Memo To: Strategic Plan for Information Technology Networking Subcommittee:

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From: David Lassner

Subject: Memo Regarding UH-Manoa Data and Video

As promised, enclosed is a copy of the memo from Allan Ah San, Walter Yee, and myself that was discussed at yesterday's meeting.

Enclosure.
MEMO TO: Manoa Deans and Directors
FROM: Allan Ah San, Director of Campus Operations
       David Lassner, Director of Information Technology
       Walter Yee, Computing Center Director
SUBJECT: Data and Video Aspects of Telecommunications Project

With campus voice services now cut over to our new telephone system, here is an update on the other aspects of the campus telecommunications project that will become available over the next several months. Please share this information with your Chairpersons and staff as appropriate.

Background on Infrastructure

While our new phone switch is classified as "ISDN-capable", meaning that it will adhere to the emerging standards for Integrated Services Digital Networks, we expect that at least for the near future the bulk of our data and video information will be carried on separate wires that are also being installed as part of the Manoa campus telecommunications project. This strategy will allow us to take advantage of the most effective current telecommunications technologies while positioning ourselves to move into international standards for integrated networks as they become feasible and economical.

In addition to the new voice switch, phones, and voice wiring that you are already using, the telecommunications project also provides a new conduit system and wiring infrastructure for data and video. Unlike the voice system, which was delivered operational to the University, the data and video component of the project is an infrastructure which we must ourselves integrate and adapt to our individual requirements. Construction of this portion of the project is not yet complete. The data and video infrastructure is expected to be finished this fall, and at that time we will be able to begin making the connections that allow us to use it. When completed, the data and video infrastructure will consist of the following:
• **Interior, unshielded twisted-pair copper wire and data jack system that parallels the voice wiring system.** Every location with a phone can also be wired for data. This system is extremely flexible and can be used for asynchronous terminal lines (e.g. "PACX" lines) or local area networks (ethernet or token ring). The flexibility of this interior wiring system means that some work and equipment will be required in each building to tailor and interconnect the infrastructure to meet the specific needs of the occupants.

• **A limited interbuilding copper wire data infrastructure.** A limited amount of copper wire was installed for data connections between buildings. This wiring will provide a cost-effective way to provide small numbers of low-speed terminal connections from any building on campus.

• **A new interbuilding fiber optic infrastructure.** Multiple strands of multi-mode and single-mode fiber connect all permanent buildings on campus. This can provide large numbers of multiplexed terminal connections as well as allow more units to join the University's high-speed data network with connectivity into the national and international academic networks.

• **A new interbuilding coaxial cable infrastructure.** Coaxial cable to all permanent buildings on campus will allow major expansion of the Campus Television System which allows origination and reception of video signals among many sources such as HITS, commercial television, satellite dishes, campus studios, and the Wong Audio-Visual Center.

• **A limited intra-building coaxial cable infrastructure.** Interior coaxial cabling will be provided to a number of campus auditoria and wiring closets for near-immediate, end-user access to the Campus Television System.

**Management Responsibilities**

In order to clarify responsibilities in this area, a new executive policy on management of telecommunications networks (E2.207) specifies that:

• Campus Operations has responsibility for the campus conduit system, wiring infrastructure, and all voice services.

• The Computing Center has responsibility for the management of campus data networking and will work closely with the Management Systems Office to assure continuity of network functionality.
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• The Office of Information Technology has responsibility for the management of the Campus TV System and will work with campus media support units as appropriate.

The Council of Directors of Information Technology serves as the coordinating body for overall telecommunications activities on campus and systemwide.

Planning for Your Use of the Infrastructure

Even though the infrastructure is not yet completed, it is not too soon for you to begin thinking about how you can use it within your units. While final policies and charges have not yet been established, this memo contains the best available information on which you can base your plans. For consultation on your video networking needs, you may call the Office of Information Technology at 956-5023. For consultation on your data networking needs, you may call Mr. Jeffrey Blomberg of the Computing Center at 956-2402, or if your office works with the Management Systems Office you may consult with them on your administrative networking requirements.

Expected Operational Policies for Campus TV System

Users of the Campus TV System will not be charged. The Office of Information Technology will be working to expand the scope of the system to reach more locations as quickly as possible. Priority will be given to new installations at sites which can make the most instructional use of the system, which will originate programming of interest to others, and which provide new capabilities that can be shared with the University at large. Installation charges will be assessed for extending the system to buildings which were not cabled as part of the initial telecommunications project. Requests may be made by memorandum to the Office of Information Technology describing the location and expected uses of the proposed Campus TV System connection.

Expected Operational Policies for Data Infrastructure

Data connections currently serviced through Hawaiian Telephone wiring on campus will be migrated to the new University-owned wiring. This will eliminate the monthly recurring charges now being paid to Hawaiian Telephone. The Computing Center hopes to centrally fund most or even all of the cost of the new data infrastructure. Therefore any recurring charges needed to recover the cost of the new infrastructure are expected to be minimal. At this time, Hawaiian Telephone is physically making all
copper data wire connections, and departments are responsible for the cost of these installations, currently expected to be about $200. In general, any use of the data jack is expected to incur this one-time charge. The wiring installation charge may be eliminated if the University is staffed to perform this function in-house in the future. In any case, departments will also be responsible for funding the equipment necessary to provide the appropriate type of connectivity to meet their needs.

For an asynchronous terminal connection ("PACX line"), in addition to the line installation, there will be a one-time $200 charge payable to the Computing Center. This will cover the cost of the ports consumed at the Computing Center as well as any necessary multiplexing or networking equipment used to provide the connection across the interbuilding infrastructure.

For more sophisticated network connections requiring twisted pair concentrators, bridges, routers, components, repeaters, or network interface cards, the department will be responsible for all equipment costs. The Computing Center will prepare an open-ended bid for recommended networking equipment to minimize costs and assure compatibility. The Center will also coordinate requests within buildings to attempt to cost-share whenever possible, and will provide assistance and advice in the installation of the equipment if it is to be interfaced to the University network. The campus backbone hardware will be owned, operated, and maintained by the Computing Center.

Private departmental use of individual strands of fiber will not be permitted at this time. This infrastructure is a campus resource which, properly managed, will serve the best interests of the entire campus for many years to come. Improperly managed, it could easily be saturated by a small number of individual applications. Similarly, departments may not rewire the internal, building copper data connections themselves. The Computing Center will work with departments to determine how their individual needs can be met while assuring proper record-keeping and management.

Requests for data connections must be made using the standard Telecom Request form and submitted to the Telecom Office, which will route them to the Computing Center for review and approval.

**Conduit System**

Once all old data circuits are moved to the new wiring system, the old inter- and intra-building conduits will be cleared of all unauthorized wiring. Use of the conduit systems, both old and new, will be managed by the Telecom Office. The Computing Center or Office of Information Technology will coordinate requests for new uses of the conduit system for data and video
applications with final design and approval to be handled by the Telecom Office. As with the new cable being installed, improperly managed use of the conduit system could easily consume all available facilities.

Summary

The completion of the data and video infrastructure will make it possible to bring new information technologies to more locations on campus than ever before. It is a state-of-the-art cable plant design comparable to the best anywhere, and it can be used in many ways. However, it will be impossible to simultaneously activate all locations to serve everyone. The campus support organizations will attempt to help you determine the most appropriate uses within your unit, and will assist in new installations as quickly as possible. There will be installation and equipment charges for new data connections that each unit will have to assume. Please do not hesitate to call any of us if you have further questions.

cc: Manoa Executive Council