

DoD Communications Support to Tele-Medicine

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Thank you, General Gorman.

It's the what not that usually gets me in trouble in my job. Let me tell you a little bit about what I do. Some of you may run into me, some of you will be lucky enough not to run into me. In my role, I am the big, bad guy at OSD that has to approve all of the acquisitions. So whether you're a weapons system or an information system, if you spend over 25 million dollars in any one year, which at today's inflation rate, just about everything we do probably breaks that, you're going to have to come and see me sooner or later or anyway. And we work very hard to help you get the programs through.

Little did I realize three or four years ago when I was in the Army (I spent 25 years in the Army). General Kind, General LeNoue, myself, and George Singly were called into General Sullivan's office, and he told us to do some experiments with this telemedicine and remote medical monitoring capability which at that time which was a gleam in the eyes of people like General Gorman and General Laneu, and such visionaries. We had no idea that we would be where we are today. Absolutely tremendous execution, tremendous strides, tremendous opportunity for this great nation and for the World. I'll have the honor tomorrow, you'll see me walking around here with the Delegation from the Peoples Liberation Army (PLA). I'll have the number 2-3 star from the PLA, spending most of the afternoon here with us, looking at all the fine work that you all have done. But, anyway, let me tell you why we are here today. Why I am here. General Gorman asked me to concentrate on probably two of the toughest issues that we are all going to face. That is the telecommunications and the bandwidth aspect. As you all out there are trying to shove more bits and more data across everything we want to do from the foxhole all the way to base of operations here in the Continental United States.

Let me have the next chart please. I will give you an astounding yes. Absolutely, we are worried about communications and bandwidth, but we have it under control. Communications is definitely a key element of the telemedicine. That is what the tele means in telemedicine. It is definitely one of the most growing capabilities, but we see it as only one of many functional areas that we have to deal with up at OSD. We have items such as the teletraining, the distance learning, the teleconferencing, packet-based video, the imaging and

dissemination, modeling and simulation. There are many, many, many aspects and functional areas right now that are also looking at passing the types of data and the types of images that you are looking into in the telemedicine area.

So our job is to design a robust, scalable telecommunications network for the future that can meet all of these requirements and not have separate stovepipe uninteroperable networks that we have had in the past. So again, this technology spans a lot of the functional areas. We consider telemedicine as one of the leading edges that will help us get there.

Next chart, please. Some of the things that we are doing, many of you know that I report directly to Emmett Paige, the Assistant Secretary for C3I. He is a devout zealot in this technology, and really supports Dr. Joseph in everything that we are trying to do. He is a member of the Telemedicine Test Board, Board of Directors for the Test Bed Activities. We have General Edmonds at DISA right now providing support from his D7 shop. A tremendous amount of enterprise integration support to all of the medical community. And we are right now working with the Joint Staff and DISA on video teleconference and video strategies that we are presently putting into the draft RFP that will be released in June of this year. So all of you industry out there, mark your calendars. You will see a draft RFP for the Defense Information Systems Network (DISN) in June 1995.

As I said, we are trying to develop that robust infrastructure not only for telemedicine but for the other applications as well. It must be integrated. We don't even want to own it as we have in the past. We want to buy bandwidth and commercial services from the providers. We don't believe we need to own everything anymore as we have in the past.

Next chart. Some of the requirements that we are looking at, beyond some of the major functions that you are seeing here demonstrated, we have to plan for other things, such as the electronic mail, access to specialized information, direct communications with pharmacies, interface with the civil agencies, video conferencing, patient status monitoring (there is a PSM device out that we are looking at). A lot of these may be unique to telemedicine, but as I said before, we are viewing these only as part of a greater plan to provide the equal capability for all of the rest of the functional areas within DOD. We are talking about the security, the bandwidth, the computer and the video transmission. All tough areas that we have to deal with.

General Gorman asked me about multilevel security. Are we there yet? No, we are not. Do we want to hold up this program based on some technology that we are gearing up right now? The answer is no. We want to move forward with as much level of security that we have today, but make it scalable, make it upgradable with technology insertion capabilities, so as the Multilevel Level Security (MLS) technology evolves, we then go to the multi-aspects of MLS down the road.

We have learned a lesson in many programs where we put complex technologies too far up front in the program life, that it bogs down the program. It prevents the capabilities from getting out to the user. So the lesson this time is, to make it scalable so that industry can come in and keep adding to the technology as industry creates the great improvements that they do every six or eight months in this area. We want to use existing bandwidth. It's the most cost effective manner, and we want to have bandwidth on demand. In the RFP that we are working right now, you are going to see asynchronous transferred mode ATM and Sonet technology. Its a requirement in the drafted RFP that you will see in June.

Next chart. Now the Defense Information Network has a global objective. Because again, we have over a hundred different networks out there today that we are trying to take apart and go into one global enterprise for the future. We want to be seamless, we want to be responsible to all of the users, telemedicine included, obviously. We want to be scalable as I have already said.

We want to provide that assured connectivity anywhere and everywhere that we go. Especially from the tactical area of operation back to the hospitals and to the areas of expertise back in CONUS. General LeNoue remembers that I bought him a whole bunch of IMMARSAT satellite terminals during Desert Shield and Desert Storm, that was because we couldn't get a lot of bandwidth on the tactical systems. But we proved a commercial satellite technology can in fact meet our needs and does in fact do the job. The DISN architecture calls for maximum utilization of commercial satellite technology. A lot of technology insertions, survivable, secure, and again, interoperable and extremely cost effective.

Next chart. If I were to draw you one diagram to make you understand what it looks like, you'd look at the deployable piece of it, the deployable DISN as we call it, all the way down to the tactical area, no matter where you are. Commercial or tactical satellite-type of interconnect activity back to a CONUS integrated wide-band transmission system. It could be military satellite or it could be commercial satellite. And then

interfacing with the public switch network. Back here in CONUS we will make maximum utilization of POST-FTS-2000, a network that we are building for the rest of the government. All of our requirements within the Continental United States have been passed to the General Services Administration for the POST-FTS-2000 contract that we are presently working with them.

If you look at the bandwidth manager inside the box, you can see that he can scale and he can switch to any of the services that you all are looking for. Everything from voice video, video teleconference data, to defense message system, and any other form of data transmission, X-rays, or any things that you would like to send. That is the vision. That is the goal of this new infrastructure that we are now getting ready to put an RFP out on.

All of you know the tyranny of the communication centers. The Defense Message System will eliminate the need for paper messaging across the Defense Department for the first time. We are going to close all those message centers down, and get rid of all that paper that comes up and down. It will be print on demand only when you want a copy. That contract, by the way, under DMS, will be announced within the next two to three weeks. Contract award is scheduled in the early part of April.

Next chart. So our plans are to accommodate your bandwidth with the SONET and ATM technology that we are adding on this RFP. No doubt about it. Industry has told us you cannot bog them down with what you want to send. So we will give the bandwidth on demand, the proper capability to you for everything that you are looking for. Increased speed, increased capacity, and obviously we are hoping for reduced costs. It's got to be cheaper than the 110 different networks that do not interoperate that we have out there today.

Why ATM? For the reasons I just explained. Voice and video data across the same media maximizes the use of the available bandwidth and we get the higher bandwidth up to 51 megabits and 2.4 gigaflops. I don't think you can even come close to what your trying to do with those data rates.

We will put a lot of capability where you need it. At those areas where you have the high bandwidth users. And the classified/unclassified will be interspersed. Security will be looked at as we build the National Information Infrastructure (NII), I am on the panel with the Department of Commerce, and the people over at Agriculture and the rest of the Federal Agencies. And we are working the security aspect of the NII.

Next chart. So in summary. The answer to the question is The Defense Information System, Draft RFP will be out in June. Final RFP in January of 1996. Services to be turned on very shortly thereafter, within six or eight months. It will provide the worldwide communications infrastructure that you are looking for. We will migrate all of the existing initiatives that you have from FTS-2000, whatever you are using, publish switch networks to this new capability. We will do all of the interfaces that you are looking for, and we will provide a capability for facilitating for the future technology as it emerges, with a lot of technology insertion capabilities.

Thank you for your attention, I look forward to any questions that you may have.

DOD Communications Support to TELE-MEDICINE

COMMUNICATIONS AND TELE-MEDICINE

YES !!!

COMMUNICATIONS IS A KEY ELEMENT IN TELE-MEDICINE

BUT

TELE-MEDICINE ONE OF A SUITE OF GROWING
CAPABILITIES BEING DEVELOPED

tele-training - distance learning	packet based video
tele-conferencing	desktop video conferencing
modeling and simulation	imaging and dissemination

AND.....

THIS TECHNOLOGY SPANS ALL FUNCTIONAL AREAS

SO.....

DOD CONSIDERS TELE-MEDICINE AS A "LEADING EDGE"
FUNCTIONAL APPLICATION THAT HAS
TO BE SUPPORTED BY THE INFRASTRUCTURE

ONGOING ACTIVITIES

SUPPORT THE FUNCTIONAL TO DEVELOP TELE-MEDICINE

- ASD(C3I) A MEMBER OF THE TELE-MEDICINE TESTBED BOARD OF DIRECTORS.
- ENTERPRISE INTEGRATION SUPPORT - DISA (D-7)
- OSD, JS, DISA LOOKING AT VTC & VIDEO STRATEGY

DEVELOPING A ROBUST INFRASTRUCTURE CAPABLE OF SUPPORTING DoD TELE-MEDICINE

- DoD (DISA) SEEK COMMONALITY ACROSS FUNCTIONAL AREAS
- BUILDING AN INTEGRATED INFORMATION INFRASTRUCTURE THAT WILL INTEGRATE VIDEO FUNCTIONALITY (TO INCLUDE TELE-MEDICINE)

USE OF AVAILABLE BANDWIDTH

FUNCTIONAL MEDICAL REQUIREMENTS INCLUDE

- ELECTRONIC MAIL
- ACCESS TO SPECIALIZED INFORMATION - PEOPLE AND DATABASES
- IMMEDIATE/DIRECT COMMUNICATION TO PHARMACIES
- RESTRICTED FIELD ACCESS TO PATIENT MEDICAL RECORDS
- TRANSFER OF DIGITAL IMAGERY (X-RAYS, PATHOLOGY, OPHTHALMOLOGY, ETC.)
- INTERFACE WITH DoD & CIVIL AGENCIES & SYSTEMS
- VIDEO CONFERENCING
- MOBILE ACCESS
- PATIENT STATUS MONITORING (TELEMETRY)
- DEPLOYABILITY

**SOME TELE-MEDICINE FUNCTIONAL APPLICATIONS ARE UNIQUE
HOWEVER COMMUNICATIONS TO SUPPORT TELE-MEDICINE ARE NOT**

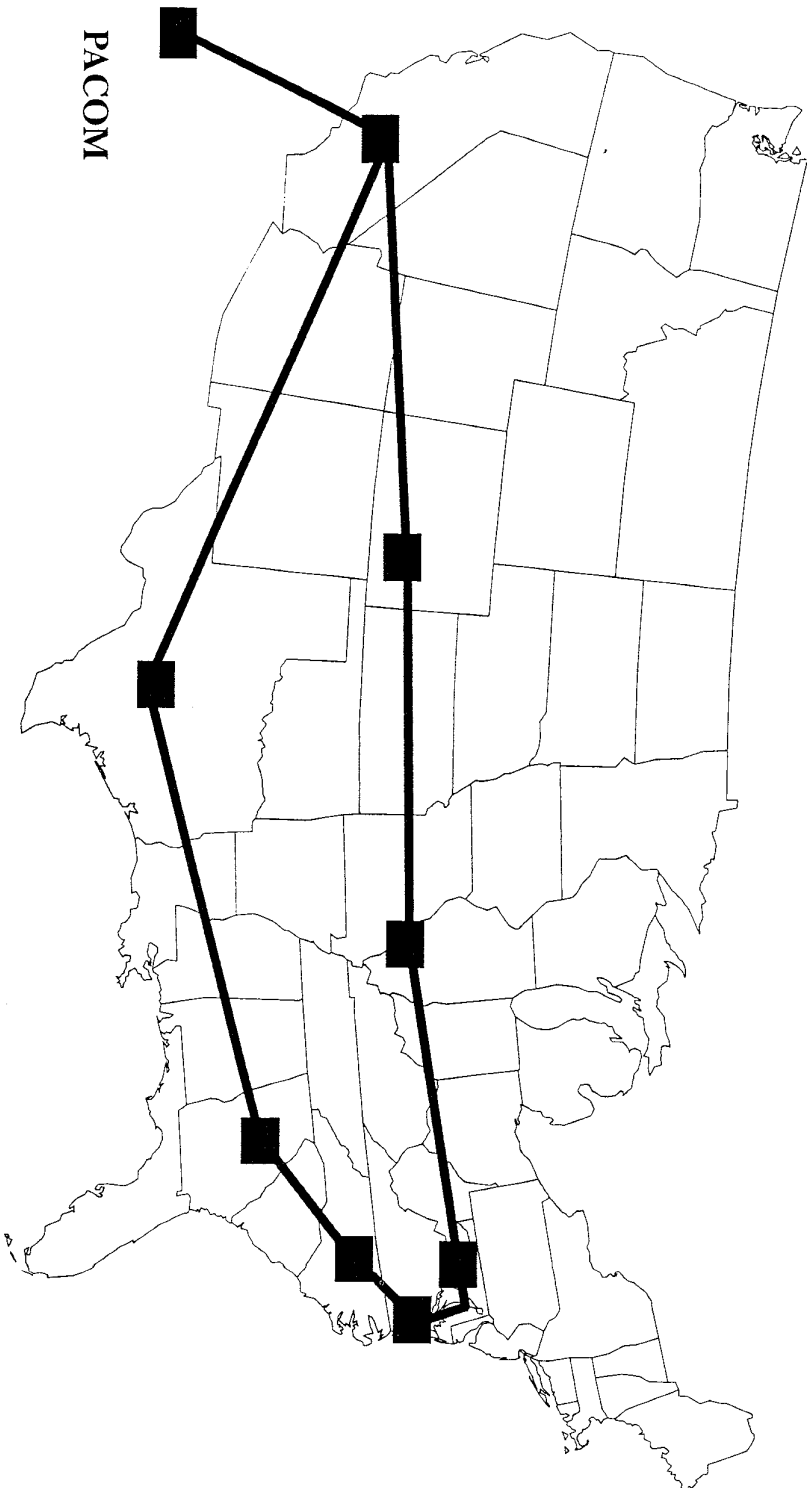
- SECURITY, BANDWIDTH, INFORMATION MANAGEMENT, COMPUTING, VIDEO TRANSMISSION

DOD APPROACH

- SEEK COMMONALITY AND INTEGRATE ALL FUNCTIONAL REQUIREMENTS INTO ITS DISN STRATEGY
- USE EXISTING BANDWIDTH IN THE MOST COST EFFECTIVE MANNER - BANDWIDTH ON DEMAND
- ENSURE SECURITY, AND A ROBUST NETWORK

LEADING EDGE NETWORK 1995

Defense Information Systems Agency (DISA)



DOD'S DISN PLANS

Defense Information Systems Agency (DISA)

- **LOOK AT SONEt + ATM**

- Speed ↑. . . Capacity ↑. . . Costs ↓

- **WHY ATM?**

- Allows Integration of Voice/Video/Data Across Same Media
- Maximizes Use of Available Bandwidth
- Higher Bandwidth for Video/Imagery: 51 Mbps to 2.4 Gbps

- **CONUS/OCONUS Medical Facilities Collocated with High Bandwidth Users**

- **Medical Data Shares Transmission Media with Other Users**

- **Classified/Unclassified ATM Cells Interspersed (security)**

- **"Pipes" Sized to Satisfy Anticipated Bandwidth Growth Requirements**

DISN SUPPORT TO TELE-MEDICINE

- **Provide a World-Wide Communications Infrastructure for Tele-medicine.**
- **Migrate and Consolidate Communications for Existing Initiatives.**
- **Interface with Public, Commercial and DoD Health Care Systems.**
- **Facilitate Advanced Technology Insertion.**