon: it takes twenty-five bucks to flag a ship in Togo.

We have boarded two Syrian ships. The Syrians do not like us for doing that, so they filed a formal protest and we stopped our operations. We didn't quite do the politics right. Tony mentioned something about the CINCs getting into an area of diplomacy; this is an area that we probably didn't get into as well as we should have. In my personal view, we should have coordinated slightly better with State to let them know we were going to do this. We notified the ambassadors, but it probably should have come through State channels.

We call these "compliant boardings," by the way. We'll have a big U.S. Navy ship coming up against one of these little things, and we will ask if it's acceptable to board the ship and look for contraband. If they say yes, we'll go ahead and board with a team of about sixteen people. They take pictures and go through computer files, so it's a pretty good process. The Navy has been doing this since the days of the Barbary pirates, so we know how to do this stuff. We do now have a military capability to do noncompliant boarding. The implication is, "If you don't let us on, we'll take over the ship." We'll send the same team on, but more force is required. The political sensitivities are significantly higher.

I've already talked about the Balkans. I can't get into a lot of detail, but the Balkans are still a target for some terrorist activities, so we stay focused on them. I also can't get into too much detail about sensitive reconnaissance operations. I knew my wife was coming, so I wanted to put a Navy P-3 here. We are flying a lot of P-3s in the Mediterranean. We are also flying a lot of other ISR resources there, because some of our current concerns are clearly with some of the countries I've mentioned that are in our AOR. The implication of sensitive recon is that sometimes we do it with certain capabilities, and we have to be careful with whom we share that information.

I mentioned Georgia. We should be there today or tomorrow, doing this training and equipping with the Georgians to help friendlies who are looking for Chechen extremists.

We're doing a lot with the global war on terrorism. If there's one thing that has refocused us it's probably not Russia, which we've talked about, it's the global war on terrorism. The level of activity has picked up significantly, and I think every person in the DOD is affected by the global war on terrorism. I'm really downplaying the level of effort and the amount of resources we're committing to it.

We're doing a lot of work with individual countries (**Figure 19**). As I mentioned, we do have a noncompliant capability now. That's a weapons capability, so if they say no we can do something ugly. We're doing a lot of collection throughout the theater. We're training and equipping.

I'll just mention the term JFACC—joint forces air component commander. That is the coordinating activity for all air activity in the theater. That's why I put that up there. When we did

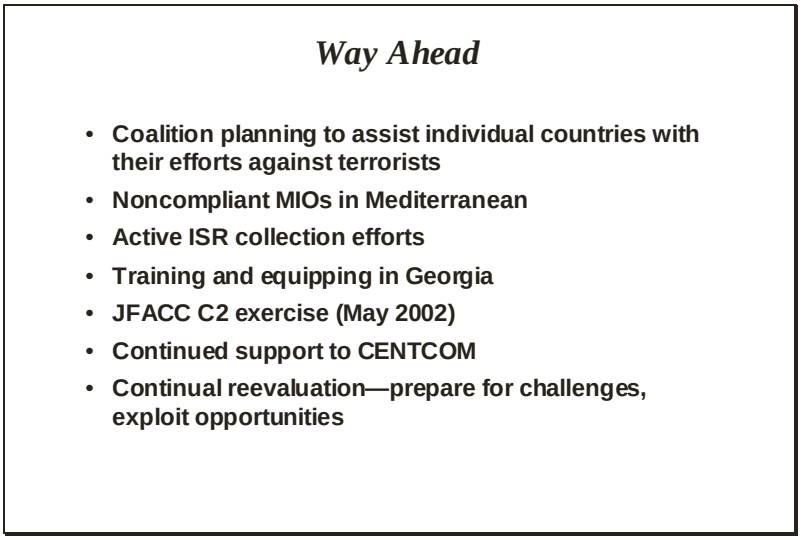


Figure 19

the C-17 operations and the MC-130 operations that I talked about before, we conducted them out of our JFACC up at Ramstein. They were deconflicting and coordinating all the flying. We do that pretty well. If we do something more aggressive, or Kosovo-like, such as an air campaign, we need to make sure we can do not only humanitarian relief operations and resupplying or refueling but also offensive air operations. We are having a major exercise in May where we'll really try to stress ourselves. I'm going to talk about JFACCs a little later, so I wanted you to know what they are.

Student: Is the exercise in theater, at Ramstein?

Salisbury: Yes, I believe so.

As long as the focus continues on CENTCOM, EUCOM is providing significant resources from a communications perspective. About 80 percent of the communications that are supporting CENTCOM are coming from my theater.

Student: Are you going to talk a bit about the adjudication and prioritization of national assets with JCS [Joint Chiefs of Staff] coordination?

Salisbury: Yes. Remind me when I get to the UAV discussions.

Let me talk briefly about transformation (**Figure 20**). I won't spend a lot of time on this, but I want to let you know that transformation is a big deal. You can always tell by that term "commitment." If the United States is committing dollars to something, it's a big deal. I think the investment we're making in transformation is a 13 percent increase from last year. In my business, and in the intelligence business—I've just captured a couple of snapshots—there is about $1 billion more in this budget going into UAVs. There's something called an intelligent communications system; but I don't know what that is. It sounds good; I want one. There is a lot of research and development related to communications and information systems, by the way. There is a lot of money going into infrastructure. If you add up communications, UAVs, and

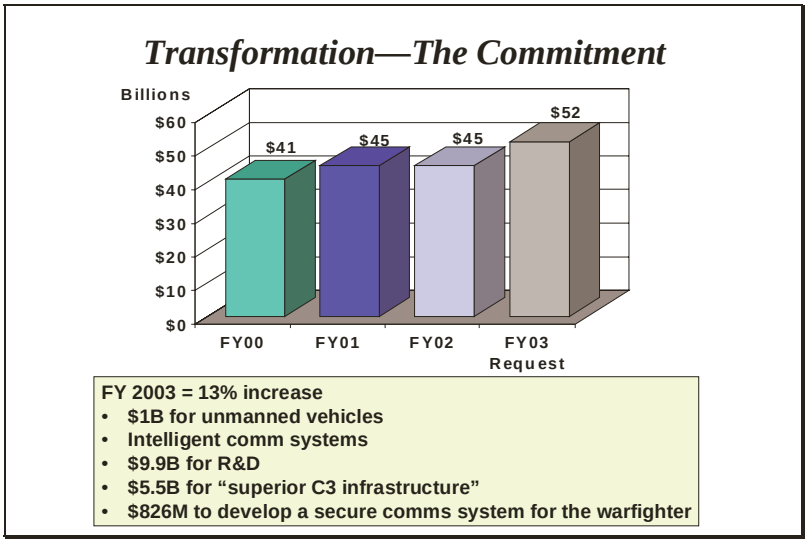


Figure 20

intelligence, that's a significant portion of the requested FY03 budget. If you're looking for post-military employment, this is what you want to get into. It will replace the dot-coms.

The transformation goals come right out of the Defense Planning Guidance [DPG] and the Quadrennial Defense Review [QDR] (**Figure 21**). These are the secretary of defense's priorities. We're going to do the first one. This is the reason we're standing up Northern Command—this tenth CINC. Information technology, information operations, and space operations are all high priorities for the secretary of defense and the president. There's a lot of money involved, as I showed in the previous slide.

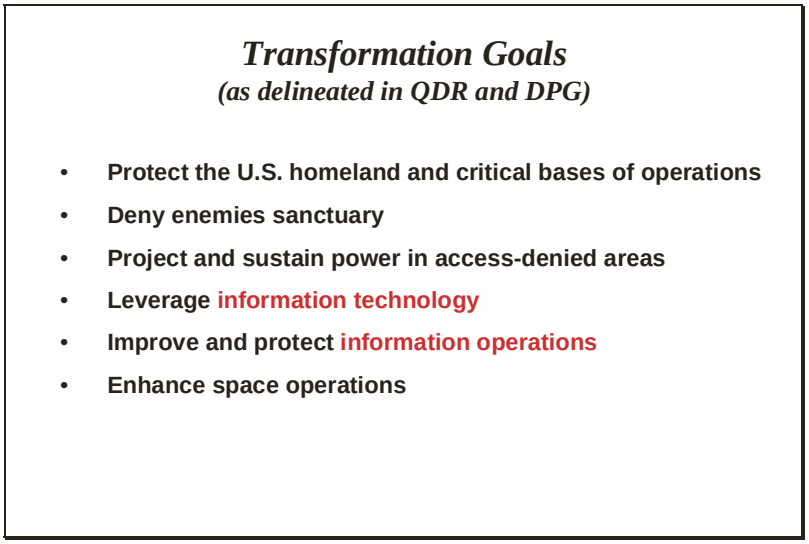
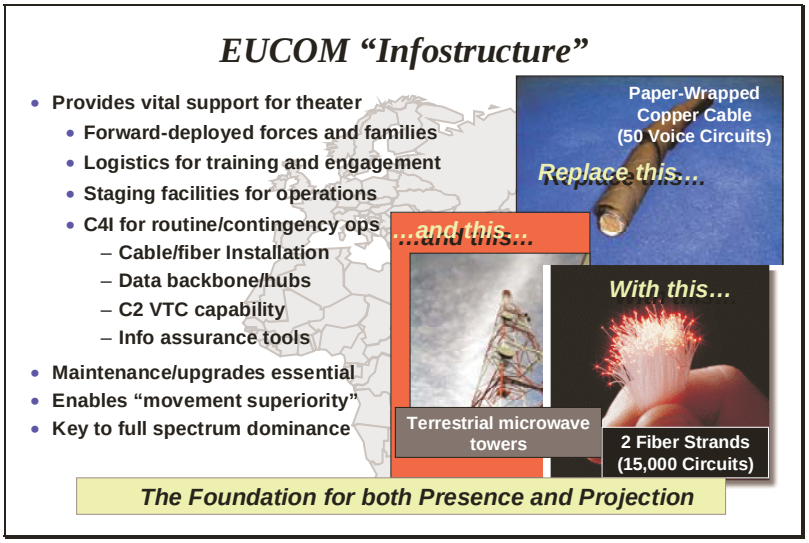


Figure 21

A lot of the theaters, like mine, have been relying for a long time on copper cable (**Figure 22**). We still have a World War II-era communications infrastructure. A microwave system has



C4I = command, control, communications, computers, and intelligence VTC = video teleconferencing

Figure 22

also been there for a long time. We're now migrating most of our stuff to fiber. We have come a long way. As a result of two years' worth of effort in our theater, we are throwing $700 million into what we traditionally call communications infrastructure.

Student: Sir, do you still have problems when it rains over there?

Salisbury: In a few places we do, but it's not as bad as it was. Those areas where we still have copper cable have some problems. I'm pretty impressed with where we are in infrastructure, mainly because fiber has become so pervasive. The economics are favorable. When Germany or Great Britain decides that they need communications infrastructure, they put fiber everywhere. What the military does is buy service from them. That is our strategy. We're getting away from the U.S.-owned older technology.

I wanted to show you how the bits flow here (**Figure 23**). I can't do this myself; this is captain-level stuff. It's pretty slick.[4]

Oettinger: If you're interested in comparing this to where we were, take a look at Admiral Jerry Tuttle's comments in the seminar in past years, and you'll get a sense of the difference between the concept and the realization.[5]

---

[4]The original slide showed the bits moving.

[5]Jerry O. Tuttle, "Tailoring C3I Systems to Military Users," in *Seminar on Intelligence, Command, and Control, Guest Presentations, Spring 1988* (Cambridge, Mass.: Harvard University Program on Information Resources Policy, I-88-1, March 1989), [On-line]. URL: http://www.pirp.harvard.edu/pubs_pdf/tuttle\tuttle-i88-1.pdf; and "The Copernican Pull," in *Seminar on Intelligence, Command, and Control, Guest Presentations, Spring 1993* (Cambridge, Mass.: Harvard University Program on Information Resources Policy, I-94-5, August 1994), [On-line]. URL: http://www.pirp.harvard.edu/pubs_pdf/tuttle\tuttle-i94-5.pdf

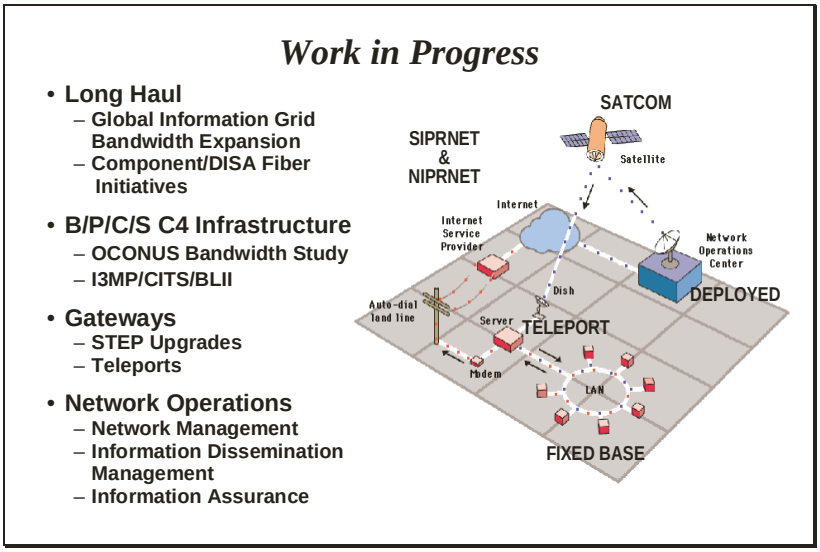


Figure 23

Salisbury: Just a couple of anecdotes. During my first assignment to Germany twenty years ago, I could not make a telephone call reliably. Most of the communications between Europe and the United States were over satellite, so when you did get a telephone call you had that half-second delay. You talked and you waited, which was terrible. What we have today (and to a large degree it was driven by Kosovo, by the way) are three major fiber routes back and forth transatlantic and over a gigabit worth of capacity. It's highly available and highly reliable. I have three different vendors, so we get contractor diversity. The communication between the United States and Europe is just phenomenal today.

Student: You said that the new infrastructure is market driven. Could you say something about what happens if war comes and we need to access those communications lines? What do we have in place to make sure we can do that, especially since these are not U.S.-owned companies?

Salisbury: There are a couple of points. If we ever do a U.S. unilateral action, we do have dedicated systems that are still operational. They tend to be some of the high-value military satellite communications systems—lower data rates and higher priority. So we are able to support U.S. unilateral operations. My professional view, though, is that we're not going to do anything in Europe without one of our allies. I hate to keep harping on this whole global war on terrorism, but that has really caused us to unify our thinking. I will not do anything in Germany today without asking the Germans to go with us, or the United Kingdom (U.K.). So we have very high confidence that those countries on whose strategic infrastructure we have opted to rely will partner with us on any operation. Of course, we have to be careful how much reliance we put on any particular country's capability. Germany, the U.K., and Italy are not a problem. It's something to be sensitive to.

The wideband communications coming north are robust. The communications system that ties our bases together has become very robust, to a large degree because it's fiber and we spend a lot of money on it. Where we have problems is on the bases. I mentioned that our CINC has been successful in getting about $700 million to improve the on-base communications; that's inside

the boundaries or perimeters of the fence lines. Just as an anecdote, in the DOD the services are responsible for the bases, posts, and camps—that on-base stuff. It's a national responsibility to fund outside the bases, so other agencies have the responsibility. We have done the outside very well, but, as we said before, when the services have the prerogative of not funding something, here's a good one not to fund.

If I want Internet service today, and I'm in Stuttgart, Germany, I use the NIPRNet [Unclassified but Sensitive (N-level) Internet Protocol Router Network] to access an ISP [Internet service provider]. That's the real routing.

By the way, in the DOD we use the Internet as a surge capability. You can't beat the prices today on the Internet, so we have a lot of capacity relying on the Internet, which really is a backup to our military capabilities. The teleport is a gateway principally to the tactical people. You asked me about how we bypass the reliance on other countries' systems. It's really by using this system. Some of the words on the slide are not quite correct. The principal communications today for the deployed warfighters are through these teleports, over a U.S.-owned satellite system, predominantly, down to the deployed forces. We're doing pretty well in space.

As far as capacity is concerned, we probably have a gigabit coming into our theater (via transatlantic fiber and satellite communication systems). Between our major installations, we have close to 700 megabits. On most of our modernized bases, we can move about 100 megabits. Our deployed forces can expect 1.5 to 2 megabits of capacity.

Oettinger: There isn't a speaker here who when speaking of this kind of thing hasn't said we're doing well, and there isn't anybody who has ever stopped complaining that it's not good enough. I just want to take a moment to underscore my belief and guess as to why this is so. One can point at appropriations and so on, but there is one thing that is more fundamental, I think, which is continuously rising expectations. That's fed by a very simple phenomenon, which is that there are no limits to complexity. No matter how accurate a picture you want, there's always a picture with higher resolution. No matter how many high-resolution pictures you get, you always want twice as many and you always want them faster, et cetera. Each time you say something like that, what you have is obsolete and you're dissatisfied and looking for the next one. I've convinced myself that's why this ongoing paradox persists. Nobody's lying. It's true, the new stuff is better, but there are still all those complaints, and I think that's the reason. Does that make any sense to you?

Salisbury: Yes, it absolutely does. It's probably analogous to when you bought your Windows 3.0 operating system. It was pretty good at the time, but when the next operating system came out you traded the old one in. What drove it to a large degree were the new applications that the Windows 3.0 operating system wasn't good enough to accommodate. As you continue to iterate that, it's the Moore's law thing that says that every eighteen months you double the processing speed of a computer chip. You may not recognize it, but you also double the capacity of communications systems about every eighteen months, and it's happening simultaneously. I don't think we'll ever get to the point where we're going to have everybody saying, "I have enough bandwidth." It's always good in your career to say, "I need more bandwidth." That'll help me when I retire, because I'm going to go into this business and I want to hear a bunch of dissatisfied customers, not satisfied ones. The amount of money we've spent on this, and the benefit we're getting out of it, are pretty good.

Hight: There is a big difference when you move from CONUS to outside CONUS and deployed sites. Here in CONUS we're bandwidth rich, so when we're in garrison we enjoy large bandwidth. When we deploy and we're in bandwidth-deprived areas, we have a whole different ball game. Sometimes part of the expectation management problem is that we don't do in garrison what we do out in the field, so when we deploy we don't like it. As a matter of fact, I had one of my folks say to me the other day, "A sailor on board a ship has more capacity to make a phone call home than we might have getting official C2 messages to that ship." That's because it's provided via two different means. If we keep our sailors on long-term deployments, and if we expect to retain them, we have to give them the same communications capabilities afloat that they have at home. In a lot of ways it is an expectation-management problem when you're at home versus when you're deployed.

Salisbury: I absolutely agree. Our focus on improving bandwidth is in two areas: the on-base networks, a service responsibility, and then again the deployed responsibility, which Captain Hight deals with every day. As we drill down into this discussion, we are bandwidth rich into the major nodes and the big transatlantic stuff in my theater and throughout the fiber-rich infrastructure, but when I get to the actual user of the computer on the desktop, on our ships, or among our deployed soldiers, that's our choke point.

Student: You said that CINCEUR had garnered $700 million for the in-garrison communications. Understanding that the CINCs don't have money, as you so aptly said, how does that affect the readiness of the service from which he garnered the money? Was there a congressionally mandated increase in the TOA [total obligation authority] to the services for this, or was it a tradeoff so that something was lost in readiness or other modernization?

Salisbury: Last year there was about a $500 million plus-up, and the request occurred right at the end of the Clinton administration. Maybe you don't recall it, but the administration decided to plus-up the DOD because of allegations that we hadn't been committing a lot of resources to the DOD. That $500 million that we needed for C4 infrastructure came out of that presidential plus-up, so no new obligation authority came out of the services. It was good timing.

This year, each of the service's TOA lines was decremented by about an aggregate of $380 million, so this was done at the expense of something else. You never know whom the money is going to come from. As you pointed out, we do not have dollars. We have the responsibility to work what we call integrated priority listings, and my boss gets to fall on his sword for just about three or four items per year. This was one of them.

Hight: I just wanted to add a comment about readiness. This money is not just going into a CINC's environment; it's going into the services' infrastructure to support the CINC. The guys in Heidelberg want this infrastructure capability just as much as, if not more than, the guys in Stuttgart. The U.S. Army, Europe, needs this capability, but as they tried to prioritize within the Army, C4 infrastructure was just not high enough. So what the CINC did was aggregate all of the infrastructure issues in Europe and said, "Hey, anybody who will listen to me—Army, Navy, Air Force, Marine Corps, Congress, JROC [Joint Requirements Oversight Council]—we need this capability because this is what keeps our readiness high in Europe."

Student: That's essentially what drove my question. I recall some of the readiness issues two years ago and I remember that being a huge issue, so I thought, "Gosh, something must have happened; maybe the CINC stepped up to the IPT [integrated program team] and said, "We're going to do it this way."

Hight: He did, and it happened in the JWCA [Joint Warfighting Capability Assessment] process as well.

Salisbury: He made it a readiness issue. He started putting this in the context of force readiness: "We can't go to war unless you fix this problem." As Betsy pointed out, 95 percent of this money goes into the Army, so that's how the actual infrastructure will be upgraded. It took me five tours to figure out how to do this.

While we're building our infrastructure, I'd like to move a little into the network warfare business (**Figure 24**).

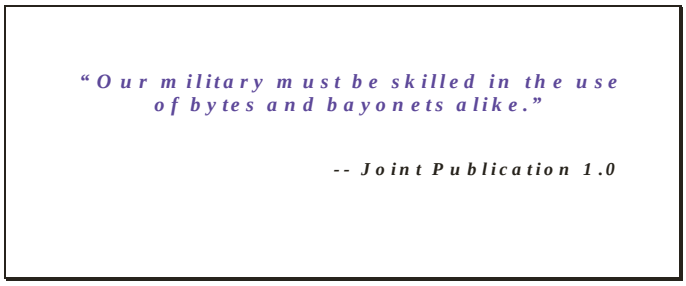


Figure 24

In this picture of asymmetric warfare, the bunny is us friendly people (**Figure 25**). The wolf is the enemy.

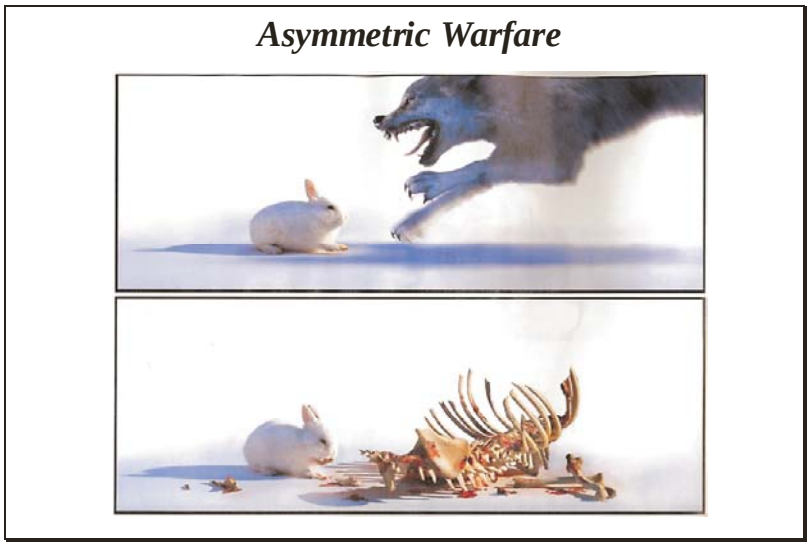


Figure 25

If there's a way to go in and suppress the enemy's defensive capabilities prior to an air strike without dropping bombs, maybe here's a way of doing it. I call it nonkinetic warfare (**Figure 26**). I've already told you we're building infrastructure; I want to show you how we can defend the infrastructure that we operate on and use it as an offensive weapon. I can't give you too much detail, because a lot of this stuff is so classified they won't even tell me about it.

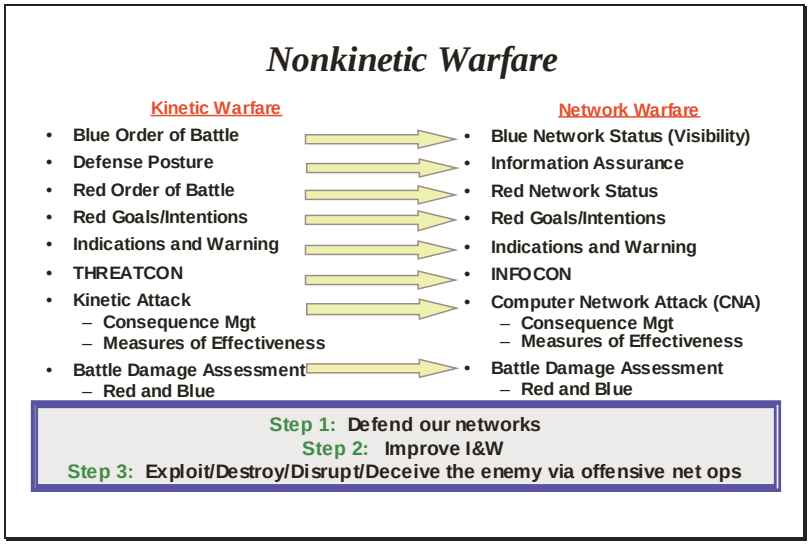


Figure 26

If you look at the left side, military planners have been doing that list for years. Going from the top to the bottom, "blue order of battle" means the capability of your own friendly forces. What's their posture? What's the capability of the enemy? What are their intentions? Are they planning to attack? Did we get some indications and warning? If we did, we raise our threat condition [THREATCON] a bit higher, drop bombs, and then look at battle damage assessment.

My sense is that there's an analogous process that we can go through in network warfare (the right-side column). First, we have to understand what the capabilities of our networks are. We want to protect those networks; we call that information assurance. We want to know the status of the enemy's networks, working with one of the OGAs to figure out what their goals and intentions are. For example, do they intend to attack us through our network capabilities? Did we get some indications and warning [I&W]? Suppose there's a virus, and we don't know whether that virus was planted by a terrorist or a hostile nation or just a hacker. The analogous conditions to these THREATCONs are these information conditions (INFOCONs). We raise our defenses a bit simply by telling people that we may be under attack. Then we can attack, measure how we do, and do battle damage assessment on both the intended target and any repercussions on our own networks.

Basically, the bottom of the slide shows the strategy we're following in the department to "weaponize" our network capabilities: that is, defend the networks, improve our I&W, and then attack if offensive network operations are appropriate.

Oettinger: I believe that those three steps refer to the military's networks and not necessarily to anybody else's. There's a disconnect here between the homeland defense aspects of this and the military aspects.

Salisbury: There are significant legal issues in this space, no question. We have no problem, legally, defending our networks. That includes putting up firewalls, blocking ports on routers, or turning off capabilities if we're being attacked. So, defense is inherent in everybody, and industry does the same thing. Improving our I&W is normally an intelligence activity, where we get a little bit smarter on what the capabilities of a hacker or a potential enemy are. The final step, though, network attack, gets into the political and legal sensitivities. It's clearly not black and white today.

Hight: That's absolutely right, and we don't do it. There's been so much information in the press lately about the Office of Strategic Influence and all that stuff, and because of the legal issues associated with commercial networks we do not do Step 3, but we do Step 1 within the boundaries of how we operate our unclassified and classified networks, those being NIPRNet and SIPRNet [Secure Internet Protocol Router Network]. We are trying to figure out how to do I&W on networks. Quite frankly, when you think about it, how do you understand the intent of a hostile nation to release a virus? I'm not talking about a virus that is just a nuisance; I'm talking about a virus that really is aimed at our ability to command and control. So we work very hard on Step 1, and we need to figure out how to do Step 2. Quite frankly, we can't do Step 3 without significant law enforcement and other governmental agency influence.

Oettinger: You'll have the opportunity to raise these questions again in two weeks with Admiral Plehal, looking at it from the civilian side.

Salisbury: There are lots of issues here. My view is that we have the technology to provide I&W and network attack, but we have legal barriers. They're not impenetrable, but they're significant.

Hight: The one thing I tell my lieutenants is that ones and zeros know no geographic boundaries, and that is why this issue is so very difficult. When you have the geographic boundaries of a nation-state and you're using kinetic warfare, you have one problem. When you're trying to use networks that are ubiquitous, you have an entirely different problem.

Salisbury: Somebody asked me about the Internet connection to the DOD. We call it the NIPRNet. There is an absolute connection, so much of the military traffic that transits from one base to another over the NIPRNet transits the Internet and, very candidly, it possibly transits through Syria and through Russia. So there really is no network or geographic boundary to this stuff.

Oettinger: If I may take issue with you for a moment, I think that can be overdone. It's not all that different from airplanes transiting somebody else's airspace. It's one of the things that worries me about contrasting kinetic warfare with network warfare. One of my former students, Greg Rattray, who was here a couple of weeks ago, calls it "microforce" or "microkinetic," to make the point that bits are not disembodied and they're not unlocated.[6] They transit the same

[6]Gregory J. Rattray is the author of *Strategic Warfare in Cyberspace* (Cambridge, Mass.: The MIT Press, 2001).

way that a ship or an airplane transits somebody's airspace, and that creates a problem. We don't overfly Germany without coordinating with the Germans. Where the bits are and where they're coming from is not necessarily unknown, and they are not necessarily unstoppable. So, to my mind, the analogies that you point out are stronger than the differences. There is a difference in scale and amount, but the notion that bits are disembodied strikes me as a very dangerously misleading logical error, because it leads you to notions about strategy that, to my mind, are just dead wrong. If you think of it as much more like what you're used to, though in a different medium (it's transiting electrically instead of transiting through the atmosphere), they're similar.

Hight: I can transit France and Germany with the ones and zeros without ever telling the Germans.

Oettinger: I wouldn't be so sure, because if the Germans wanted to stop you they could stop you.

Hight: They'd have to stop their whole Internet activity.

Oettinger: That's a matter of design. The Soviets designed their communications networks so that the military and civilian were quite separate. The Poles originally didn't, but when they saw what happened to the Shah they separated their networks so they could stop Walesa while continuing their internal security. These are matters of tactics and strategy in the same way as air attack and air defense are. I think that somehow the cyber crowd has upped the state of things by emphasizing differences that, to my mind, aren't real. I keep seeing them perpetuated in what I think is a specious distinction between kinetic and network warfare. What's remarkable to me is the total similarity of the issues you have on both sides.

Salisbury: Let me tell you why I put that chart together. It was to address the mindset of traditional military planners who know how to do the business on the left. I wanted to focus them on this other potential capability. It was not my original intent to look at the bits and bytes and show the exact duplications. From a process perspective, my intent was to get into the CINCs' ability to use nonkinetic and kinetic capabilities, because the way we employ kinetic weapons is through this process on the left. If we can use the same processes, then let's employ the right side and get a whole different dimension of concerns. I have personally come to believe, though, that what's on the right is closer to reality.

Oettinger: I think you're right, and to me the only wrong thing is the title "nonkinetic." I would say "microkinetic."

Salisbury: It really has helped us in the warfighting sense, because I'm talking to operators in most cases as a techie. I tell them to think of this in the context of "This on the left side is the way we go to war; this on the right ought to be the way we go to war," because these are similar processes.

You are absolutely right about the legal issues. The issues on the technology are a little different. We have become so interconnected today, either because of the economy or somebody not paying attention, that I think we need to be sensitive to the vulnerabilities that we in the United States have created. We have created an exploitation opportunity with potential enemies. I

would have agreed with your comment two or three years ago. Maybe there was a distinction between military and civilian networks. My insight into some of this is that, for whatever reason, it's easy for the DOD, for example, to go out and buy Internet service and not even think about it. For financial reasons, we're backing away from a DOD-only owned system, and I think other countries are doing the same.

Student: I would just add a note of caution that was expressed in the seminar session that Rattray attended.[7] That structure's OODA [observe-orient-decide-act] loop happens almost at the speed of light, whereas in kinetic warfare you have more time.

Oettinger: Tanks go faster than horses. I don't deny that.

Student: True. But that's just a difference in perspective.

Salisbury: We know certain pieces of this strategy are long term. This may start changing a little more dynamically. There's probably little or no I&W time, and you're right: it's almost a continuum. On the traditional ISR side, we're getting those timelines down significantly, too.

We're trying to protect our networks from all these threats (**Figure 27**), among others. Here's what we're trying to do. If there's a bottom line to our strategy, our first priority is to provide service and protect those communications systems that provide critical services (**Figure 28**). One of my goals is to get smarter on intelligence networks, sharing visibility on the status of our networks among everybody in our theater who manages these things. I want to solidify our information assurance posture. These last three items are consistent with the previous chart. We're headed down the path of giving ourselves a warfighting capability that we can exploit in our theater.

Oettinger: Just to go back to the earlier point, the point I was trying to make was really a question: Given the dependence of the military on the civilian infrastructure, it's my impression that the effort is greater to defend the part that is military, such as air bases, and less to defend what is civilian owned. That strikes me as a problem.

Salisbury: There are other organizations in the federal government trying to defend the U.S. Internet and those components of the Internet that are really supporting our banking, industry, and power infrastructures.

Oettinger: I'm skeptical about that. That's the point. It strikes me as a gap there, but that's another discussion. I wanted to call attention to it, because we have another speaker, Admiral Plehal, with whom we can talk about it.

---

[7]See Gregory C. Radabaugh, "Information Operations," in *Seminar on Intelligence, Command, and Control, Guest Presentations, Spring 2002* (Cambridge, Mass.: Harvard University Program on Information Resources Policy, I-02-1, November 2002), [On-line]. URL: http://www.pirp/pubs_pdf/radabau\radabau-i02-1.pdf

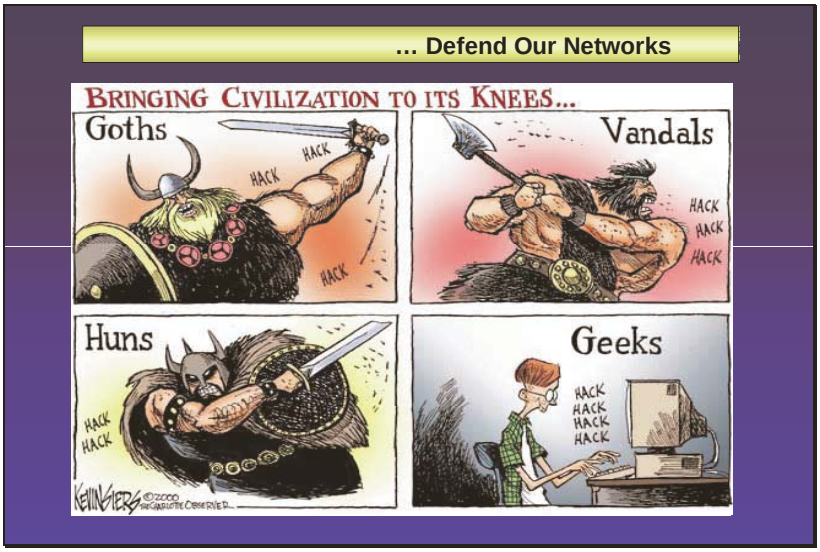


Figure 27

UNCLASSIFIED

HQ USEUCOM Strategy

- **Provide service!**
- **Integrate visibility of intelligence networks into the TCCC**
- **Integrate visibility and management of all component and agency networks**
- **Solidify theater IA posture**
- **Develop a red network order of battle**
- **Mature our computer network attack capabilities**
- **Transition network warfare into the CINC's arsenal**
  - **Will enable us to integrate network-centric warfare concepts into the evolving C2 systems for the CINC.**

UNCLASSIFIED

IA = information assurance TCCC = tactical component command center

Figure 28

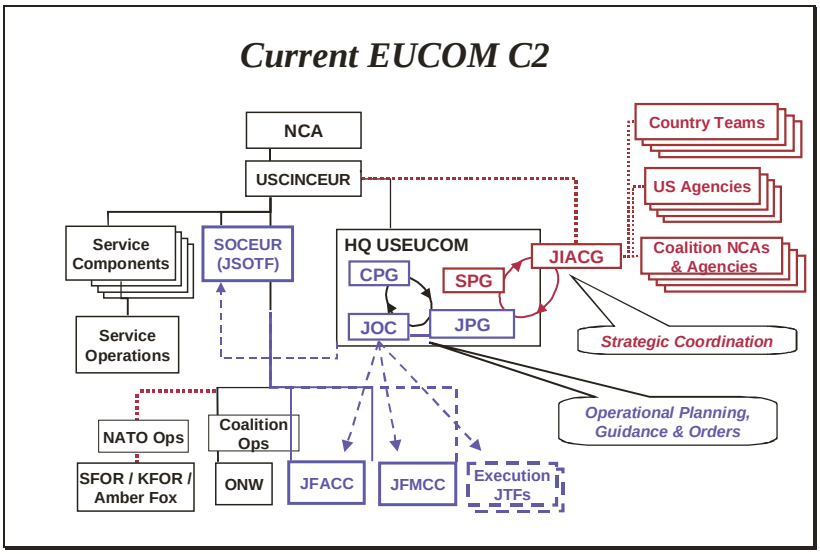
Salisbury: I would think the ground rules on the importance of this stuff from a U.S. national perspective changed on September 11. We've done pretty well in the DOD. A lot of the procedures that we've put in place are being mapped over to a lot of the federal agencies, and maybe your future speaker can give you some insight into that.

Student: I think it's worth noting, too, that there are different domains of the infrastructure, whereas the vulnerabilities of what's generally referred to as the NIPRNet, if you will, are fully shared with civilian industry. The same routers and control mechanisms are all applicable. There are separate and distinct domains that have less vulnerability as you crank up this telescope. Although they may have a tie to the lower level, they have a greater level of security by virtue of

the restrictiveness of the domain. I think there's a perspective that may be worthwhile bringing up with Admiral Plehal, and that's where the NIPC [National Infrastructure Protection Center] can best help: across organizational, federal, and state boundaries.

Salisbury: We spend a lot of time on that.

The organization of command and control and relevant technology are my last subjects. I don't think I'm even going to talk about the current EUCOM C2 (**Figure 29**).



CPG = centralized planning group JIACG = joint interagency coordination group JOC = joint operations center JPG = joint planning group NCA = national command authorities ONW = Operation Northern Watch SPG = strategic planning group

Figure 29

Student: I think this is really key. Professor Oettinger is going to love this. If you can take ten minutes to talk about it, that would be great. We just read Martin van Creveld's *Command in War*,[8] with the notion of decentralized execution, centralized control, and the genesis of the general staff.

Salisbury: Centralized control comes out of the headquarters of USEUCOM in the middle of the chart; decentralized execution takes place at the JFACC and JFMCC [joint forces maritime component commander] at the bottom of the chart. A couple of things have changed since September 11. We could change this from EUCOM to make it CENTCOM and the way we're conducting today's war in Afghanistan. This is basically the way General Franks is running his war. He's doing it from MacDill. He physically does not sit in Afghanistan; he is sitting down in Tampa, Florida. The reason he is able to do that is because of the communications infrastructure. The command, control, and intelligence systems that are supporting him are one of a hell of a lot

[8]Martin Van Creveld, *Command in War* (Cambridge, Mass.: Harvard University Press, 1986).

better back at MacDill than they are anywhere outside MacDill. So the investments that we in the DOD have made in these fixed infrastructures are paying big dividends right now.

We have the same argument: if we go to war, wherever it is (call it somewhere in south Africa), we're going to run the operation out of our headquarters at EUCOM, at Patch Barracks. We have stood up something new at the CINCs, and it came out in recognition of this global war on terrorism. It's shown in the boxes outlined in brown on the right. There are a lot of solutions to counterterrorism issues that are not military in nature: banking, for example. There's the relationship with the ambassadors, and that's what this is. We've put together a joint interagency coordination group [JIACG] and it has representatives from the OGAs, as well as the Department of State, Department of Transportation, Treasury, and all those. When we have developed our strategic plan, we'll route that through the JIACG. They will coordinate with our country teams—the ambassadors, other U.S. agencies, and our coalition partners—to decide if there's an action that can be taken that is not military. If it is, we will take that through nonmilitary channels. They'll coordinate again back through their national agencies in the United States.

If there is military action, we send it back to our joint planning group [JPG], and they take the requirement up through what we call our joint operations center. The military action will be executed through what we call functional components (the JFACC and JFMCC). Our planning to date does not involve standing up joint task forces [JTFs], if that term means something to you. CENTCOM has not stood up one. Instead, we'll basically run the strategic and operational levels of the mission from Stuttgart and stand up these functional components. I mentioned before that this JFACC will be sitting at Ramstein running all air operations in the theater. The JFMCC is the guy on the flagship in the Mediterranean running the MIO operations.

If we have to stand up something, we'll probably stand up a task force: the Army doing something or the special operations guys doing something. It's a big change from the way we've done business historically. Special operations guys are over on the left. We have a JSOTF [Joint Special Operations Task Force] already operating in the Balkans.

Basically, what has changed on this chart from what we've traditionally done and what doctrine has taught us to do for the last forty years is that we've never seen these JIACGs before. Sometimes we call them JIATFs [joint interagency task forces], but it's the same thing. We have a couple of them stood up, principally in the drug area. You keep seeing some of the JIATFs. Now that all CINCs have a JIACG we are starting to think this way. We're not going to stand up a joint task force; we're going to consolidate and run the operation because it's a global war. To a large degree, it gets back to the discussion we had several times: it's a resource issue. Every time the Joint Staff with the chairman [of the JCS] or the CINC stands up a JTF, the implication is that we're talking about 1,000 people deploying somewhere and doing things we could probably do better in these fixed locations.

Student: Sir, would you say that strategic and operational decisions are getting closer together, basically?

Salisbury: Yes. It's happening in two locations. The blue on the slide [Fig. 29] is tactical operational; the brown is strategic operational. I think we're going to be able to do that, and I'll

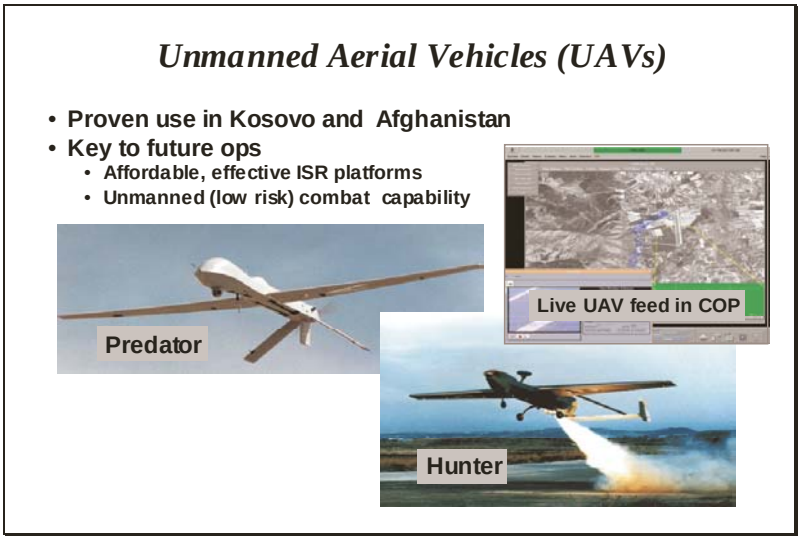
get to it in a couple of slides. To a large degree, I think it's because we have better situational awareness.

Oettinger: It also mirrors what's been happening in industry: the flattening of hierarchies and so on, and for similar reasons.

Salisbury: If I had to more time to wax eloquent on this subject, I could tell you that if you now map this onto peacetime organizational structures, if this is the way we go to war and you look at the way our organizations are today in the Army, Navy, Air Force, and Marine Corps, you can almost argue, "Why do we have these other levels that may be irrelevant if we're not going to use them in a wartime environment?"

C2 is changing. Whether it's reality, or being able to rely on this stuff, or it's resources, or that maybe we're doing our job more efficiently, I'm not sure. But watch C2 and the philosophies and strategies and the way we organize change.

We talked at lunch about UAVs, so I won't spend too much time on this (**Figure 30**). Most of you have seen the Predator stuff. I want to talk about the sensor piece, predominantly focusing on these UAVs. I've got another chart that shows some of the ways we move this information around globally, and, finally, I want to show how we present this stuff. It's the sum of those three, and the ability to get this shared information to all levels of command, that give us one hell of a lot more capability than we ever had in the past. Dean and I worked on this project to get UAV information all the way back to Beale AFB, California, and all the way to the cockpit of an F-16 to go kill tanks. We had that timeline down to about four or four and a half minutes during Kosovo.



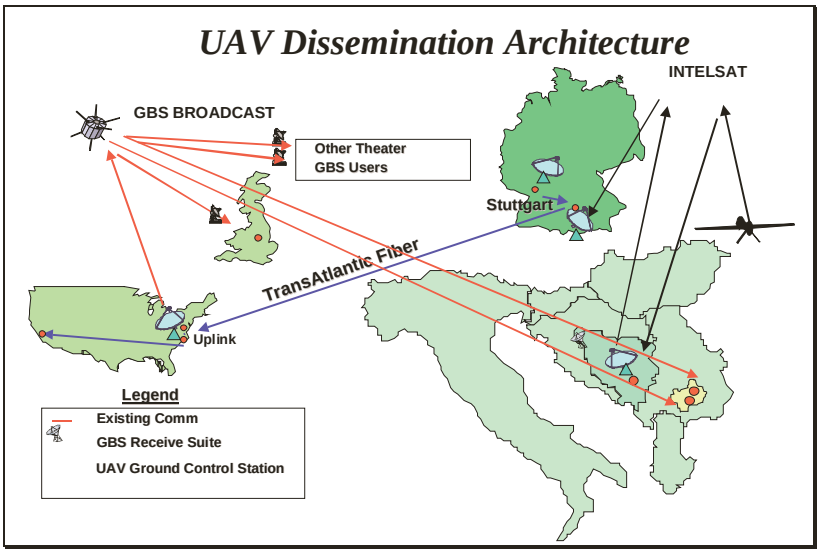
COP = common operational picture

Figure 30

Hunter is the Army version of Predator. The slide shows the antenna on that Hunter. It actually relays data between two Hunters, and in a second we'll talk about that. These are line-of-sight communications systems, so with this satellite antenna we do well with beyond-the-horizon, Predator kinds of stuff.

We have to insert information on this thing I'll call a common operational picture [COP]. We now have capabilities that allow me to do some pretty slick things if I can get the same software and the same display we have in our command centers and if I can get real-time UAV information on that display.

Here's the communications architecture we put together in 1996 (**Figure 31**). Basically, the Predator is flying. The information goes over satellite to a downlink. We stick it on long-haul communications back into the United States, bring it back, and then rebroadcast it to everybody. For Bosnia and Kosovo, the analysts were sitting back in Beale AFB in California, so we were getting real-time imagery off the Predator, analyzing it for quality targets, and sending that information back to the actual shooters. That's the time we got down to four or four and a half minutes from the time Predator identified a tank (we were trying to kill tanks in Kosovo).

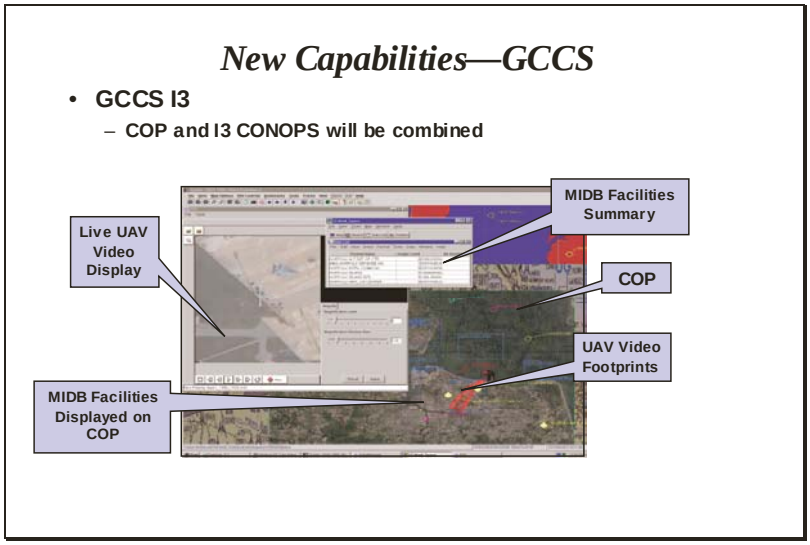


GBS = Global Broadcast System

Figure 31

For Afghanistan, we took that architecture and shifted it 1,000 miles farther east, so that architecture is in Afghanistan today. The other change we made, and I don't have a lot of time to talk about it, is that we put weapons on the Predators. We have the capability of launching Hellfire missiles from Predator today.

The Global Command and Control System [GCCS], if you haven't heard of that, provides our common operational picture perspective (**Figure 32**). This is the imagery coming off a UAV. Once I get it into GCCS, I can move it anywhere in the DOD. The beauty of this system is that it's interoperable, so if somebody can get this I3 [integrated imagery and intelligence] software

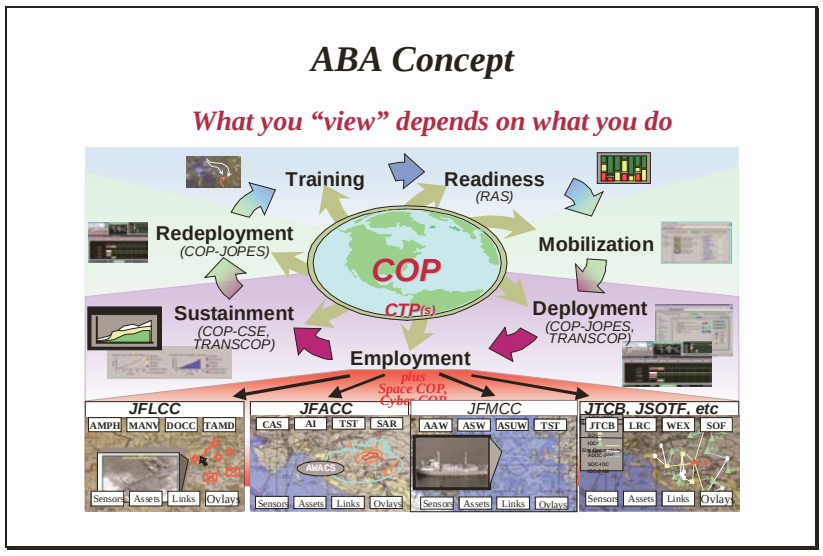


CONOPS = concept of operations MIDB = modernized, integrated database

Figure 32

and can load it on GCCS, I can get not only full situation awareness based on traditional sensors and reporting but also real-time targetable quality UAV stuff. It's pretty slick.

We're expanding that. Integration and interoperability occur not only up and down the chain of command but also laterally (**Figure 33**). Not only are we working from the president to the CINC to the strategic, operational, and tactical guys but we're also at the operational level. I



ABA = area battlefield assessment CSE = communications security element CTP = common tactical picture JOPES = Joint Operations and Planning TRANSCOP = transportation common operational picture

Figure 33

mentioned our JFACC at Ramstein; our JFMCC is down in the Mediterranean. These guys are sharing the same picture today, so we've got horizontal and vertical integration.

So, where are we headed (**Figure 34**)? (I'm going to finish this by four o'clock.) Somebody asked me about interoperability. My view is that we've got to get the same software. I don't care what everybody says; I can't do this through standards. All our C2 is on a single network. That gets us around the security problem I talked about. If you can get your information on our secure Internet—our SIPRNet—I can almost guarantee you that we can interoperate. So, from a U.S. and joint perspective, getting on the SIPRNet is a big deal. We have single workstations for these things. We want a COP.

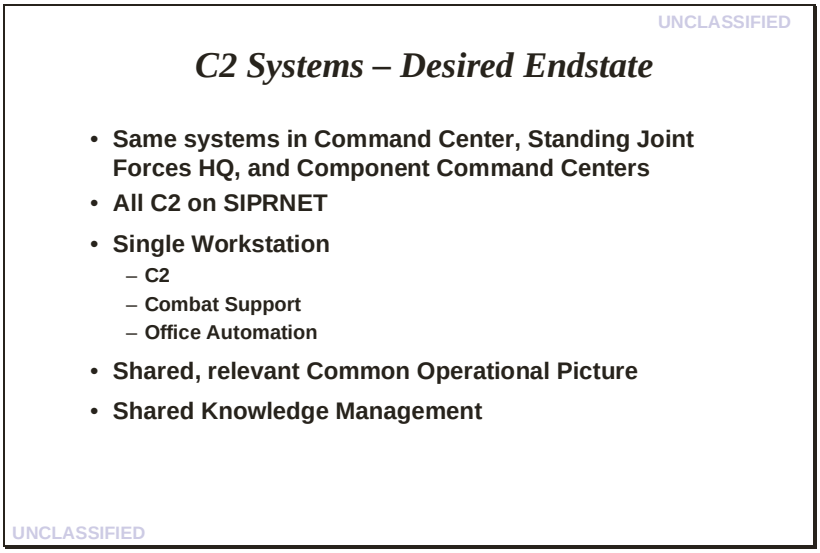


Figure 34

I've got the imagery; I've got the communications system to distribute it; I've got a way to display it; but I just sat there getting hell from the support guy in the command center because he's got too much crap on his table. Let's talk really quickly about all this so-called knowledge management or knowledge walls (**Figure 35**). We're going to do that. The whole intent of knowledge walls is to take that plethora of data that we've given them—I can give you more megabits than you can shake a stick at—and figure out how to distill the important stuff, get it up to the decisionmaker, and let him make an executable decision. We're doing that. You know who does this well? The Navy, because the Navy has this problem of limited bits. They get so much information, and once they get it they're able to make near-real-time decisions as a corporation on a limited amount of data. So a lot of the knowledge-wall thinking going on in the DOD is coming out of the Navy.

Student: Just quickly, how would you compare the size of the pipes on an embarked flagship to what the JFACC can do?

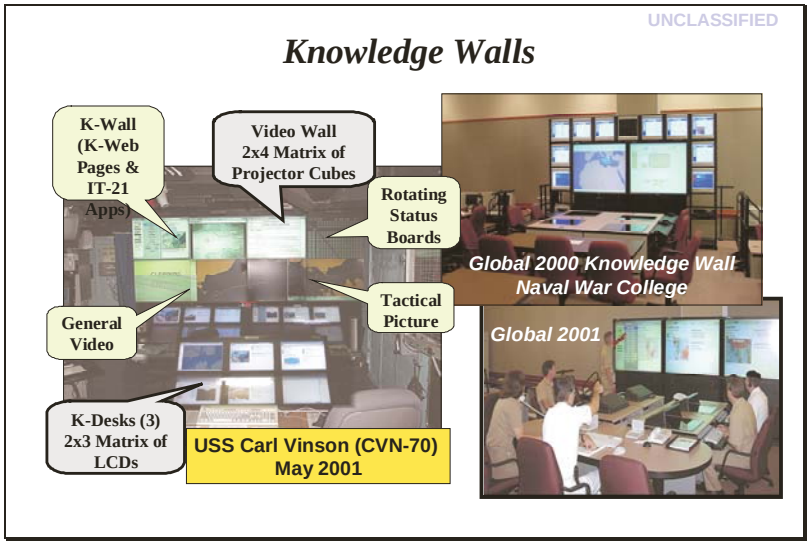


Figure 35

Salisbury: In terms of bits? On a flagship, on the *LaSalle* today, I get about 70 megabits. That's through some commercial stuff, the GBS, as well as traditional Navy communications. It's not two-way in all cases, but it's actually pretty good.

Student: How does a carrier compare?

Salisbury: A carrier is better. I can get more data on a carrier. We've invested more money in carriers than in flagships. If I'm going to run a JFACC operation, clearly I want to point to either a carrier or a flagship. Actually, I can get gigabits up at Ramstein, because we've got robust infrastructure. My professional recommendation is that, if it's a large-scale JFACC operation, you probably want to do it in a fixed location.

This is a parting thought (**Figure 36**). And that's it.

Parting Thought…

"The computer chip may very well be our most useful warfighting tool. Although it's never a good thing when we lose a Predator on the battlefield, I look forward to many more computer chips dying for their country."

—SECAF, 1 February 2002

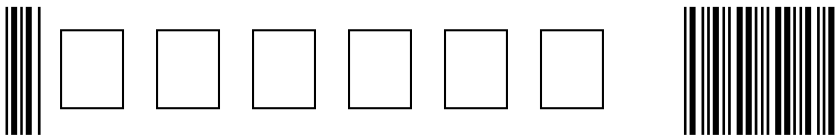
Figure 36

Oettinger: Thank you! I have a small token of our large appreciation. I guess you and Captain Hight are going to have to share.

Acronyms

AEF	Air and Space Expeditionary Forces
AFB	Air Force Base
AOR	area of responsibility
AWACS	Airborne Warning and Control System
C2	command and control
C3	command, control, and communications
C4ISR	command, control, communications, computers, intelligence, surveillance, and reconnaissance
CENTCOM	U.S. Central Command
CINC	commander in chief
CINCCENT	commander in chief, U.S. Central Command
CINCEUR	commander in chief, U.S. European Command
CONUS	continental United States
COP	common operational picture
DOD	Department of Defense
DPG	Defense Planning Guidance
ECOWAS	Economic Community of Western African States
EU	European Union
EUCOM	U.S. European Command
FY	fiscal year
GBS	Global Broadcast System
GCCS	Global Command and Control System
I&W	indications and warning
IFOR	Implementation Force (Bosnia)
ISP	Internet service provider
ISR	intelligence, surveillance, and reconnaissance
JCS	Joint Chiefs of Staff
JFACC	joint forces air component commander
JFCOM	U.S. Joint Forces Command
JFMCC	joint forces maritime component commander
JIACG	joint interagency coordination group
JIATF	joint interagency task force
JPG	joint planning group
JSOTF	joint special operations task force

KFOR	Kosovo Forces
LOCE	Linked Operations Intelligence Capability—Europe
MIO	maritime interdiction operation
MND	multinational division
NATO	North Atlantic Treaty Organization
NAVEUR	U.S. Naval Forces, Europe
NIPC	National Infrastructure Protection Center
NIPRNet	Unclassified but Sensitive (N-level) Internet Protocol Router Network
OEF	Operation Enduring Freedom
OGA	other governmental agency
PACOM	U.S. Pacific Command
PfP	Partnership for Peace
QDR	Quadrennial Defense Review
SFOR	Stabilization Force (Bosnia)
SIPRNet	Secure Internet Protocol Router Network
SOCEUR	Special Operations Command, Europe
THREATCON	threat condition
TOA	total obligation authority
TRANSCOM	U.S. Transportation Command
UAV	unmanned aerial vehicle
UCP	unified command plan
USAFE	U.S. Air Forces, Europe
WMD	weapons of mass destruction



Seminar 2002

ISBN 1-879716-81-X