



INFORMATION TECHNOLOGY AND INTER-INSTITUTIONAL COLLABORATION:
THE CASE OF THE NATIONAL AUTONOMOUS UNIVERSITY OF MEXICO

by

Victor Guerra
Coordinator of Academic Services
National Autonomous University of Mexico (UNAM)
Mexico City, Mexico

presented by
Mariano Bauer
Institute of Physics
UNAM

The Twenty-first International Conference on the Unity of the Sciences
Washington, D.C. November 24-30, 1997

Committee 1. Session I. Information Technologies and Interinstitutional Collaboration

The Case of the National Autonomous University of Mexico

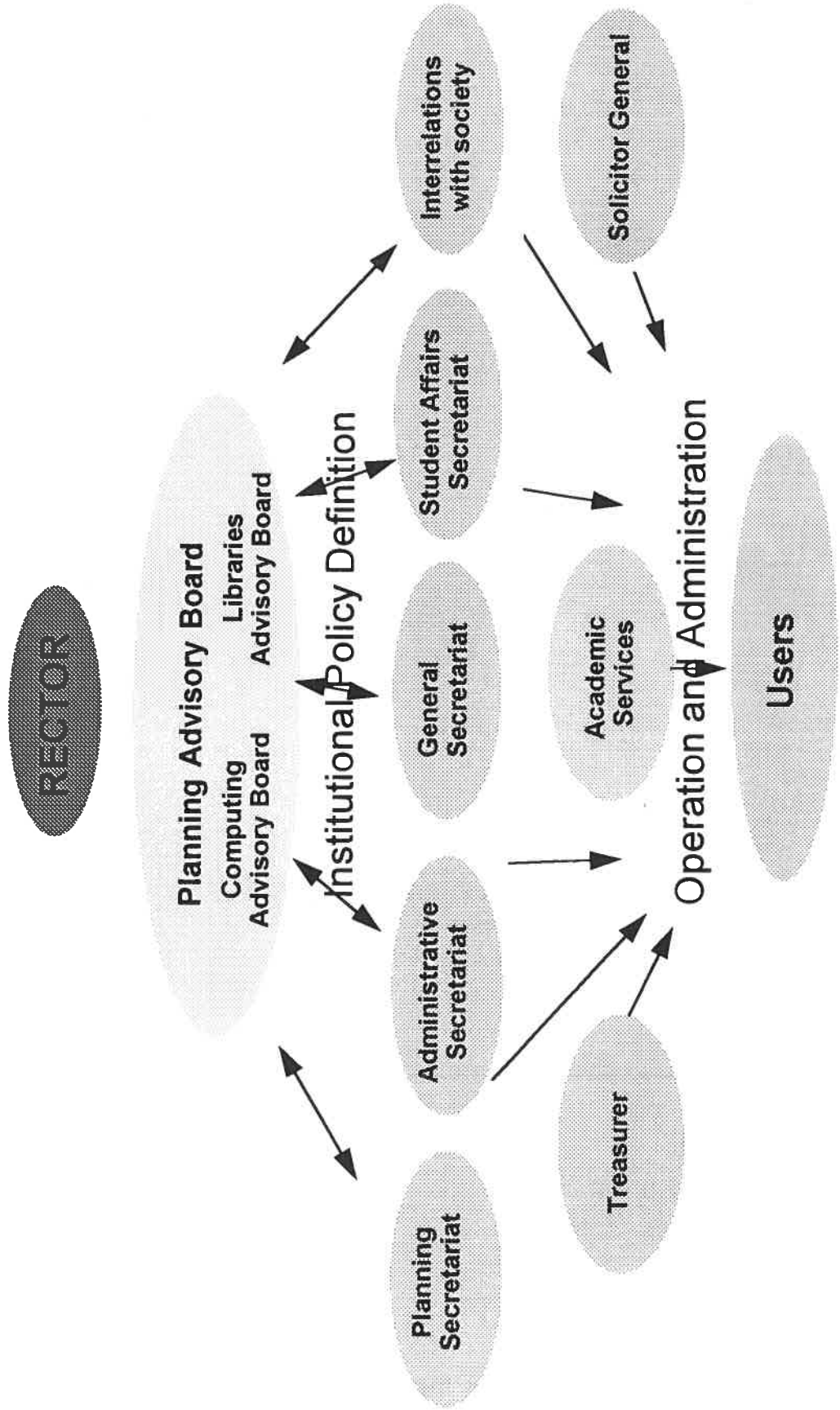
Victor Guerra
Coordinator of Academic Services
National Autonomous University of Mexico (UNAM)

(presented by Mariano Bauer, Instituto de Fisica, UNAM)

The National Autonomous University of Mexico (UNAM), as the leading educational institution in Mexico, recognized early the need to promote an information culture with the implementation and dissemination of the information technologies (infotec) as they developed. Its own institutional program has had the following objectives: a) integrate its students, from high school to graduate level, into the information culture ; b) incorporate the teaching of infotec in the formal curricula of all disciplines ; c) supply the teaching and research personnel with all the tools of infotec for the development of their activities ; and d) provide the institution with a modern computing and telecommunication infrastructure. Under UNAM's technical guidance and leadership, this program has been extended to other higher education institutions around the country, that are now linked together as well as with foreign institutions. UNAM's infotec capability is systematically sought in support of diverse federal government programs. There is also an active collaboration with several academic institutions in Latin America.

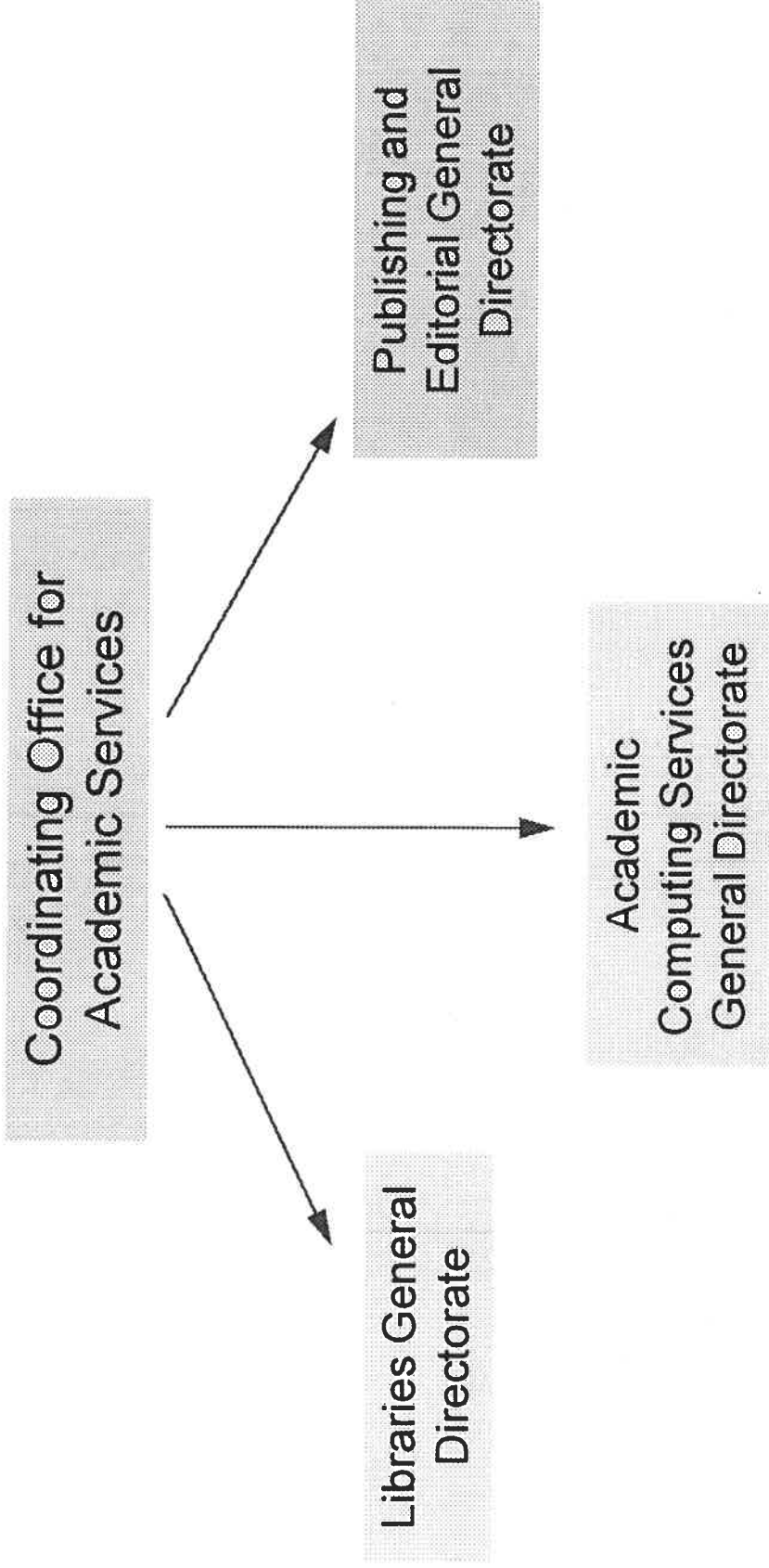


PLANNING AND ACTION SCHEME





COORDINATING OFFICE FOR ACADEMIC SERVICES





HISTORY

- 50's: UNAM acquires the IBM-650: the first computer in Latinamerica
- 60's: First computer assisted research
- 70's: First connections to a central computer using copper lines
- 80's: BITNET telephone links to San Antonio
 - Connection to the NSF network through the Morelos II satellite
 - First LAN interconnection through fiber-optic
 - Rapid expansion of communications infrastructure
- 90's: UNAM becomes the first Latinamerican Institution connected to INTERNET
 - RedUNAM is born
 - UNAM acquires the supercomputer Cray Y-MP 4/432



INFRASTRUCTURE (1996)

- **PERSONAL COMPUTERS**
 - A total of: 26,000 microcomputers
 - High-school: one for every 24 students
 - Undergraduates: one for every 15 students
 - Graduates : one microcomputer or work station for every 13 students
 - Research faculty: one for every faculty member
 - **VOICE/DATA NETWORK**
 - Digital ISDN telephone system with 13,000 sets
 - Internet connection
 - More than 600 local networks interconnected via TCP/IP over Ethernet
 - FDDI backbone
 - 15 satellite links, 24 microwave links and 12 fiber-optic links
 - 14,000 computers networked
- **HIGH PERFORMANCE COMPUTING**
 - One Cray YMP4/464 and One Cray Origin 2000 S2MP
 - Visualizing laboratory
 - 2000 workstations.



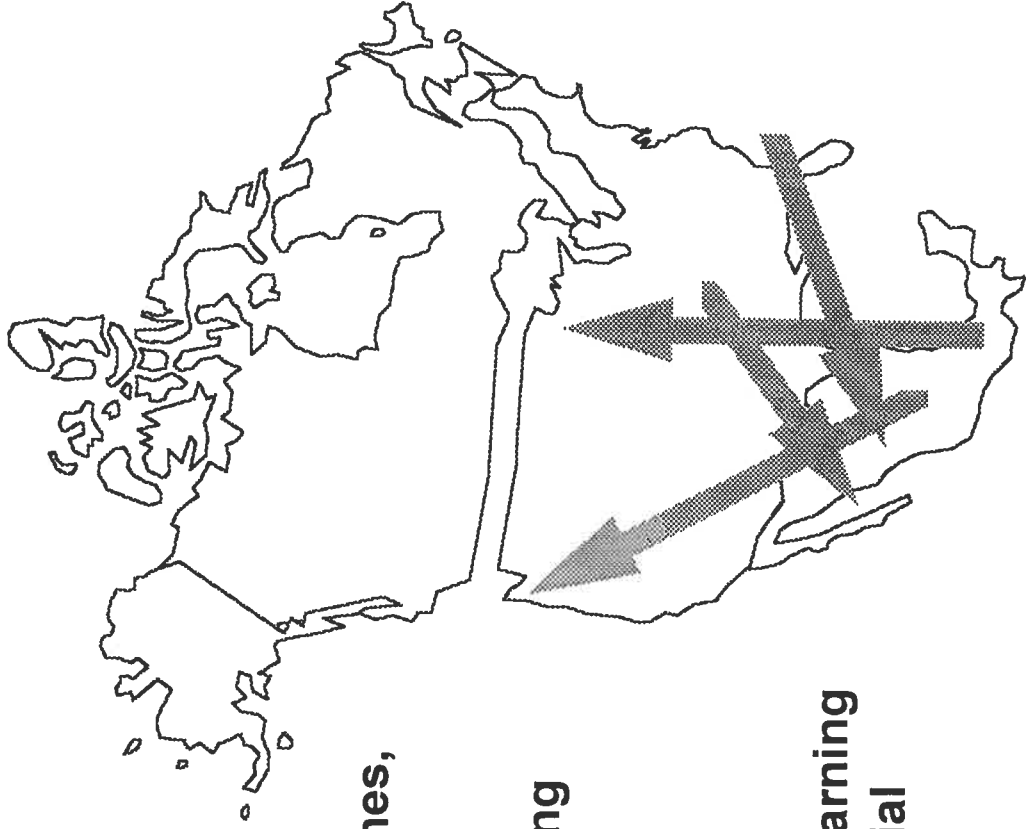
Multinational Information Flow

Mexican Involvement

**Law, Commerce, Art and Language
Libraries, Newspapers and magazines,
Financial Information
Data bases: Human Resources,
Image Data Bases, Distance Learning**

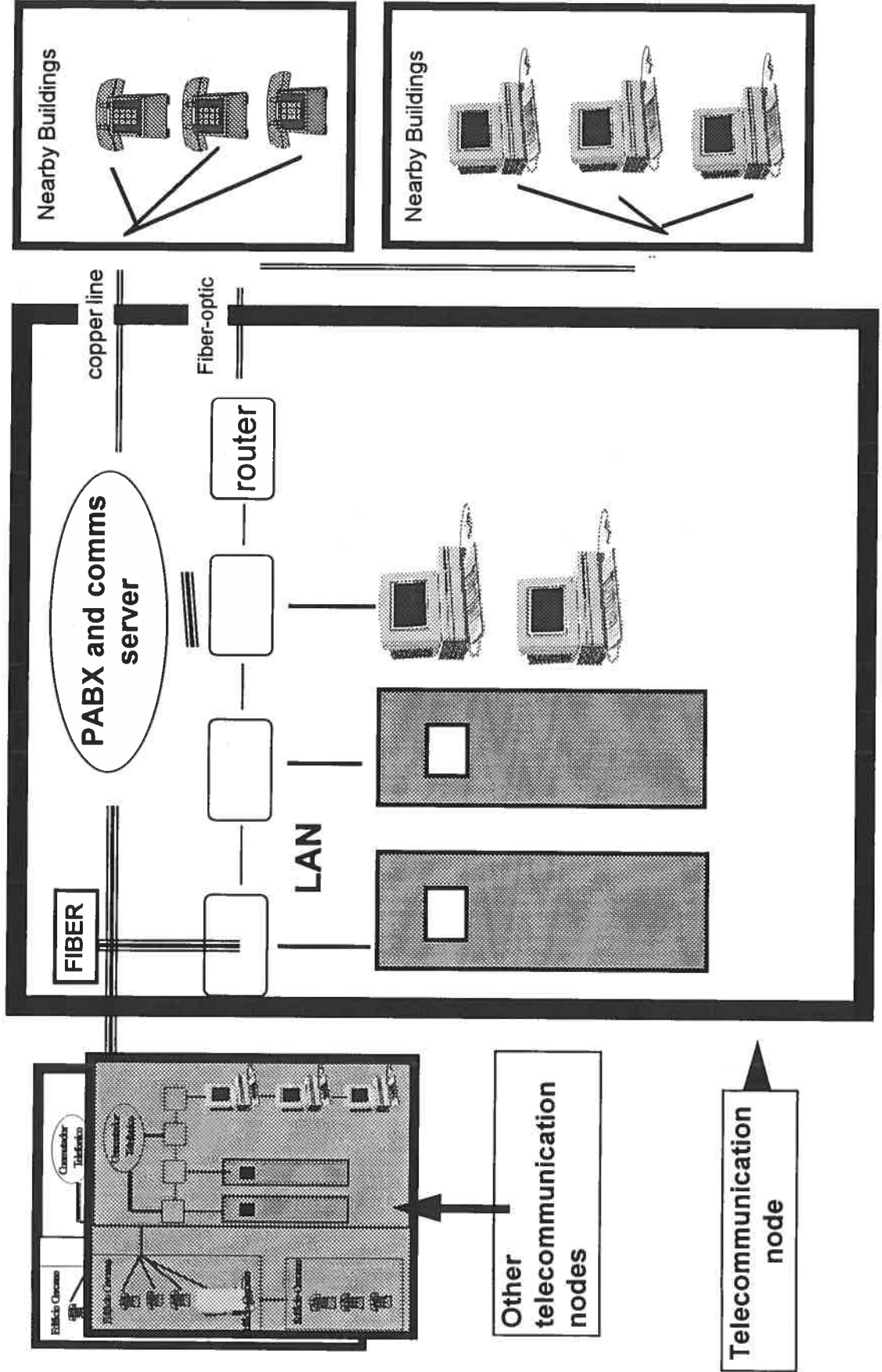
USA Involvement

**Technology, Technical Distance Learning
Language, Commercial and Financial
Information, ...**



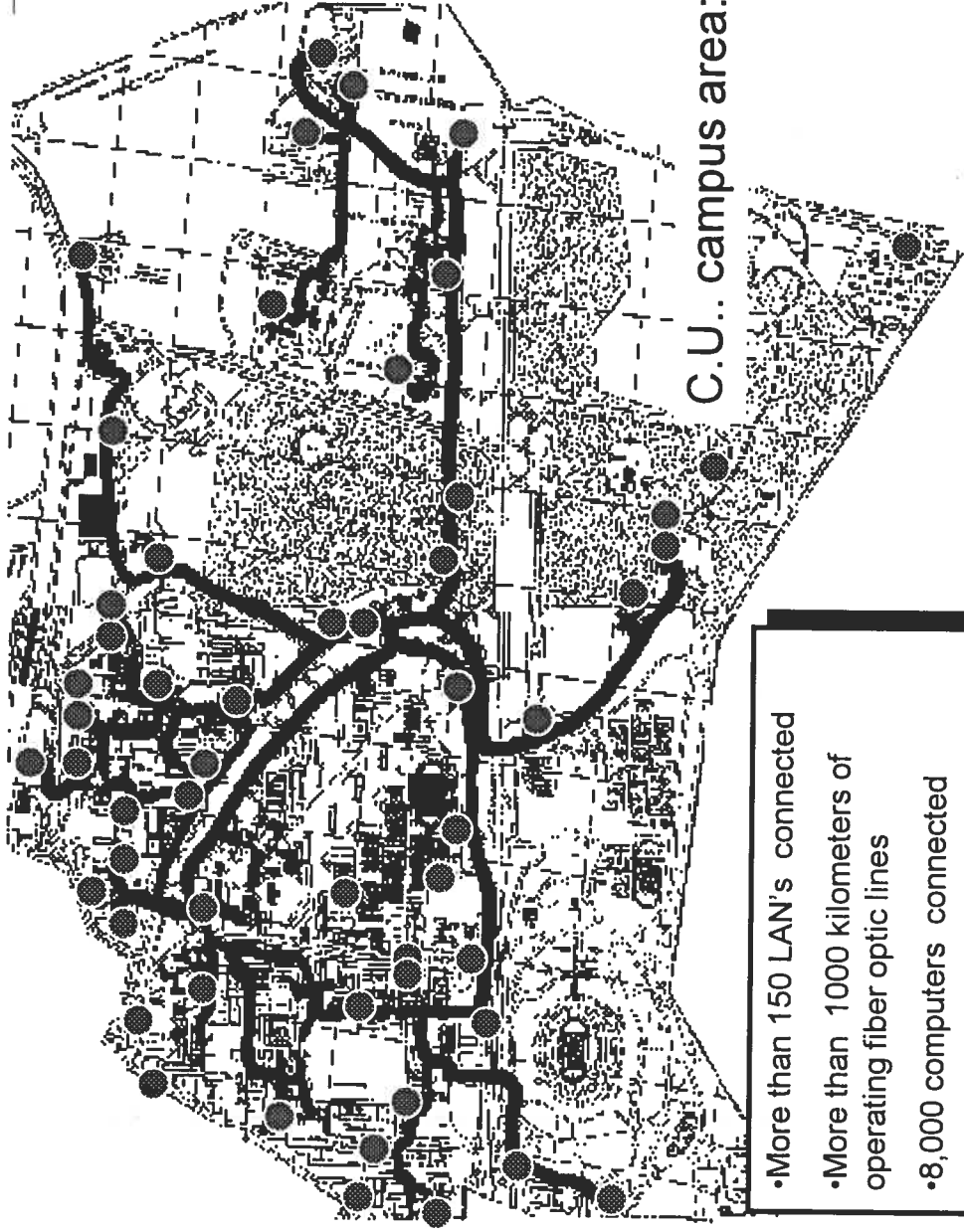


VOICE-DATA INTEGRATION





CAMPUS FIBER-OPTIC LAYOUT

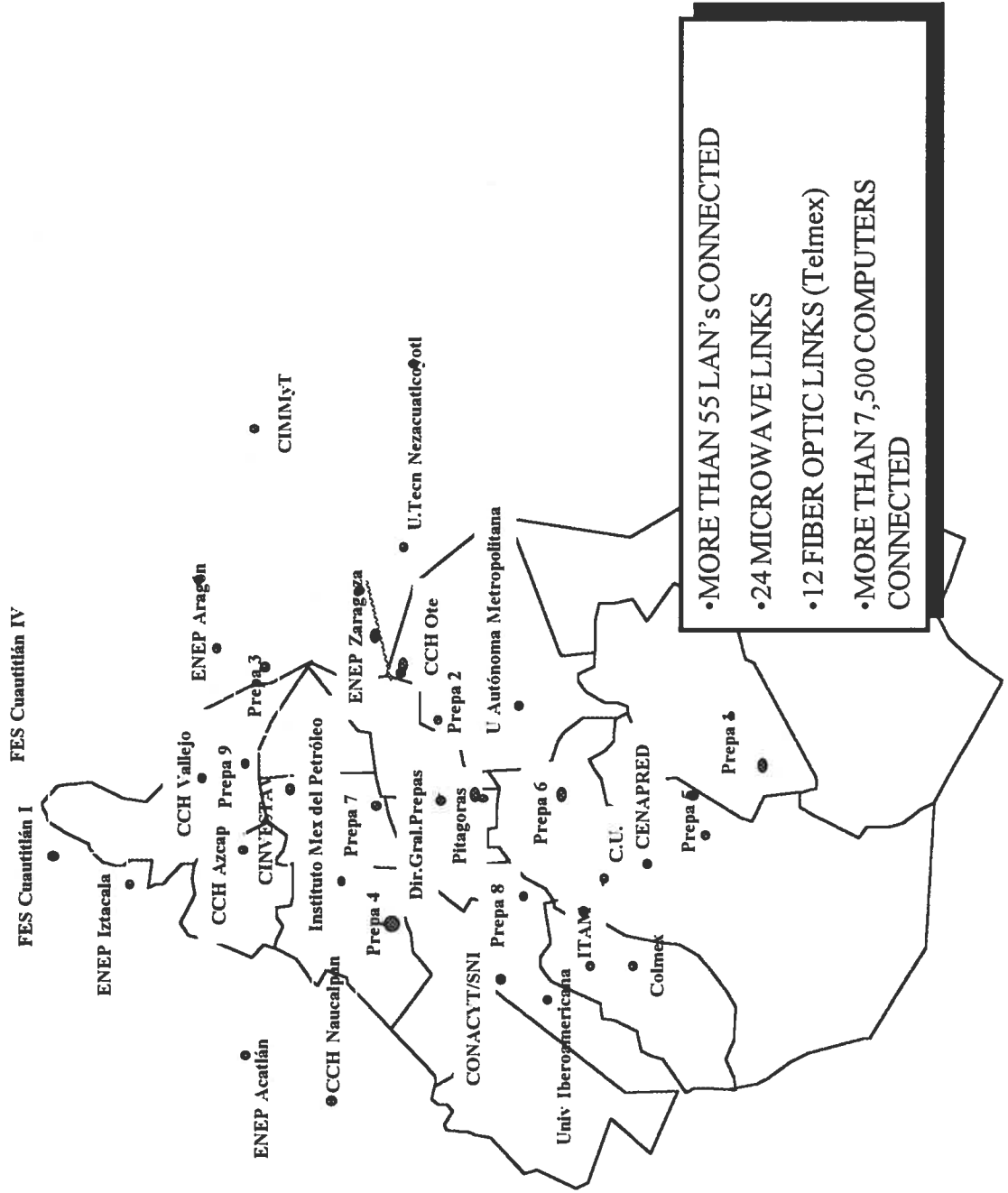


C.U. campus area: 2,000 acres

- More than 150 LAN's connected
- More than 1000 kilometers of operating fiber optic lines
- 8,000 computers connected



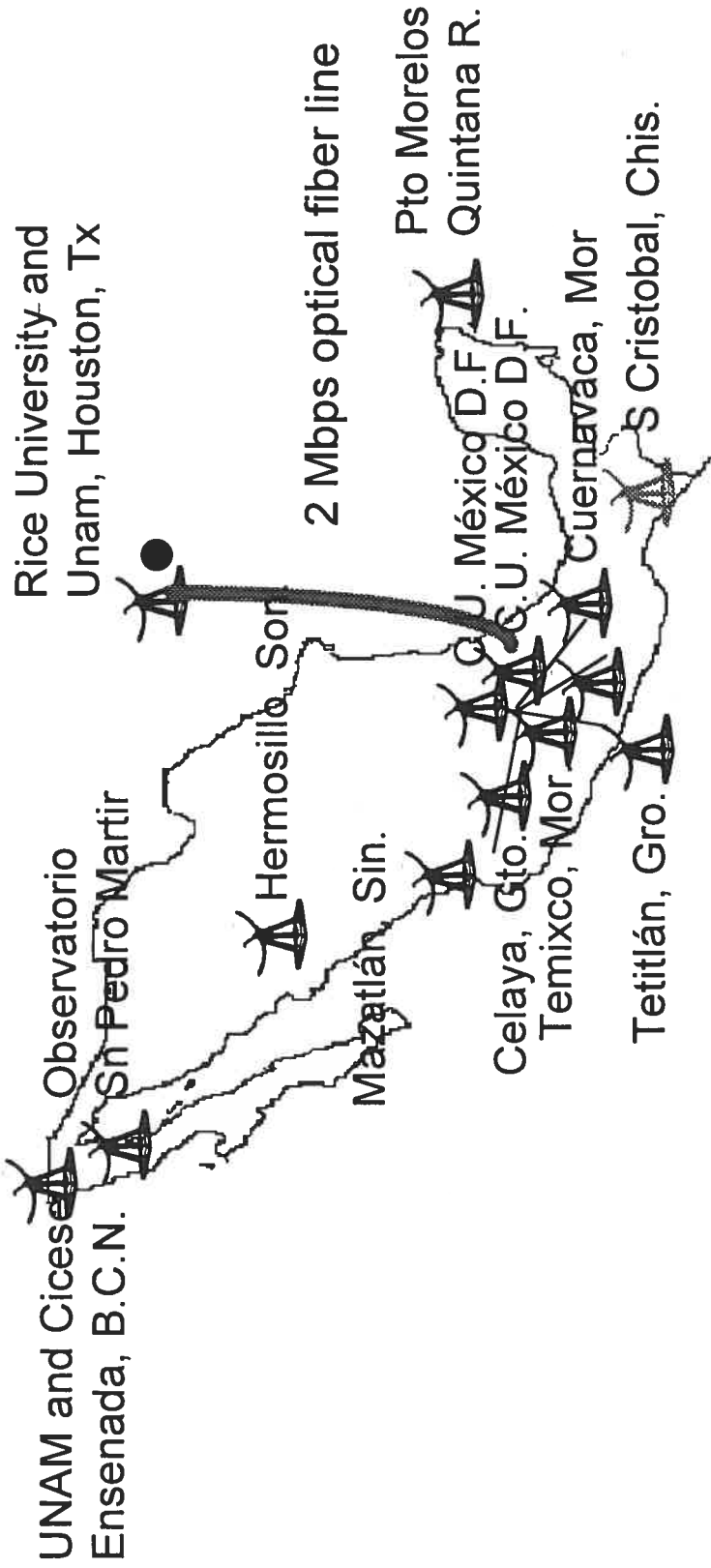
RED/UNAM in MEXICO CITY





VOICE/DATA NETWORK

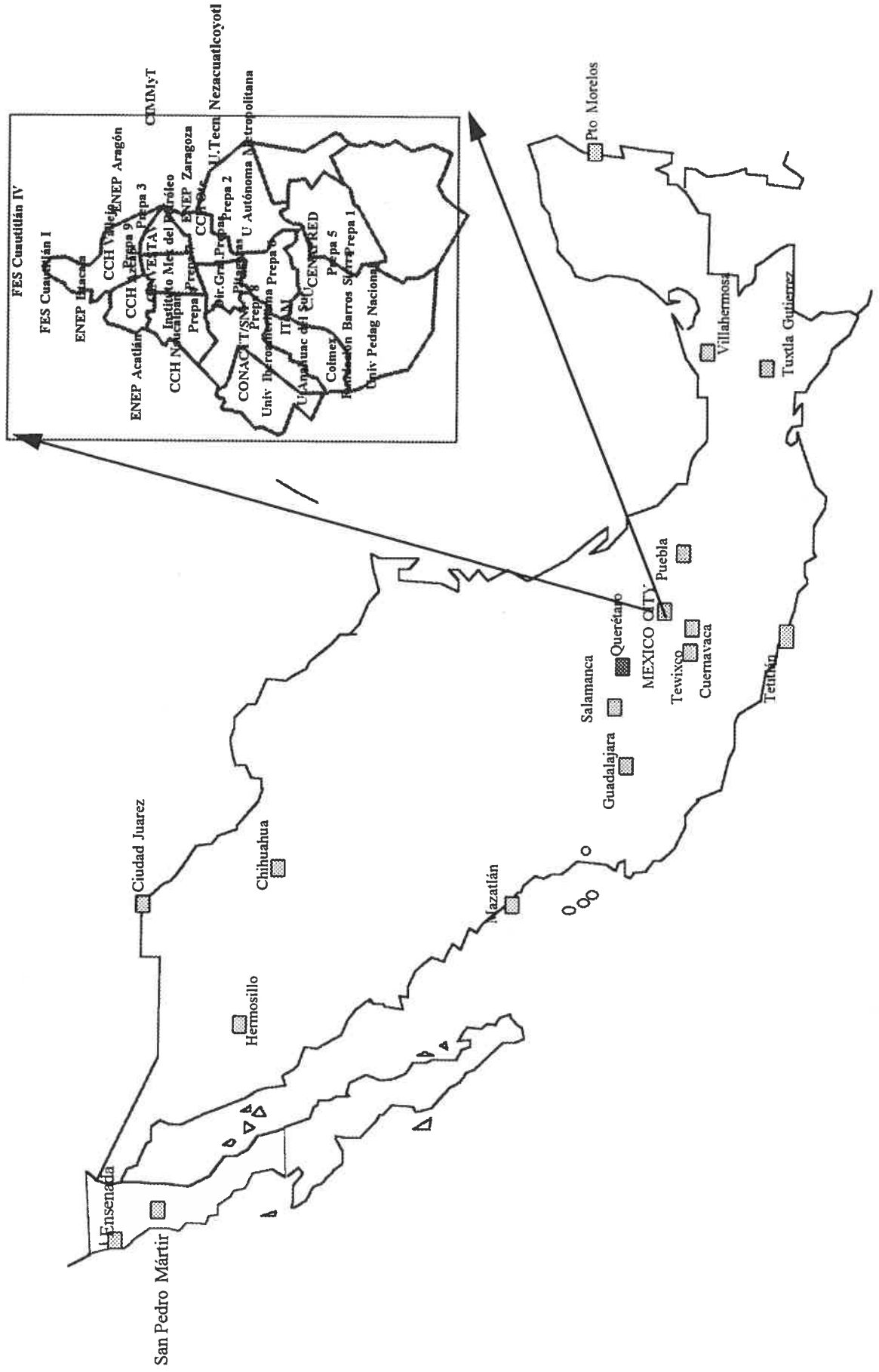
 NSF network
Boulder, Co.



- | | |
|-----|--|
| 15 | Satellite links using Morelos 2 Satellite |
| One | Leased (Telmex and MCI) 2 Mbps fiber-optic line to Rice University |

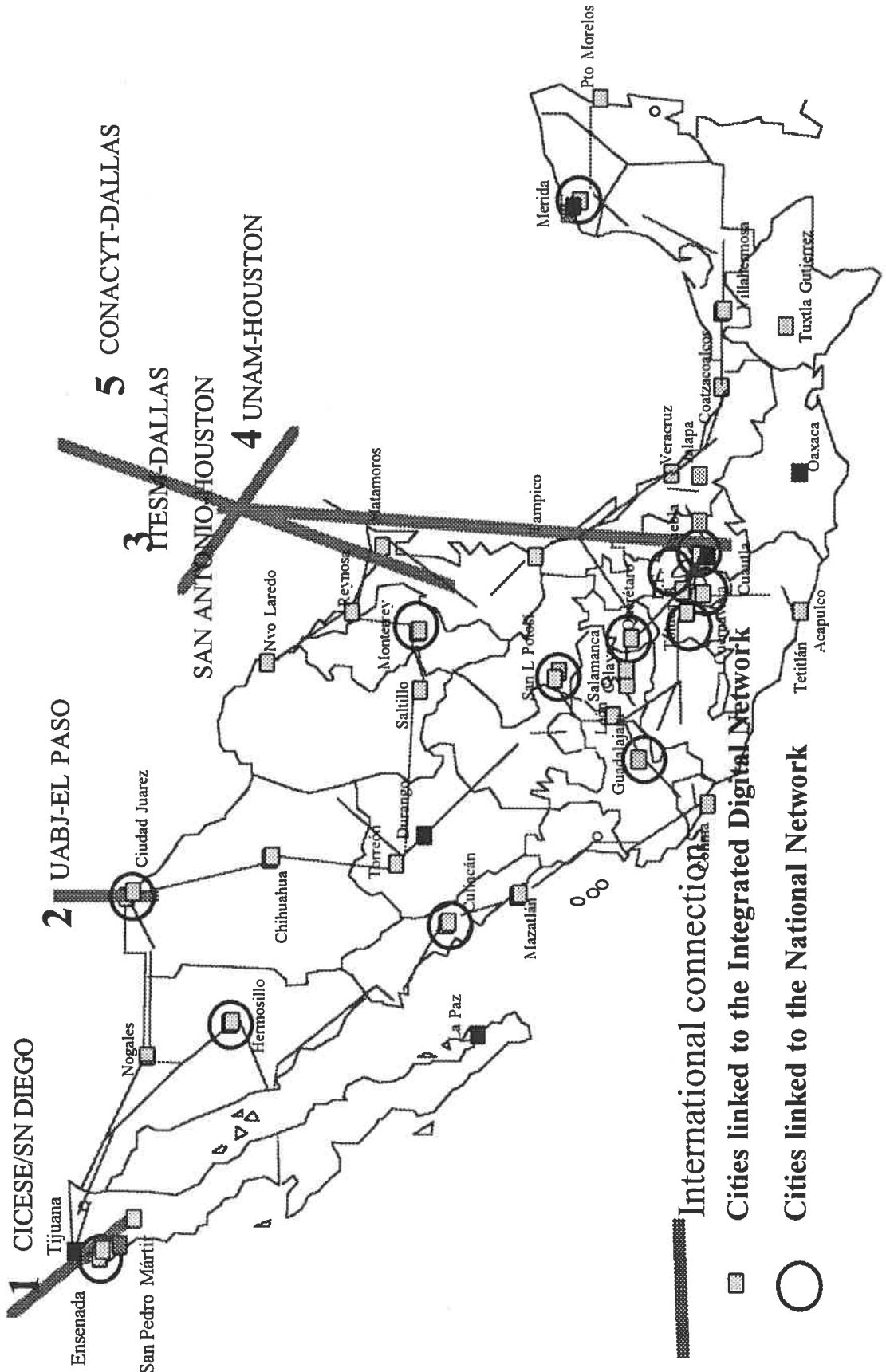


UNAM'S DIGITAL DATA NETWORK





MEXICAN PUBLIC DIGITAL DATA NETWORK





NETWORK SERVICES

- LIBRARY CATALOGUES
- FULL TEXT JOURNALS
- KNOWLEDGE DATABASES
- E-MAIL
- FILE TRANSFER
- REMOTE LOGIN
- SEARCH TOOLS
- DISCUSSION GROUPS AND BBS
- IMAGE DATABASES
- PHONEBOOKS
- DISTANCE LEARNING
- PRINTING ON DEMAND
- OTHER INTERNET SERVICES
- UNIVERSITY INFORMATION



SUPERCOMPUTER CENTER

- Important tool for many areas
- Simulation
- Modelling
- Permits frontier research



LIBRARIES

- On line catalogues
- Optical disk network
- Full text journals
- Databases on line:
 - Librunam
 - Tessunam
 - Seriumam
 - Computer select
 - Datapro Communications Analyst
 - Aries
 - BINFHER
 - BIBLAT
 - Computer Library
 - Facets



DISTANCE LEARNING

- 25 videoconference rooms approximately at UNAM
- 55 in other Mexican Universities
- INTERNET connections
- 1.28 Mbps bandwidth transmission speed
- Audioconference
- Videoconference



INSTITUTIONAL AGREEMENTS

- Information system development for automation data process
- Computer training programs
- Computer and Telecommunication support through Internet and Red UNAM



SAN CARLOS UNIVERSITY OF GUATEMALA

Advising in:

- Telecommunications Infrastructure
- Internet Services
- Digital Libraries
- Databases



LATINAMERICAN INSTITUTE OF EDUCATIONAL COMUNICATION

National Network for Education:

- Advising on information technology trends and possibilities
- Technical support and training
- Development of educational material
- Development of telecommunication and network services



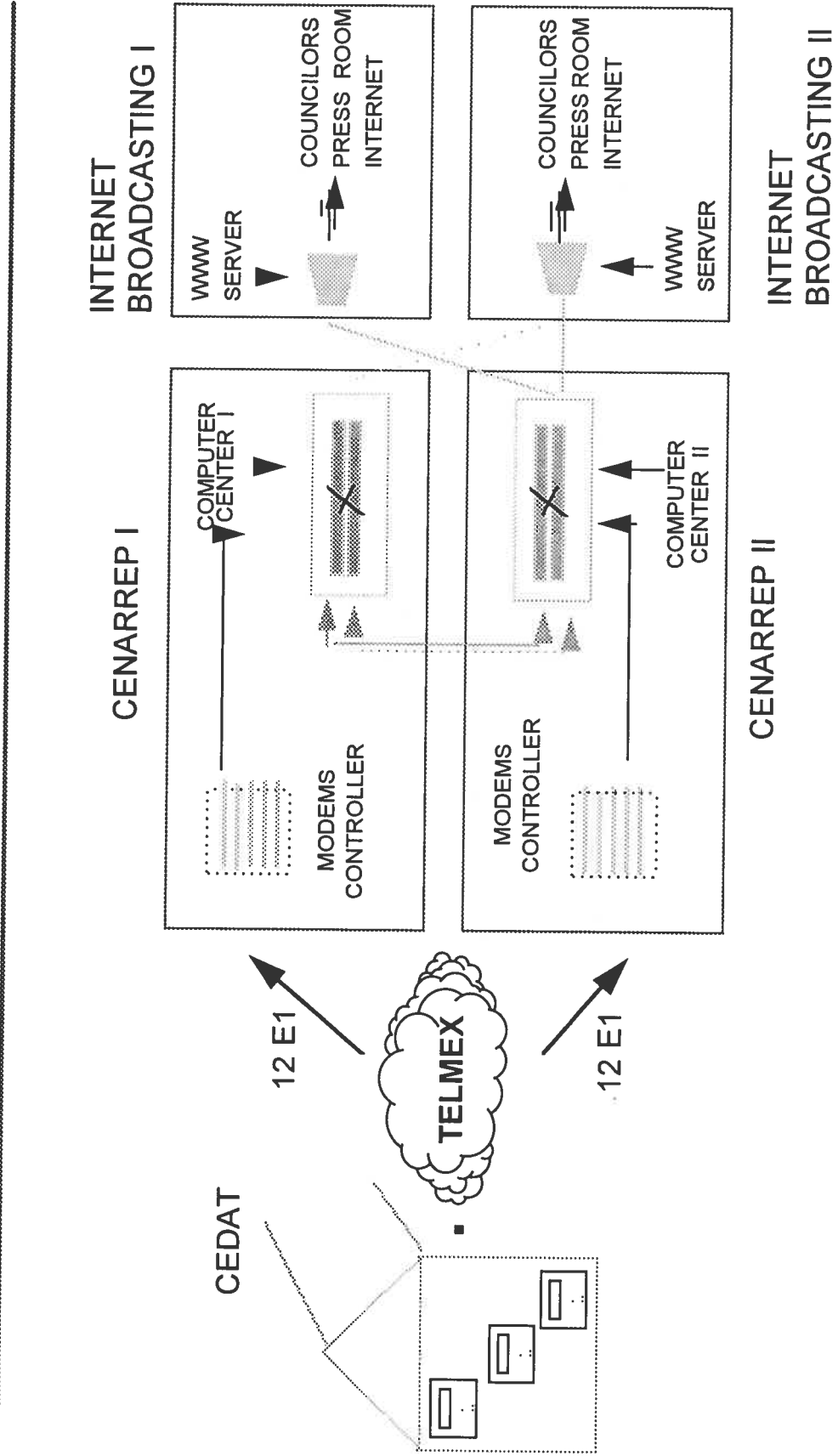
ELECTORAL FEDERAL INSTITUTE

Program of Electoral Preliminary Results:

- Advising on the design and implementation of the vote counting system
- Computing and telecommunications support
- Broadcasting the results

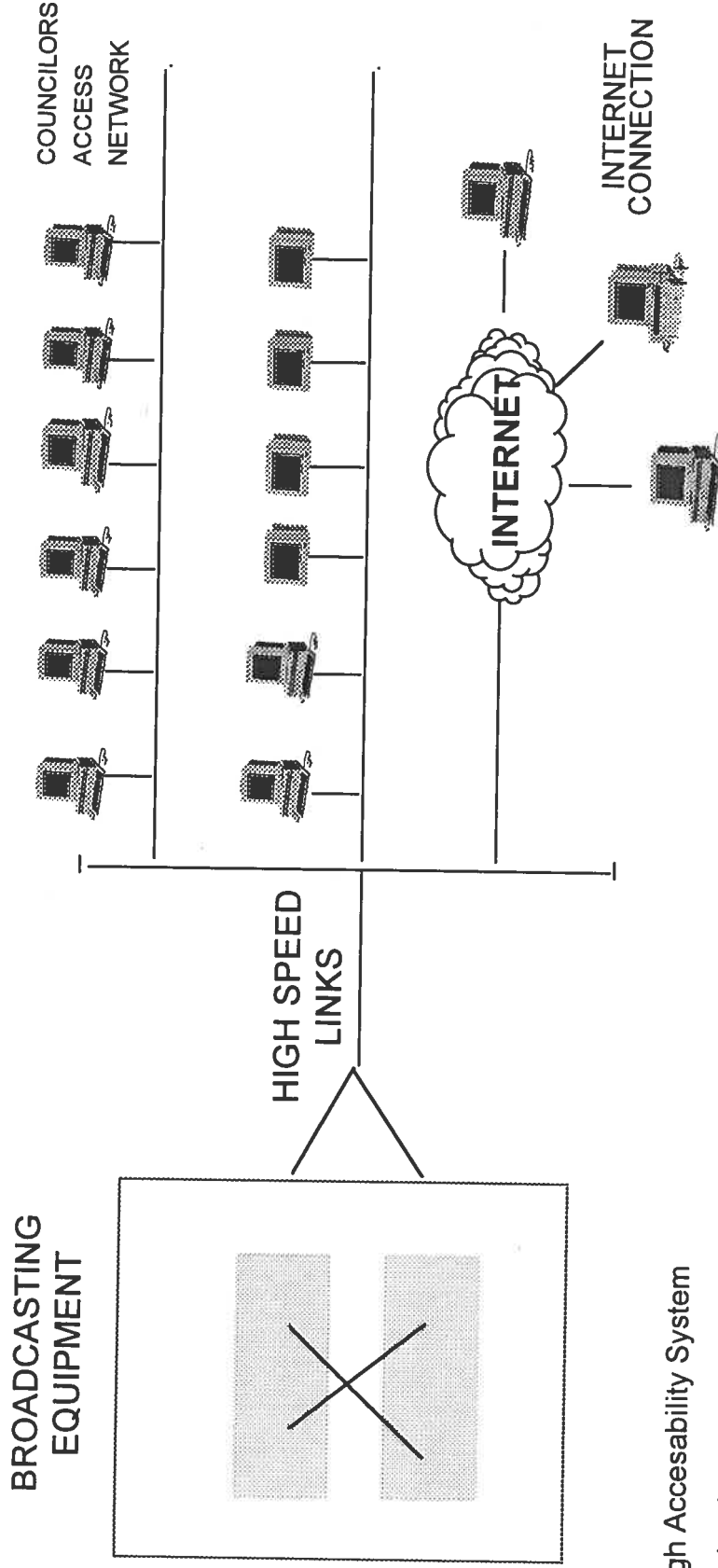


GENERAL COMPUTER SCHEME





INTERNET BROADCASTING CENTER

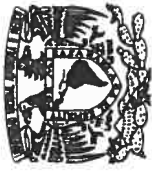


- High Accessibility System
- Redundant vital components (CPU, UPS)
- Error resistant storage
- Objective: Broadcasting systems and Internet servers' request processing



GENERAL ARCHIVES OF THE NATION

- Internet services support
- Advising on computing and telecommunications technology
- Database structuring assistance
- Technical, scientific and cultural advising



HOSPITALS-ENDOWMENT UNAM

- 35 computing laboratories in hospitals throughout Mexico City
- Red-UNAM, inter-hospital and inter-institutional connection
- Internet services



COMPUTING AND TELECOMMUNICATIONS PROGRAM

- Computers, telecommunications and libraries are key components for a modern university
 - Access to all students and faculty members
 - A modern computer environment has been developed
 - voice
 - data
 - images
 - Libraries are growing, becoming computerized and integrated to the network
 - Every desktop should be connected to the network as soon as possible
- A comprehensive training program must be developed



Coordinating Office for Academic Services : the primary function

Do

- Planning
- Ruling
- Guidance

What

- Production
- Gathering
- Selection
- Distribution
- Organization
- Access
- Usage
- Administration

With

Information in
many formats
using new
technology.

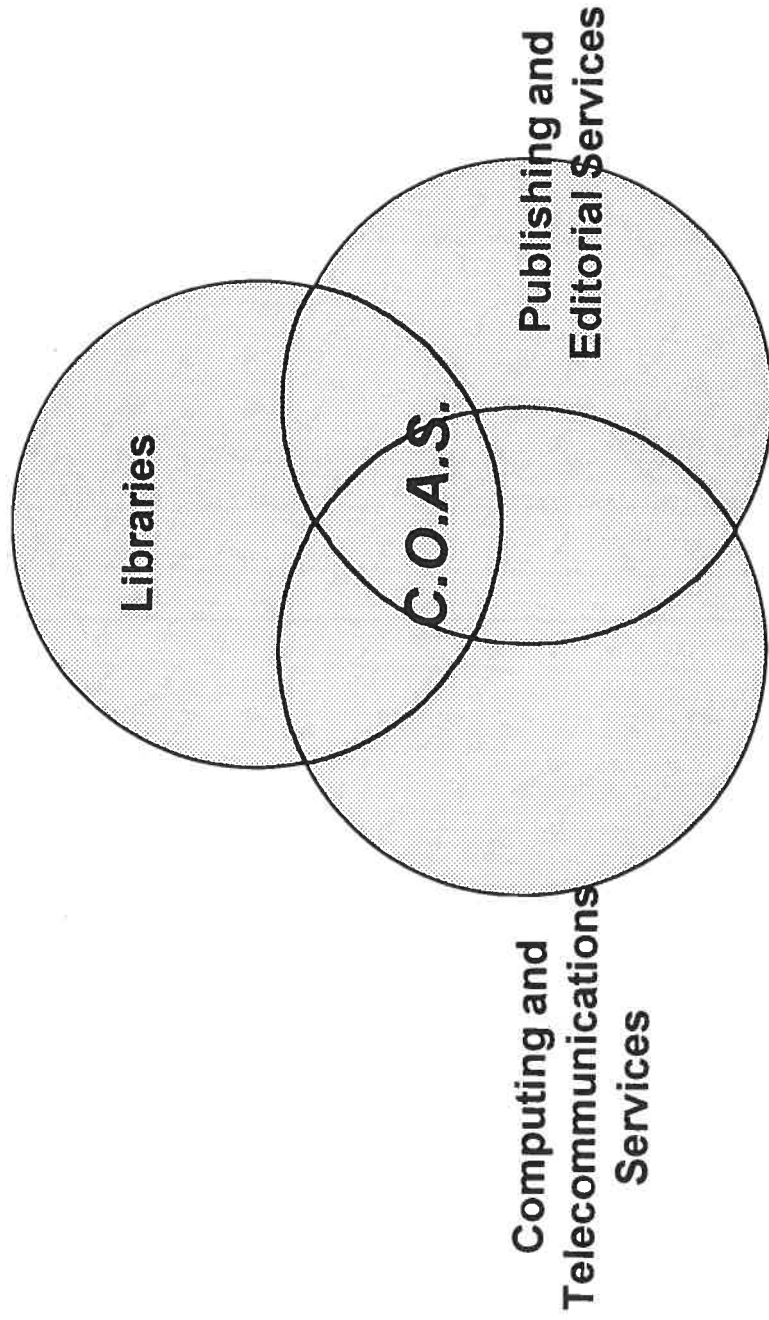
What for

To offer Services :

- efficient
- pertinent
- integrated
- value added
- Coherent with the
Institutional
Development Plan



COAS : an integrative mision





Libraries General Directorate

Libraries and Document Services University System

Enlarge collections -
rationalize acquisitions

General catalogue, indexes
and databases

*Publishing and
Editorial Services*

**Information
Technologies**

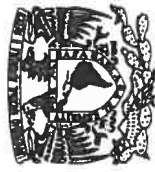
*Computing and
Telecommunications*

users and
loaning
control

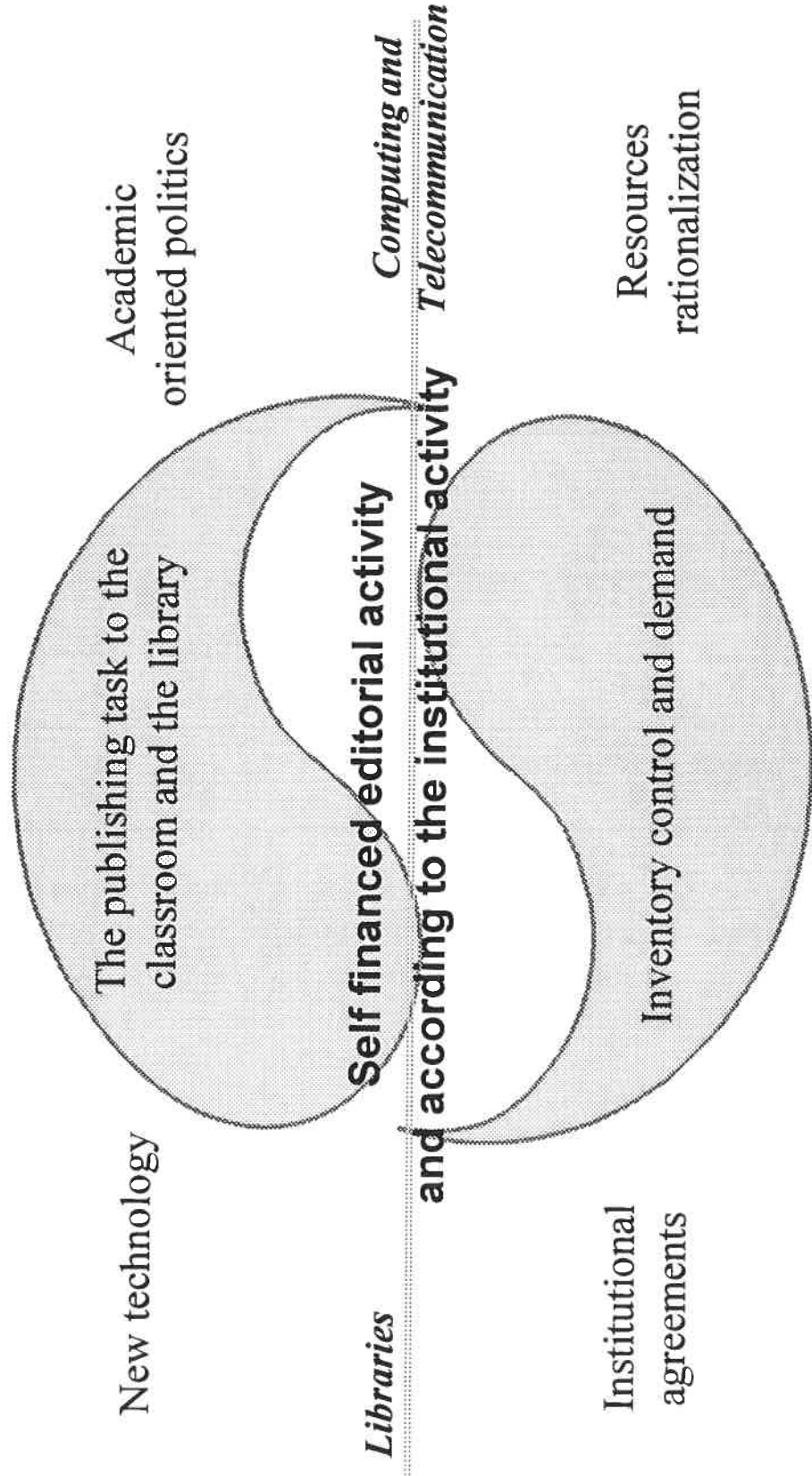
Technology leadership and
academic activity

Printed and digital access
and copying





Publishing and Editorial General Directorate





Academic Computing Services General Directorate

Frontier Technology Source

