

E. INFORMATION TECHNOLOGY

BACKGROUND

Information technology refers to voice, data and video transmission systems, as well as some life-safety systems.

Information technology links the various UCSF sites together, connects users at each site with each other, and connects resources at UCSF with resources world-wide. Information technology refers to voice, data and video transmission and communication; telemetry control (activation of remote equipment); and life-safety systems (e.g., fire alarms). These systems use fiber optic or copper cabling to transmit data. Opportunities exist to develop cabling systems which can be shared by multiple systems, enhancing efficiency and economy in the future.

The existing UCSF network architecture consists of many Local Area Networks¹² in single departments or within single buildings, interconnected by a Wide Area Network.¹³ There are presently about 4,000 registered connections to the UCSF network, which is increasing by about 150 new connections monthly. The UCSF network is connected to the Internet¹⁴ through connections to the Bay Area Regional Research Network at UC Berkeley and San Francisco State University. The UCSF network is also connected to the UC Inter-campus Telecommunications Network through UC Berkeley, the UC Office of the President, and UC Santa Cruz.

The current UCSF information network system lacks standard systems architecture (capacity, configuration, and technology used) and protocols (the standards that computers use to exchange information). The system also is incomplete in that many buildings are not connected to the network. In addition, in many cases the network capacity is insufficient for the sophisticated applications of a medical center and research and instruction university such as UCSF.

At present, the capacity of existing UCSF information systems is very limited, with fiber optic cables to buildings limited or non-existent.

Network capacity requirements generally increase by orders of magnitude with more sophisticated applications, and fiber optic cables are necessary to provide this higher capacity. At present, the capacity of the UCSF backbone is very limited, with fiber optic cables to buildings limited or non-existent. In addition, the inter-site connections do not have sufficient capacity to provide rapid transfer of information between UCSF sites. In a medical center and instruction and research setting, instant transfer of information within each site, between sites, and to other institutions is essential to perform applications such as transfer of visual images for collaboration on surgery, access to library databases for research material, and distant learning and teleconferencing. Capacity for those applications currently is very limited at UCSF.

¹² A Local Area Network (LAN) is a data-communications system that spans a physically limited area (generally less than a mile or two). LANs can be limited to a single department, floor, or building depending on the configuration of the network.

¹³ A Wide Area Network is a network interconnecting multiple LANs spanning multiple sites.

¹⁴ A concatenation of many individual campus, state, regional, and national networks into one single logical network all sharing a common address scheme.

At present, UCSF is developing plans to provide a first increment of fiber optic cabling between buildings at Parnassus Heights. In addition, most UCSF buildings were not designed to accommodate the equipment required for information technology systems, and with a few exceptions, existing equipment rooms cannot support networking hardware. Planning for space for network equipment will use space within existing buildings.

DETERMINANTS OF THE 1996 LRDP

The information technology component of the 1996 LRDP is guided by the following determinants:

- The LRDP's *Goals and Objectives*; and
- The need to protect the privacy of individuals and groups in the use of electronic communication systems.

INFORMATION TECHNOLOGY NEEDS AND PLANS

UCSF endeavors to accomplish the following through a coordinated plan for information technology:

- Expand and improve communications infrastructure to support current and future demands, including telecommunications.
- Develop and expand capabilities of linkages between all UCSF sites and with other institutions to provide capacity to support applications that enhance collaboration, gain access to resources, increase efficiency and instructional opportunities, and provide equal access to data systems for users.
- Pursue opportunities for UCSF to be at the forefront on information technology applications in order to advance research and clinical techniques, enhance UCSF's position as a leader in these fields, and take advantage of national efforts to create an information network.
- Develop UCSF-wide standards for technologies and system/network architecture, implement technology improvements by UCSF groups in a comprehensive and compatible way, and share information technology and development opportunities between UCSF groups to the extent possible, in order to maximize utilization and effectiveness of investments in information technologies.
- Accommodate space requirements for information technology equipment and wiring into existing buildings through comprehensive network planning and efficient space utilization.

- Enable opportunities for remote access to provide students, faculty, staff, and the community opportunities to access information, to foster distance learning and continuing learning.

To develop comprehensive connections between all UCSF sites, UCSF will require a network center to control and maintain the entire network system at all locations, network distribution centers on each site that are interconnected for redundancy, and distribution frames within buildings to serve as a point of entry for information systems and for distribution to departments and users. Over time, it is expected that facilities at existing sites and the major new site will be designed to provide state-of-the-art information technology, and where necessary to provide central services to which nearby buildings can connect.

*Information
Technology Goal:
Infrastructure*

<p><u>LRDP PROPOSAL:</u> Provide state-of-the-art information technology to UCSF sites and develop a network center to control and maintain connections between all sites.</p>
