
QUICK SCAN SURVEY
PART B: PRIORITY AREAS FOR DEVELOPMENT



Developing Information and Communication Technology (ICT) services for institutes of higher education and research.

QUESTIONNAIRE

January 2000



0. General Information

0.1 Universidad Nacional de Ingeniería, UNI

1. Responsibility for strategic management

1.1 Which group (office, directorate, department, committee, council others) is the main responsible body of the university for strategic planning and decision making concerning university wide developments:

In the order of importance:

University's Direction Committee: In charge of the decision about priorities, planning and evaluation of planned activities for the whole University.

University's Technical Council: In charge of University problems discussions ,proposals about planning, and priorities.

1.2 What is the composition (who are members) of the groups mentioned in the answer of 1.1:

Members of the University's Direction Committee:

- Rector
- General Vicerecotor
- General Secretary
- Administrative Vicerecotor
- Academic Vicerecotor
- Research and Development Vicerecotor

Members of the University's Technical Council:

- Rector
- General Vicerecotor
- General Secretary
- Administrative Vicerecotor
- Academic Vicerecotor
- Research and Development Vicerecotor
- Dean of the Science and Systems Engineering Faculty
- Dean of the Electrothechnic and Computer Engineering Faculty
- Dean of the Architecture Faculty
- Dean of the Chemistry Engineering Faculty

- Dean of the Industrial Technology Faculty
- Dean of the Civil Engineering Faculty

1.3 Does the university have a recently updated and well-documented strategic plan? If the answer is yes, can a copy be made available to the consultants?

UNI does have a long term plan for strategic development (2000 to 2010), here you can find it as ANNEX B1 as well a short term plan (2000 to 2002), attached as ANNEX B2. Both are in spanish.

1.4 Does the university have a group (office, directorate, department, committee, other) directly responsible for the development of ICT based university wide applications? If the answer is yes, what is the name of this group and who are members:

No. We don't have a single group or entity in charge of it for the whole UNI.

1.5 Does the university have a computer centre (or other ICT oriented entity) what provides ICT services to the administrative and academic sector? If the answer is yes, name the main services the centre is providing to internal clientele:

Yes, UNI has two campuses, Campus "Simón Bolívar" and Campus "Pedro Arauz Palacios". In each campus we have one main Computer Center, the Computer Center at the Faculty of Science and Systems Engineering for the Campus "Pedro Arauz Palacios" and the Computer Center at the Electrotechnic and Computer Engineering Faculty for the Campus "Simón Bolívar".

Main services provided:

- Support, installation, and maintenance of Information Systems to the whole UNI
- Network and connectivity responsible for the LANs and amongst the LANs at UNI
- Provision of UNI connectivity to INTERNET
- Design, implementation, and planning of the Communication infrastructure
- Basic ICT training demanded for the faculties they belongs.

1.6 Does the computer centre provide services to external clientele? If the answer is yes, which services does it provide?

Yes, in the case of the Computer Center of the Campus "Simón Bolívar", at the Electrotechnic and Computer Engineering Faculty. The Computer Center is providing INTERNET connectivity to several external clients. It is also provided some courses about UNIX, LINUX, Server Configuration, etc. to external clients demanding such courses.

2. Priority areas for development

2.1 What are the main areas for development identified in the strategic plan or (if such a plan is not available) defined by the university management?

- To upgrade the existing computer capacity for research and education to a minimum standard of 1 PC per 3 teacher (140 PCs in total), 1 PC per 20 students (450 PCs in total) all of them with a reliable connection to INTERNET (email, browsing, etc.).
- To set a computer facility at the central libraries (50 PCs per campus) for bibliographical consults to specialised educational and research databases (virtual library) for students and teachers, as well offering INTERNET connection for academic use.
- To set a computer facilities (15 PCs) at each faculty library (six faculties) for bibliographical consult to specialised educational and research databases (virtual library) for students and teachers, as well offering INTERNET connection for academic use.
- Definition of sustainable management (i.e. reposition, maintenance, and normative of use) of the computer capacity at UNI, including the Computer Centers.
- Setting up of videoconferencing facilities for the continuous education at UNI, with partners from international Universities.
- Automation and standardisation of the database and control systems for Human Resources management at the whole UNI.
- Automation and standardisation of the financial systems at the whole UNI.
- Designing and standardisation of a UNI's Research Database for information to the whole UNI about the Research activities, this database will cover the thesis done by the students.
- Automation and standardisation of a central information systems about teachers plan of activities, administration of classes supervision and other academic information.
- Promotion of the UNI activities, teachers and student achievements, internal normative, research production, publication of on-line magazines using INTERNET (web site of UNI).
- Implement the Academic Registration System, to record the academic student situation, curricula data, examination results, status of the scholarship given, and the professional record of outcome "production" from UNI. This information system should cover the statistical systems about the academic work at UNI.
- Implement an automated and open service about Academic Registration via PCs for students.

- 2.2 Please define priorities for the following (possible) areas for development by ranking the areas with a number in the range of 0 to 10. The number 0 will indicate “no priority/need at all” and the number 10 will indicate the highest (top) priority. Please try to avoid to give same numbers to different areas

Possible area for development	Priority 10 = top priority 0 = no priority
<p>Setting up (or upgrading) of university wide Internet/e-mail facilities</p> <p>Including the satellite connection for UNI or better to the pool of Universities in this project (UNA, UNAN-M, UNAN-L and UNI). This INTERNET facility should provide interuniversity connectivity.</p> <p>Promotion of the UNI activities, teachers and student achievements, internal normative, research production, publication of on-line magazines using INTERNET (web site of UNI).</p> <p>To upgrade the existing computer capacity for research and education to a minimum standard of 1 PC per 3 teacher (140 PCs in total), 1 PC per 20 students (450 PCs in total) all of them with a reliable connection to INTERNET (email, browsing, etc.).</p>	10
<p>Setting up (or upgrading) of university wide telephone system</p>	3
<p>Implement (or rehabilitate) a computerized financial information system</p> <p>Automation and standardisation of the financial systems at the whole UNI.</p>	7
<p>Implement (or rehabilitate) a computerized library information system</p> <p>To set a computer facility at the central libraries (50 PCs per campus) for bibliographical consults to specialised educational and research databases (virtual library) for students and teachers, as well offering INTERNET connection for academic use.</p> <p>To set computer facilities (15 PCs) at each faculty library (six faculties) for bibliographical consults to specialised educational and research databases (virtual library) for students and teachers, as well offering INTERNET connection for academic use.</p>	9
<p>Implement (or rehabilitate) a computerized human resource management information system</p> <p>Automation and standardisation of the database and control systems for Human Resources management at the whole UNI.</p>	5
<p>Implement (or rehabilitate) a computerized academic register information system</p> <p>Implement the Academic Registration System, to record the academic student situation, curricula data, examination results, status of the scholarship given, and the professional record of professionals educated by UNI. This information system should cover the statistical information about the academic work at UNI and it should be centralised at the UNI Academic Register Center with link and connectivity to/from the Faculty Academic Register office (six Faculties). It is foreseen the need for PCs in LAN-WAN configuration at every Faculty's management layer as well the University's</p>	8

<p>management level.</p> <p>Implement an automated and open service about Academic Registration Information, via PCs, for students.</p> <p>Automation and standardisation of a central information systems about teachers plan of activities, administration of classes supervision and other academic information.</p> <p>Designing and standardisation of a UNI's Research Database for information to the whole UNI about the Research activities, this database will cover the thesis done by the students..</p>	
<p>Implement (or rehabilitate) a computerized public and external relations information system</p>	4
<p>Implement (or rehabilitate) specific, ICT based, applications for education and research such as GIS and CAD</p>	3
<p>Implement (or rehabilitate) ICT based (distant) learning programs</p> <p>Setting up of videoconferencing facilities for the continuous education at UNI, with academic partners from international Universities. Such videoconferencing capacity should be ready for external campus lecturing (rural areas) as well the most important cities without University covering.</p>	7,5
<p>Other 1 (please specify)</p> <p>Training in management of Computer Centers with focus in sustainable management (i.e. reposition, maintenance, and normative of use).</p> <p>Acquisition of technological software for academic use for the different Engineering at UNI in order to have the "state of the art" tools supporting the knowledge base of each curricula.</p> <p>.</p>	6

In the past years, the Internet has become the main communication infrastructure and contact point for the global scientific and academic community. However, for many institutes of higher education and research in developing countries (already facing for many years a decreasing access to international scientific publications and other information resources) this main communication infrastructure is yet not available, thus increasing the already existing isolation of the scientific and academic community in these countries.

Many if not most institutions of higher education and research consider access to the Internet as of utmost strategic importance. On line, real time access to various information resources such as libraries, scientific news groups, electronic journals, training materials, public software pools, academic and scientific data bases and educational programmes available now a days on the Internet will improve the management, administration, research and education of the institutions. In turn, it will also enable the institutions to present their research, educational and other outputs matching international standards to the outside world and it will improve the competence, societal position, and (national and international) reputation of the respective institutions being public institutes for research and the dissemination and distribution of expertise and information.

- 2.3** In case *setting up university wide Internet/e-mail* is ranked as one of the 5 top priority areas for development, what impact (or benefits) can be expected of making access to the Internet available to management, administration and service support:

Improved communication with external organisations

Enhanced public and international relations through publishing on the web the UNI activities, UNI plans and projects, activities of teachers and student achievements,

Improved internal communications, with an increasing knowledge of internal normative at UNI

Access to databases through the World Wide Web (WWW)

- 2.4** In case *setting up university wide Internet/e-mail* is ranked as one of the 5 top priority areas for development, what impact (or benefits) can be expected of making access to the Internet available to education and research.

Staff and students will be exposed to ICT by the upgrade the existing computer capacity for research and education. The a minimum standard proposed of 1 PC per 3 teacher (140 PCs in total), 1 PC per 20 students (450 PCs in total) all of them with a reliable connection to INTERNET (email, browsing, etc.).

Internet/e-mail will allow cost efficient communication with lectures and researchers in other parts of the world, as well internally and inter-university researchers.

INTERNET publication of the research production, and publication of on-line research magazines.

The students and staff will get access to external data bases and electronic information resources. This will be the vehicle for bibliographical consults to specialised educational and research databases (virtual library).

2.5 Describe in brief on the following pages for the five areas for development having the highest ranking, the problems the application of ICT may address and the benefits you expect to gain from successful application of ICT in these areas. If the setting up of university wide Internet/e-mail belongs to the top five areas, refer to the question given in 2.4

2.5.1 First priority area for development:

<p>Description:</p> <p>Setting up (or upgrading) of university wide Internet/e-mail facilities</p> <p>Including the satellite connection for UNI or better to the pool of Universities in this project (UNA, UNAN-M, UNAN-L and UNI). This INTERNET facility should provide inter-university connectivity.</p> <p>Promotion of the UNI activities, teachers and student achievements, internal normative, research production, publication of on-line magazines using INTERNET (web site of UNI).</p> <p>To upgrade the existing computer capacity for research and education to a minimum standard of 1 PC per 3 teacher (140 PCs in total), 1 PC per 20 students (450 PCs in total) all of them with a reliable connection to INTERNET (email, browsing, etc.).</p>
<p>Problems to be addressed:</p> <p>Lack of reliable INTERNET connection, which is limiting the access to knowledge, research experiences in the areas of interest of UNI, interchange of ideas amongst colleagues in other Universities. INTERNET is by fact the most common communication way amongst the academic, and probably becoming like that to all society sectors. Not having INTERNET connection is becoming an island with any chance to get in to the global knowledge production and international quality standards at the UNI's academic and technological interest.</p>
<p>Benefits expected:</p> <p>A reliable INTERNET connection, will open the access to knowledge, research experiences in the areas of interest of UNI. Will allow interchange of ideas amongst colleges in other Universities. We expect to set and increase the tradition of knowledge interchange as a tool for developing. Having the contact via INTERNET will allow to the global knowledge production and international quality standards at the UNI's academic and technological interest. By the INTERNET connection we can have access to specialised research and educational databases.</p>

2.5.2 Second priority area for development:

<p>Description:</p> <p>Implement (or rehabilitate) a computerized library information system</p> <p>To set a computer facility at the central libraries (50 PCs per campus) for bibliographical consults to specialised educational and research databases (virtual library) for students and teachers, as well offering INTERNET connection for academic use.</p> <p>To set computer facilities (15 PCs) at each faculty library (six faculties) for bibliographical consults to specialised educational and research databases (virtual library) for students and teachers, as well offering INTERNET connection for academic use.</p>
<p>Problems to be addressed:</p> <p>Lack of reliable library connection to INTERNET, which is limiting the access to databases for the work on the research and educational material available at specialised databases as well the INTERNET it self.</p> <p>Lack of actualised information of the books available at each Central Library (one per campus, 2 in total) and at the Faculty Libraries (a least 6 in total). Lack of administration of the lend-borrow system about the books in circulation.</p> <p>Limited facility for the demand of the 9,000 students looking for information and/or books all over the UNI. Lack of information about the books available in other Universities, probably useful in educational and research projects.</p>
<p>Benefits expected:</p> <p>A reliable and open library connection to INTERNET, which allow access to databases for the work on the research and educational material available at specialised databases as well the INTERNET it self.</p> <p>Access to information about the books available at each Central Library (one per campus, 2 in total) and at the Faculty Libraries (a least 6 in total). Better administration of the lend-borrow system about the books in circulation.</p> <p>Covering the demands and use of the 9,000 students looking for information and/or books all over the UNI.</p> <p>Hopefully this Library System can be linked amongst the other Universities for inducing the availability of books from other Universities, so we can have a National bulk of books available to this Information System.</p>

2.5.3 Third priority area for development:

<p>Description:</p> <p>Implement (or rehabilitate) ICT based (distant) learning programs</p> <p>Setting up of videoconferencing facilities for the continuous education at UNI, with academic partners from international Universities. Such videoconferencing capacity should be ready for external campus lecturing (rural areas) as well the most important cities without University covering.</p>
<p>Problems to be addressed:</p> <p>Limited education available or accessed by cities far from Managua, capital city. There is a need, no attended, for training and qualification of people living not in Managua. The situation is leading to a migration of some population originated by the search for better education, such migration is having an impact in the personal economics, expensive living in Managua, as well an impact to the housing in the capital.</p>
<p>Benefits expected:</p> <p>To strength and to enlarge the education services to remote areas of the Country. This area includes training and support to education programs about prevention for catastrophes, community development, community projects and alternatives for facilitate the learning and develop process, based in education, to a National wide spread way.</p>

2.5.4 Fourth priority area for development:

<p>Description:</p> <p>Implement (or rehabilitate) a computerized academic register information system</p> <p>Implement the Academic Registration System, to record the academic student situation, curricula data, examination results, status of the scholarship given, and the professional record of professionals educated by UNI. This information system should cover the statistical information about the academic work at UNI and it should be centralised at the UNI Academic Register Center with link and connectivity to/from the Faculty Academic Register office (six Faculties). It is foreseen the need for PCs in LAN-WAN configuration at every Faculty's management layer as well the University's management level.</p> <p>Implement an automated and open service about Academic Registration Information, via PCs, for students.</p> <p>Automation and standardisation of a central information systems about teachers plan of activities, administration of classes supervision and other academic information.</p> <p>Designing and standardisation of a UNI's Research Database for information to the whole UNI about the Research activities, this database will cover the thesis done by the students..</p>
<p>Problems to be addressed:</p> <p>At present the Academic Register Systems of the university is mainly characterised by: Largely manual operations and hence long processing cycles; Duplication of same information in various registers and also sections; No standard procedures and data management not standards by each Faculty and the Central Registration Office. High possibility of human errors and consequent additional manpower efforts, time and costs Up to date and reliable information not readily available; Situation of backlogs of works with an increasing trend each year</p>
<p>Benefits expected:</p> <p>Shortened processing cycles; Standardisation of the information in all the Registration Offices ; Standardisation of the procedures and data management , including open access to the whole UNI officess. Direct availability of up to date and reliable academic data for decision making (groups of classes definition, classrooms administration, educational resources management), search of information open to students (avoiding manual answers, cues, etc.), better vision of the academic dimension and foreseeable bottlenecks in the Academic Administration and Management, both for top level managers as well the Faculty level managers. Planning with back-logs and historical trends the academic management and priorities at UNI.</p>

2.5.5 Fifth priority area for development:

<p>Description:</p> <p>Implement (or rehabilitate) a computerized financial information system</p> <p>Automation and standardisation of the financial systems at the whole UNI</p>
<p>Problems to be addressed:</p> <p>At present the financial system of the university is mainly characterised by:</p> <p>Largely manual operations and hence long processing cycles;</p> <p>Duplication of same information in various registers and also sections;</p> <p>High possibility of human errors and consequent additional manpower efforts, time and costs</p> <p>Up to date and reliable information not readily available;</p> <p>Situation of backlogs of works with an increasing trend each year</p>
<p>Benefits expected:</p> <p>Shortened processing cycles</p> <p>Direct availability of up to date and reliable financial data for decision making</p> <p>Direct availability of up to date and reliable financial data for planning and prioritisation of budget use and good knowledge of the incoming sources and its behaviour.</p> <p>Budget holders within the faculties will have direct access to the central financial database for budget queries</p>

- 2.5 In case an comprehensive project on ICT will be started for your university, who will be assigned the role of project supervisor (or director) with the responsibility to supervise and monitor the whole implementation:

Name project supervisor:

On discussion. Most probably will be a committee in charge with representatives from the two campuses' Computer Center. This committee will have a co-ordinator acting as a project supervisor.

Present function:

The members are currently related to the Computer Centers operation and Management.

**Telephone number:
(505) 2772650; 2705126**

**Fax number:
(505) 2773709; 2705125**

E-mail address:

For the time being all information should be addressed to Ing. Mario Caldera, Rector: rectoria@uni.edu.ni, Ing. Marcia Vargas, Vicerectora: mvargas@uni.edu.ni and to Leonel Plazaola, Project Director: leonelp@tmx.com.ni .

- 2.6 In case such an ICT project will span five areas for development with the highest ranking, mention the names of the persons who possible will be assigned the responsibility as sub-project managers for project management of the respective areas of development?

First priority area for development:

Name sub-project manager:

On discussion. Most probably will be a committee in charge with representatives from the two campuses' Computer Center. This committee will have a coordinator acting as a project supervisor and the members will act as sub-project manager.

Present function:

Telephone number:
Fax number:
E-mail address:

Second priority area for development:

Name sub-project manager:

IDEM

Present function:

Telephone number:
Fax number:
E-mail address:

<p>Third priority area for development:</p> <p>Name sub-project manager:</p> <p>IDEM</p> <p>Present function:</p> <p>Telephone number: Fax number: E-mail address:</p>
<p>Fourth priority area for development:</p> <p>Name sub-project manager:</p> <p>IDEM</p> <p>Present function:</p> <p>Telephone number: Fax number: E-mail address:</p>
<p>Fifth priority area for development:</p> <p>Name sub-project manager:</p> <p>IDEM</p> <p>Present function:</p> <p>Telephone number: Fax number: E-mail address:</p>

3. Recurrent cost for operation and maintenance of ICT services

3.1 Please give an estimate of the annual cost for (national and international) communication in the past year

Cost for international communication (telephone calls, cellular phone calls, fax, other) in 1999 US\$ 30.000,-

Cost for national communication (telephone calls, fax, other) in 1999: By law the public Universities are exempt of paying national calls.

- 3.2** For many counterpart universities in development the main bottleneck for operating Internet services are the recurrent cost for bandwidth. For a modest facility (for instance: an Internet channel with a bandwidth of 128 Kbps out, 512 Kbps) serving the whole university, the recurrent costs may vary in the range of US\$ 5.000- 7.000/month.

In case financial support can be attracted from an external donor organisation for setting up a comprehensive data communication network and advanced Internet facilities, but no external financial support can not be expected covering the recurrent costs, what would be possible scenario's for the university to solve this problem of high recurrent cost.

In the coming 4 years it will not be realistic to expect that our University can cover the amount of US\$ 5000-7000/month from its own resources. Taking into account the strategic importance of Internet for education and research, our university will make budget reservations for this purpose trying to cover such costs partially and increasingly every year.

<end part B>