Information materials
to the consideretion aiming NATO Grant application.

Contents

1.
Present stage of networking and communiaion facilities in NTUU-KPI, Kiev-region and Ukraine
(JUN 1996)

<u>National Technical University of Ukraine -"Kiev polytechnical Institute"</u>

General information :
Students
>25139 - students
>334 -postgraduates
>30 - getting a doctor of science degree
>689 - foreign students

Academic staff:
>33 Academicians
>215 Professors
>706 Teachers (PhD)

2509 Research staff
4288 Service staff

21 Faculties
15 Scientific and Research Institutes

In the campus of NTUU - KPI plased:
41 buildings, 23 dormitroy buildings (hostels), 12 Apartment houses, 2 clinics, etc.

 INTRANET of the NTUU -KPI
- Ethernet-based backbone .
  - $\Rightarrow$ 10Mbps. Thin coax cable 75Om(long, up to 1'200m lines).
  - $\Rightarrow$ 10 of 29 main buildings connected.
  - $\Rightarrow$ 15 UNIX-based routers. (486 and Pentium based)
  - $\Rightarrow$ 200 PC connected (out of 3'000 available).
  - $\Rightarrow$ 500 registerd users .
- Main computer and information resourses concentrated in
  - $\Rightarrow$ CIM Centre (ES-9000, AS-400, RISC-6000, SUN, SG)
  - $\Rightarrow$ CAD Department (VAX claster)
  - $\Rightarrow$ Multimedia Centre
  - $\Rightarrow$ Library (VAX, Alef-software- not connected yet!)
  - $\Rightarrow$ Telecommunication Centre
- Potential number of users in 2005: 10'000-15'000

Outside connections:
- 4.800 bps - leased line to "TechnoSoft" commercial INTERNET provider. price $200 per Month. Quality - bad(!)
- 9'600 bps - GeoSAT satelite node - Phone and FAX facilities only(!). Out of operation since 01.1996.
- 2Mbps - Radio relay to the "Kiev Bone Network"(Open Society Institute funded). **Testing stage**. NTUU-KPI is most important node of "Kiev Bone Network". We install two Cisco 2511 routers with 16 serial ports. 20 serial "dial-up" incoming lines. 5 leased lines to the other Universities of Kiev, Institutions of Academy of Science of Ukraine, Leased line to Sevastopol (Krimia region) with the connection to 12 organisations.
- 3 City Telephone stations are plased in KPI. The modern ERICSON station (4000 numbers) is under constructing. 350 numbers are available now. Close connection to the International PTT Telephone station.

http://liner.polytech.kiev.ua/ - WWW-server was created first in the beginning of1996. It contains general Information about NTUU-KPI.

Kiev-region

"Kiev Bone Network"
- Funding J.Soros International Sciense Foundation (ISF), Open Society Institute(OSI USA) $500'000 in 1994-1997.
- 2Mbps Radio relay Backbone, 7 nodes.
- NTUU-KPI is the main node with the biggest number of potential (outside KPI) users.
- Radio relay Backbone has no licens (up to now)
- No more than 100 regular users
- Outside connection 28'800bps toMoskow FreeNet
- Free of charge to the end of 1996.

7 commercial INTERNET providers (Autonomos Systems). Price for leased line connection to them is approx. $400 per month

Single mode optical fiber (up to 655Mbps) bone by KANCOM (ANDREWS - USA) private system in MetroChannels (see map). Not connected to the INTERNET nodes, Not connected to PTT City Telephone system. No Clients.

Universities in Kiev has no common computer network and are not connected all togather.

UKRAINE
ditailed information see appendix(in Russian)
- No national Backbone
- Abscense of optical line covered the territory of the country
- UARNET project. West regions of Ukraine. Centre in Lviv. Strongly oriented on Poland.

2.
Ongoing progects and expecting results

<u>National Technical University of Ukraine -"Kiev polytechnical Institute"</u>

EU TEMPUS-TACIS Project ("University Management")
Funding 100kECU(instullation expected to the end 1996):
- Optical Fiber Backbone (see figures)
- CISCO Routers and WorkGroup Switches based Campus Network (FDDI, Fast Ethernet or ATM based)
- IPP procedure to create University Management IS. Staff training in TU Delft and RWTH Aachen is finished now.

EU TACIS Project N EUK 9406 ("Energy conservation training and information centre")1996-1997
- Training Centre of "EnergyManagers" for all-Ukrainian purposes
- All Ukrainian DataBase on Energy Conservation and Energy Control

Application of Pre_JEP in EU TEMPUS-TACIS on "Distance Study"

Outside links:
- 14'400bps leased line to UARNET (via RADA node - Supreme Counsil of Ukraine - Parlament)
- leased lines to a number of other Universities of Kiev

Registration procedure to receive B-Class of IP addresses and AS for NTUU-KPI in INTERNET

Here are main strategic tasks for KPI communication activity:
1. To develop INTRANET of NTUU-KPI
2. To build fast connection to the INTERNET
3. To acheive good connections to other Universities of Ukraine

3.
Materials for the applcation for NATO Grants

3.1. Points of interest (refered to NATO announcement paper)

NTUU-KPI is mainly interested in so-called "Linkage Grant". Such a grant is in a good agreement with one of our strategic aims for the nearest future. ***That's why we would like to know the possible ways of cooperation with NATO "Priority area on computer networking" "Linkage Grant" and related "Computer Networking Supplement" Grants programm.***

NTUU-KPI is an active member of the University community of the Ukraine. Our representatives are in the pilot Networking team in the Ministry of Education of Ukraine. The task of this team is to create conseptual plan and litle bit later masterplan of the creation of the National University Network of Ukraine. IPP procedure is in progress now. This activity is strongly supported by the Minister of Education of Ukraine Prof. Mikhail Zgurovsky (at the same time - Rector of NTUU-KPI).Fundings for such a purpose should be find elswhere. ***That's why we would like to know the possible ways of cooperation with NATO "Priority area on computer networking" Network Infrastructure Grants programm.***

Of course these points of interest, both, can be combined. For example, Link from NTUU-KPI to the INTERNET should be used by all other Universities of Ukraine.

While the University community of Ukraine is only doing its first steps in this direction "Expert Visits" and "Advansed Networking Workshop" Programms are also of interest.

3.2. Linkage Grant "NTUU-KPI (Kiev), ... - RWTH (Aachen) , TU Ilmenau, TU Delft (NL), ...

3.2.1. Background for the grant ("Why do we apply")

According to the requests of such a Grant Programm our explanation
"Why do we apply for this Grant?" shoul be the next:

NTUU-KPI has a strong relations with the number of Educational institutions (Universities mainly) in the NATO countries. Among them:
- RWTH Aachen (GR)
- TU Ilmenau (GR)
- Univ. Munchen (GR)
- BAM - Berlin (GR)
- TU Delft (NL)
- Paris 12 (F)
- Univ. Wien (A)
- Luxemburg Univ. (LX)
- Bristol Univ. (UK)

From the other side (CP-side) NTUU-KPI has traditional close links to the Higher Education and Research Eastableshments in all CIS-countries. In Ukraine, NTUU-KPI is a biggest one and plays a leading role in the field of Technical Education.

As an example of such relationship we would like to present a number of activities vich are going on betwen NTUU-KPI and RWHT Aachen.
1. Common Projects
    1.1. EU TEMPUS-TACIS Main T_JEP in "University Management"
    1.2. EU TEMPUS-TACIS Pre_JEP in "Lenguage Study"
    1.3. EU TEMPUS-TACIS Pre_JEP in "European Study"
        1.3.1.
2. Bilateral Treaties
    2.1. Frame Treaty between RWTH and NTUU, signd in April 1996
        2.1.1. Students and Staff mobility
        2.1.2. Common Studing Programms
        2.1.3. Common Research Projects
        2.1.4. Information Exchange
    2.2. Treaty of Cooperation in Research between Departments (direct)
        2.2.1. Microelectronocs Dept, Institute of Applied Electronics from one side(NTUU-KPI) and Institut of Prof. Lugscheider RWTH Aachen on the other.
3. Students exchange
4. Staff mobility
    4.1. DAAD Stipendiums for research in
        4.1.1. Lehrschtul fur Werkstoffe der Electrotechnik Prof. Waser
    4.2. Training courses for KPI staff members in
        4.2.1. Univ. Management in Fervaltung der RWTH
        4.2.2. IS in Libraries study in RWTH
        4.2.3. Networking technologies in RZ der RWTH

All activities listed above requires intensive data exchange 24 hour a day 365 days a year. Data exchange means not only e-mail, fax . Mainly, fast connection between RWTH and NTUU-KPI is needed to support remote database acsess in both institutions and outside them (DB on Ferroelectric materials in KPI and in Moskow for RWTH, DB of CIM Centre in KPI, DB on Energy conservation) WWW-service accsess, Distance study pilot projects, videoconferencing.

Naturally such a link would be used not to connect RWTH and KPI ONLY! While the similar needs we have with other our partners. We expect to get a possibility to have a fast link to the INTERNET itself.

Now in KPI together with State Commettee of Science and Research, Ministry of education and Ministry of Economy of Ukraine decided to create a new database in HTML format, opend to the whole INTERNET community. This DB should contain data comcerning all aspects of getting Higer education in Ukraine (laws, curricula, schedule etc.) Universities where it is possible to do; about reserch projects under these organisations; statistics data and so on. International acsess to this DB should forse students and professors mobility , processes of integretion of our research into the European Scientific community.

Potential outside users of NTUU-KPI Networking facilities, and fast INTERNET link:
- International Sciense and Technology University
- Civil Aviation Institute (Univ.)
- Medical University
- Goethe Institut in Kiev (placed in the Library of KPI)
- Information centre of British Council in Ukraine (placed in main building of KPI)
- TACIS beuro of KPI and Min. of Edu. of Ukraine
- Kiev-City Central Public Library

SUMMARY

Substantiation of need to establish better network connectivity for data exchange between RWTH Aachen, Germany and NTUU "KPI", Ukraine.

1. These universities are involved in a number of joint TEMPUS-TACIS projects, such as T_JEP, European Languages, etc., which require extensive data exchange.
2. NTUU "KPI" participates in the TACIS project of energy conservation, which can be strengthen through cooperation with RWTH Aachen.
3. There is an agreement about cooperation between RWTH Aachen and NTUU "KPI", under which different cooperation programs, such as students and teaching staff mobility, are administered.
4. A number of joint research projects are carried out, and even more such projects are under way, which is natural taking into consideration similarity in research and teaching orientations of RWTH Aachen and NTUU "KPI".
5. Close territorial location NTUU "KPI" and Kiev Medical University makes it easy to establish joint projects and data exchange between Kiev Medical University and Medical Institute of RWTH Aachen in case good network connectivity between RWTH Aachen and NTUU "KPI" is established.

Thus, establishing network links between RWTH Aachen and NTUU "KPI" makes it possible:

- to strengthen substantially activities in existing joint projects and cooperation;
- through establishing comprehensive databases (in HTML format) of research, teaching and other activities and facilities in both universities — to establish new joint projects and activities more effectively.

3.2.2.Technical materials to the application

Romantis, EuroDATA
1. VSAT station **point (in Kiev) to HUB (in Berlin).** 32kbps. 68'730DM - station. 4434DM per month (up to 2GB)
2. VSAT station **point (in Kiev) to point (in Aachen).** 64kbps,128/32kbps. 68'730DM*2(points) 6350DM per month.

Infocom Satellite Communications INC.
1. - Satellite communication telephone station TES: 1 to 4 channel blocks (up to 32 optional), each trasmits either data or voice. Voice channel block - voice transmission and data transmission via fax/modem (speed up to 9.6Kbps). Data channel block - RS-232 port, speed 4.8-56Kbps in syncronous mode, 0.3-19.2 in asyncronous mode. Price: 1 TES station - $25,000 - $90,000
2. - Satellite communication personal station PES: **point to multypoint** to 5 channel blocks, each has voice transmission port for phone/fax, 4 to 32 data transmission ports with speed up to 19.2Kbps (asyncronous mode) or up to 64Kbps (syncronous mode), Interfaces: RS-232, RS-422/V.35. Protocols: Ethernet, Token-Ring, SDLC, X.25 etc. Price: 1 PES station - $14,000-$20,000
3. - SCPC (Single Channel Per Carrier) - **point to point connection**, speed 19.2Kbps up to 2.4Mbps. 1 port with speed 19.2Kbps-128Kbps, 1 full-duplex syncornous channel with speed 115.2Kbps, 5 full-duplex RS-232 channels with speed 19.2Bps, 5 expansion slots. Price: $25,000-$60,000, satellite channel 64Kbps- $2,000.