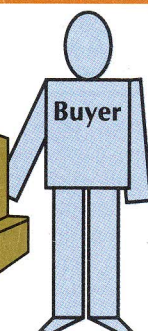
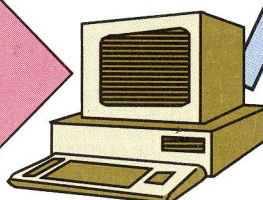
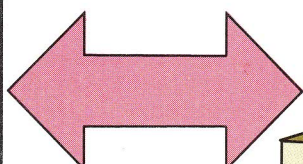
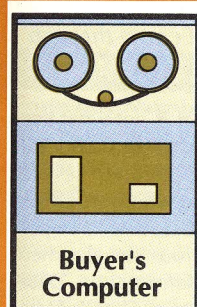
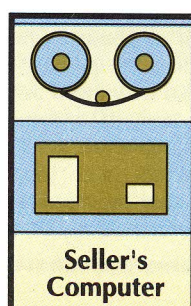


# Informatics



**NIC Infrastructure  
gears up for  
Electronic Data  
Interchange ( EDI )  
for Paperless Trade**



## THIS ISSUE BRINGS TO YOU

**ACCOLADES** Page - 2

A Deputy Commissioner writes

**AROUND THE NIC WORLD** Page - 3

The news section

**FEATURE** Page - 4

Electronic Data Interchange (EDI)

**PRODUCTS** Page - 6

How they are being utilized

**PROJECTS** Page - 7

A glimpse of some of NIC's projects

**IN THE LIMELIGHT** Page - 8

A profile of the Nagaland State Centre

••• and all our regular columns.

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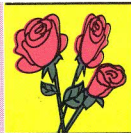
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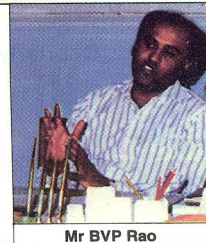
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Subhash Kapoor



# "It is really a pleasant experience working with NIC"



Mr BVP Rao

*says Mr BVP Rao, IAS and Deputy Commissioner of Jorhat, Assam, under whose stewardship the National Informatics Centre has achieved remarkable success in the District. The involvement of the District Administration, the co-operation extended, the planned approach and the hard and dedicated work put in --- they all come through in what Mr Rao has to say of his two-year-long association with NIC. Over to Mr Rao.*



When I came to Jorhat as Deputy Commissioner back in 1991, one of my first priorities was to tune up the DISNIC Programme of the National Informatics Centre (NIC) by introducing computerization in different spheres of the District Administration, specially development administration. Today, I look back with satisfaction and a certain degree of pride at all that we have achieved in the last two years. There is also the realization that this is just a small beginning in utilizing the enormous potential of the District Computer Centres of NIC.

Although I had several areas in mind, it was evident that it would not be possible to cover multiple areas simultaneously. Considering the constraints in resources, most notably the lack of technical manpower (till recently, the District Informatics Officer of NIC was the sole technically adept professional in the District), we decided to take up one major area at a time, along with one or two smaller projects so that we would be in a position to cover more areas after consolidating the initial ones.

## Face-lift for Public Distribution System

Acting on this approach, we adopted computerization of the Public Distribution System (PDS) as the first major project. It coincided with the programme to completely overhaul the PDS in the District by eliminating a huge number of bogus population. This was to be done by carrying out an exercise for renewal of family identification cards. All the details of the renewed family identification cards were computerized, and thereafter, the computer was utilized for allotment of essential commodities to fair price shops. Today, this has resulted in a new-look PDS which is not only much easier to manage but also completely transparent.

## Immunization Activities Computerized

Along with the computerization of the Public Distribution System, we also started an unique experiment in monitoring immunization activities in the District. Certain areas of the District, under a number of Health sub-Centres, were selected for computerization of child birth and immuniza-

tion details, on a pilot basis. This system uses a set of pre-designed post cards which the Health-worker concerned sends to the District Computer Centre, with details of inoculation dosages administered. The details are then entered into the computer system. The data so compiled in the computer is processed to serve dual purposes. Primarily, it facilitates overall monitoring of the Immunization Programme. Equally important, the computerized details also enable direct communication with the mothers of the inoculated children. This is achieved through computer-generated printouts of the exact immunization schedule, which are signed by the Deputy Commissioner and sent to the mothers concerned. These printouts in the local language motivate the mother to get her child immunized on time.

The modest success achieved in these two projects spurred us on to build an integrated Management Information System (MIS) for the ongoing Total Literacy Campaign (TLC) in our District. Details of each of the 11,000-and-odd Literacy Centres and 1,20,000 enrolled illiterates were entered into the computer systems to create two large databases which are acting as the core of the MIS. The MIS monitors the progress through periodic reports from the field, which are entered into the computer.

## The Gameplan

Along the way, we are also working on certain long-term projects which envisage the creation of an MIS for Gram Panchayat (GP)-level infrastructural details, in keeping with NIC's policy of grass root-level informatics development (GRID).

In the coming years, efforts have to be made for orienting the information system structure towards the Gram Panchayat (GP)-level infrastructural details as the Government is putting more and more stress on the Panchayati Raj System. With this in view, we are consciously working towards creation of databases, which in addition to providing the primary service intended, can also be viewed as GP-level Information Systems (IS) and queried on that basis. For example, all the Public Distribution System fair price shop details (of rural areas) and the Total Literacy Campaign master databases can also be viewed as

GP-level IS although that is not what they were primarily intended to be. Under this programme, we have created several databases notable among which are Drinking Water Pumps Database, extension personnel database of various development departments, Schools Information Database, Co-operative Societies Details Database in addition to the database on details of Gram Panchayat members. All these databases will help in the development of a Geographic Information System (GIS) which I am sure will be extremely helpful in providing a quick and efficient decision-support system in a wide variety of areas. Another area which has far-reaching impact is that of employment exchange computerization. Work for the creation of a live register of unemployed persons is on.

In addition to these major thrust areas, we are making efforts to use computers in every possible area of work. This has resulted in the creation of small systems such as the Gun License Database, Muster Roll Employees Database, excise prohibition case register etc. Continuous efforts are on to foster a culture of using electronic mail and other facilities of NICNET so that it becomes a major mode of communication in coming years.

## The Hurdles

One area in which we had to go a bit slow is in the creation of village-level databases under the DISNIC-PLAN Programme of NIC as we have found from experience that creation and maintenance of these databases is an onerous task where the result often does not commensurate with the efforts. This is largely because our planning machinery is yet to gear itself up to fruitfully utilize these databases in the planning process. In case of the Elementary Education Information System (EEIS) also, we have found that even after the creation of extensive databases having every conceivable details of each school of the District, these were hardly used till we finally decided to upgrade the databases and utilize them for the creation of an approach paper on education for all programmes.

All told, it is really a pleasant and satisfying experience working with NIC and helping, in my own humble way, towards propagating a culture of informatics.



## TRAINING PROGRAMME

### From our Nagaland Correspondent

**New Delhi, NOV:** The Nagaland State Unit of the National Informatics Centre conducted a seven-day training programme on computers for the staff of the Nagaland State Government. The training programme ended on November 11, 1993.

Twenty trainees from various State Government Departments attended the programme.

Mr M Odyuo, Deputy Development Commissioner, Nagaland, graced the closing function of the training programme and gave away the certificates to the trainees.

## BRAIN-STORMING SESSION

### From our Local Correspondent

**New Delhi, DEC:** The newly formed Co-operative Informatics Division of the National Informatics Centre will conduct a one-day brain-storming session on **NICNET Utilization for Co-operative Sector** on January 19, 1994 at the India International Centre, Max Mueller Marg, New Delhi.

Central and State Government officials of the Co-operative Department, representatives from NABARD, NCUI, NCDC, etc. will participate in the session.

## CPWD OFFICIALS COACHED IN USE OF NEW MIS

### From our Local Correspondent

#### Workshop on PROMIS

**New Delhi, DEC:** A three-day workshop on the PROject Management Information System (PROMIS) was organized jointly by the Central Public Works Department (CPWD) and National Informatics Centre from December 20 to December 22, 1993, at NIC Headquarters in New Delhi. This was the first of a series of workshops to be conducted nationwide to introduce CPWD personnel to various features of PROMIS.

PROMIS is a Management Information System developed by NIC for CPWD which enables the CPWD to monitor both the physical and financial progress of projects executed all over the Country. Data from the project sites are entered into local computer systems and sent through computer diskettes to the NIC CPWD Computer Cell. The data is then consolidated and made available in computer terminals at the CPWD Headquarters in New Delhi. Officials at the CPWD Headquarters can access the project information they require by simply punching a few keys of the computer terminals installed on their desks. This helps in expediting the progress of the projects to a large extent.

Fifty-two officials from the CPWD attended the workshop. Followed by a brief introduction to computers, both classroom demonstrations and hands-on practice sessions were conducted to familiarize the participants with the operational details of PROMIS. Lively interaction between the participants and the system developers

helped in clearing doubts and misgivings. A video film on Information Technology was also shown to the participants.

#### Workshop on VIGMIS

**New Delhi, SEPT:** The Central Public Works Department (CPWD) and the National Informatics Centre jointly organized a one-day workshop on the VIGilance Management Information System (VIGMIS) on September 24, 1993, at NIC Headquarters in New Delhi. The objective of the workshop was to introduce CPWD officials to VIGMIS and to familiarize them with the operations of VIGMIS.

VIGMIS is a management information package developed by NIC to computerize the activities of the Vigilance Unit of the CPWD. VIGMIS envisages speedy disposal of cases referred to the CPWD Vigilance Cell. The process of vigilance clearance for promotion, retirement, resignations etc. will now be expedited to a large extent, thanks to VIGMIS. VIGMIS also prints out periodical reports thus maintaining an up-to-date information base.

Twenty senior-level officials of the Vigilance Cell of the Central Public Works Department attended the workshop which started with a brief introduction to computers. Different features of the Vigilance Management Information System (VIGMIS) were explained in detail, and a half-day practical demonstration session was conducted to clarify the operational features of the System.

## GOING BACK TO THE ROOTS WITH GISTNIC

### From our Local Correspondent

**New Delhi, NOV:** A new database on **Traditional Sciences and Technologies of India** has been incorporated in the database galore of the General Information Systems Terminal of the National Informatics Centre (GISTNIC). The database was formally inaugurated by Dr SZ Qasim, Member of Planning Commission, on November 11, 1993 at a function organized in the Scope Complex auditorium, New Delhi.

In his inaugural address, Dr Qasim congratulated NIC for the accomplishment. "This information will be crucial for Planners related to science and technology in various organizations in identifying the appropriate technologies for implementation in the rural areas," he said.

Dr P Rama Rao, Secretary, Department of Science and Technology, Government of India, spoke on the rich tradition of

Indian science and technology, with special emphasis on metallurgy. Dr K Swaminathan, Member, Planning Commission, who was also present on the occasion, congratulated NIC for compilation of the database.

The distinguished guests and invitees were given a demonstration on how to access the database.

The GISTNIC database on Traditional Sciences and Technologies of India has been classified into 10 major subject areas and 100 minor subject areas. Each subject covers a large number of individual items. Each individual item is a well-defined concept the description of which is given as an abstract displayed on the computer terminal screen. About 2,500 of such individual areas are covered under the subjects.

The retrieval of information can be either

menu driven or keyword based. When the User gives a keyword, the subjects and items matching the keyword are retrieved by string matching technique, and the text displayed on the terminal screen. The information is in English, with occasional Sanskrit quotations. Any User with authorized User-id, password and allotment number can log on to the NEC S1000 computer system at NIC Headquarters in New Delhi, from any NICNET node, and invoke the database with the command **VIJN** at the **SYSTEM? prompt**.

The database is expected to cover about 5,000 items of interest in traditional sciences and technologies of India by 1995. National Informatics Centre is soon to develop a sub-database of the GISTNIC Traditional Sciences and Technologies database, with multimedia facilities.

# EDI : Business Communication goes Electronic



Electronic Data Interchange (EDI) is the inter-organizational exchange of business documentation in structured, machine-processable form. EDI is actually a way of replacing manual data entry with electronic data entry. The purpose of EDI is to eliminate delays in processing and data re-entry.

Electronic Data Interchange can be used to electronically transmit documents such as purchase orders, invoices, shipping notices, advice and other standard business correspondence between trading partners. EDI can also be used to transmit financial information and payments in electronic form. When used as such, EDI is usually referred to as Electronic Funds Transfer (EFT).

## EDI Solutions from NIC

National Informatics Centre has been offering messaging services to its corporate customers. These include electronic mail service based on NIC's satellite-based computer-communication network, NICNET. With the growing international acceptance of X.400 standard (Please refer X.400 Stand-

ard Model Description in Box) and EDI technology, NIC recognizes the opportunity to significantly increase its business volume through differentiated services. In order to meet the new demand from the business community, NIC has established an EDI/E-Mail Value-Added Network (VAN) Server over NICNET.

## Network Server Configuration

At present, this Message Handling System (MHS) consists of only one central MTA based on VAX/4300 dual node cluster and TELECOM 400/G-X (or TC400) Message Switching (XS) software of Digital Equipment Corporation. The TC400 is based on the 1984 implementation of X.400. The VAX cluster is connected to the packet switch on two 64 kbps links. The TC400 MTA will be interconnected with VSNL's MTA using P1 protocol. Similarly, it can be interconnected with any MTA supporting P1 protocol for messages relaying purposes.

## Telecom 400 Implementation

The UA and MTA are co-located on the VAX/VMS platform. With this kind of configuration the UA is often called LUA. Using this LUA, both E-Mail and EDI mes-

sages can be exchanged. Separate mailboxes are maintained for EDI and E-Mail. NICNET Users with accounts on TC400 MTA can access the LUA to submit/collect the messages. LUA also gives a limited facility to create E-Mail; but creation of EDI standard message should be done outside LUA.

To cut down the access time on the Network Server, a Remote User Agent (RUA) software named PC-BOX/UNI-BOX will be given to Users. The PC-BOX is a stand-alone software resident on DOS platform. The UNI-BOX on UNIX platform can create the E-Mail messages and submit them to MTA. The protocol used between RUA and MTA (via LUA) is Digital's proprietary protocol (Common Definition Interface Format, CDIF). This kind of format is adopted by almost every vendor to minimize the cost at the user site.

## Utility Features of Network Server

The NIC Network Server is also hosting a DEC/EDI central translator software to provide:

► Value-added services such as EDI standards translation.

Mailbox Users may want to convert the structured message (created using forms)

## X.400 Standard Model

### Message Handling System (MHS) Model

Recommendation X.400 describes the system model and service elements that administrations provide for subscribers to exchange messages on a store-and-forward basis. In essence, X.400 MHS conventions provides two fundamental types of Message Handling (MH) services --- Interpersonal Messaging (IPM) and Message Transfer (MT).

Interpersonal Messaging (IPM) (encoded in P2 protocol) is a person-to-person communication of electronic mail (E-Mail). Message Transfer (MT) service supports general, application-independent message transfer. Message Handling System (MHS), which describes sub-layers within the Application layer, supports both services.

An MHS User (depicted in figure), can be either a person or computer application.

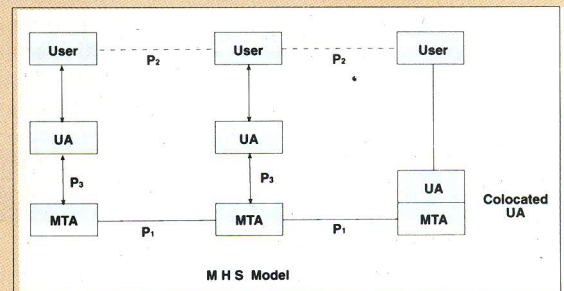
A corresponding User Agent (UA) represents a User, classified as an originator or recipient, in the MHS. UAs interact with Message Transfer Agents (MTAs) and, with MTAs, form the Message Transfer Systems (MTS). UAs are grouped into classes based on the types of messages they handle; each identifying its class by facilities in the MTS.

Collectively, all these elements make up the Message Handling Environment. Functions performed solely by the UA and not standardized as part of the MH services, such as those proprietary features of a vendor's UA implementation, are called local UA functions.

An originator prepares messages with the assistance of a local UA, which structures the information into envelope and content entities. After the envelope and contents are submitted to the MTS, the MTS initiates a generalized store-and-forward service. The MTS must support both submission and delivery interactions with the appropriate UAs.

Using the relaying interaction (P1 protocol) and its associated relaying envelope, each MTA passes an outbound message to another MTA until the message is received by the recipient's MTA, where it is delivered to the recipient UA via the delivery interaction (P3 protocol). The relaying envelope contains information related to MTS operation as well as the service elements requested by the originating UA. Generally, MTAs transfer messages of binary information and do not alter or interpret the contents unless instructed by a service element to do so.

**Organizational Mapping Facility:** Since a large-scale implementation of the MHS often links geographically and logically-separate Users, some means for distributing system administration tasks are necessary. A Management Domain (MD) fulfills this task. An MD consists of at least one MTA and can contain UAs owned by an organization or public administration. Domains managed by administrations (such as P&T) are Administration Management Domains (ADMDs), while those maintained by private organizations are Private Management Domains (PRMDs).



Source: Datapro Reports

into EDI standard message or require translation from one EDI standard to another (eg. from X12 to EDIFACT) before delivering the message to the trading partner.

#### ► EDI capability for infrequent Users

A User can upload ASCII flat-files extracted from his in-house computer application into DEC/EDI through an application interface specific to him. DEC/EDI translates the flat-file into a defined standard message (eg. EDIFACT, X12 etc.) and forwards it to

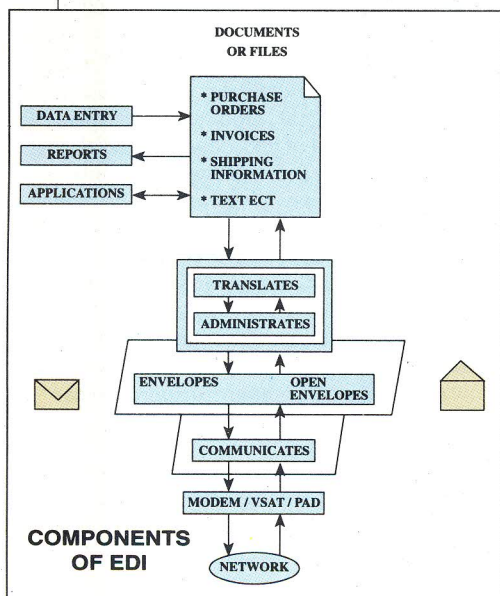
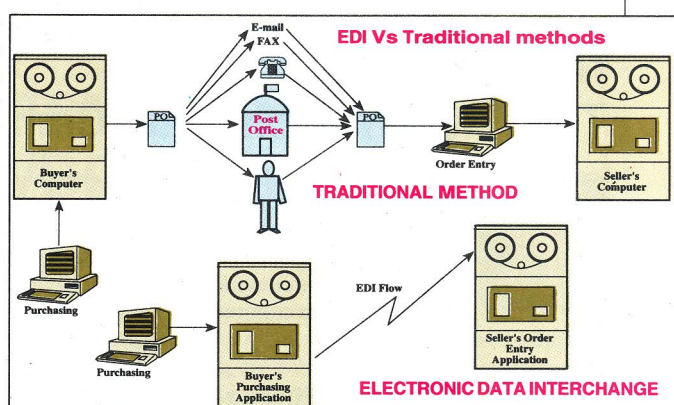
the trading partner. In the same way, it can receive EDI messages from the trading partner, convert into flat-file, and make it available for the User to download into his in-house computer application for processing.

### Transport Media for EDI

The actual movement of EDI data can take many forms. The transmission can be directly between two parties; or it can be transmitted indirectly via a third party which acts as a service provider (VAN). Also, the transmission can be made in the form of computer tapes and disks (where large volumes are involved), or any other forms of physical storage of data as long as the data can be processed by the receiving computer without re-keying.

### EDI Requirements

Along with some sort of hardware for communications, the basic requirement is a software capable of handling and controlling incoming or outgoing EDI messages to any number or combination of trading partners. Such a software is generally called an EDI converter or translator and is totally independent of the computer



applications that pass data to it, or receive data from it. NIC provides such an EDI converter software, based on DOS, to be used as RUA for EDI-message class. This package operates both as a stand-alone workstation as well as an unattended, front-end processor. It comes with a built-in, user-friendly development tool kit for customization of EDI message templates, screens, printouts and flat files for uploading and downloading. The package supports all versions of EDIFACT and X12 standards and is upgradable to any other industry standard including proprietary messages. (For further information please contact: TDPP EDI Group, National Informatics Centre, A-Block, CGO Complex, Lodhi Road, New Delhi - 110 003. Phone: 4360597, Fax: 91-11-4362489.)

**NIC wishes you  
a Happy and Prosperous  
New Year**



## RADIX : The Friend in Computer Communications



ADIX is a general purpose communication software facilitating asynchronous communication over serial ports of the computer. Using RADIX, the User can communicate between systems

- connected through direct connection
- connected through dial-up MODEMS
- connected over networks through PAD interface.

### Software Features

**Terminal Emulation:** RADIX provides *terminal emulation*. This implies that RADIX enables the terminal to send out the characters typed on the keyboard through the serial port. Characters that arrive at the serial port are also displayed on the screen.

**Fully-Automated Dialling :** The User can maintain up to 500 entries of names and addresses for dialling the remote systems in an on-line address book. The User can ask RADIX to dial any one of these numbers to connect his computer to the remote computer. It will automatically re-dial several times if a number is busy.

**Reliable File Transfer:** RADIX supports file transfer facilities between two computers in an interactive mode. The User can choose any of the standard protocols supported by RADIX to achieve the trans-

fer. As the protocols are widely available, it is not mandatory to have RADIX running at the remote end. Any software supporting these standard protocols can be used to transfer files.

**Raw Send and Capture:** RADIX also provides raw send and capture facilities without any kind of error detection and correction. This allows the User to send files to remote systems or get files from remote systems which do not have any other file transfer protocol supported by RADIX.

**Background Daemon :** RADIX Background mode runs as a server daemon monitoring the calls received from the remote users on the configured serial port. When a call is sensed, a menu is displayed to the remote user, using which, various services, for example Mail, File transfer etc., can be accessed.

**Screen/Non-Screen Mode operations:** RADIX foreground mode has its own screen where each character typed from the keyboard is processed before it is transmitted. Also, each character received is processed before it is displayed on the screen. This may be a disadvantage when the User wants to access screen-based applications on remote hosts. In order to facilitate access to such screen-based applications, RADIX allows the User to work in the non-screen mode avoiding any character processing. ⚡

## Software for Analysis and Modelling

**TRANSYS** The Analytics and Modelling Division of the National Informatics Centre has developed a generalized decision-support system for solving multi-objective, multi-source, multi-product and multi-transport mode transportations and distribution problems.

Named TRANSYS, a prominent feature of the System is that unlike in other similar transportation softwares, the User need not be an Operation Research specialist. TRANSYS generates the model and various analytical reports on its own. Moreover, most of the softwares available in the area of transportation and distribution handles only single-objective type problems (such as minimization of transport cost or time), whereas, in reality, Users view the transportation and distribution problem as a multi-objective one. TRANSYS, with its multi-objective criteria, provides the solution.

The Goal Programming approach has been used as the solver.

**GISTNIC-Analyst** The Analytics and Modelling Division of the National Informatics Centre has developed an interface, called GISTNIC-Analyst Interface, to select parameters and retrieve data from the new version of statistical profile in GISTNIC.

The GISTNIC-Analyst Interface is now available with **Analyst ---** a generic analysis package on the NEC system under GISTNIC Analyst.

The invoking command is **ANAL** at the **System?** prompt. ⚡

## Going Places with NICMAIL400



he recent introduction of NICMAIL400 services over the satellite-based computer-communication network, NICNET, of the National Informatics Centre, now provides NICNET Users fast and reliable electronic mail service conforming to X.400 recommendations. With NICMAIL400, Users can now exchange mails through any other national or international network providing X.400 mail services.

NICMAIL400 supports integrated facility to transfer EDI messages. FAX gateway is provided for non-X.400 Users who have FAX facility. Different platforms host Remote User Agent Software to enable Users to access NICMAIL400 which is available round the clock.

Prominent features of NICMAIL400 include:

■ Composing and manipulating mail at

local site/network host

■ Filing mail in different electronic folders

■ Password-protected unique mailing addresses

■ Directory-service support to provide simple addressing schemes

■ Gateway to SMTP/UUCP world

■ Delivery of messages to multiple recipients

■ Distribution list to send mail to a group of Users

■ Delivery and non-delivery notification

■ Answer and forward capabilities

■ Transfer of text files

■ Binary file attachment to message

■ Attachment of forms with message

■ Easy-to-use menu-driven user interface

■ Time stamp for sending and receiving messages

### NICMAIL400 can be accessed through

◆ Dumb terminals with asynchronous connection to NICNET via direct, dial-up or VSAT connectivity. In this case, no software is required.

◆ Personal computers with asynchronous connection to NICNET via direct, dial-up or VSAT connectivity; using Remote User Agent Software

◆ Systems with X.25 card with X.25 synchronous connection to NICNET; using Remote User Agent Software. ⚡

# PROJECTS

## NIC to translate Russian S&T Information

**T**he National Informatics Centre will soon be taking up a project to translate the vast and rich information on science and technology developments available with Russian research and development institutions, for utilization by the rest of the world.

*Perestrioka* and *Glasnost* and the subsequent restructuring of the Soviet Union opened the floodgates to the largely untapped information on science and technology in Russia. The information, most of which is in the Russian language and was available only to a group of select institutions within the Country in the days of the Soviet Union, reveals significant Russian advances in many fields. This has kindled the interest of many Countries including the US. However, the information is in a very disorganized state and needs to be sorted out before it can be utilized fruitfully. The information is mostly in the form of literature, documents and university theses.

The National Informatics Centre has already conducted a series of discussions with Russia and plans to set up a cell in Moscow for the purpose. NIC will have satellite link up with four Russian research and database organizations. A national translation facility will be created in the Country and the translated information will be provided to Countries which want it.

India will receive service charges as returns, while the organizations in Russia will benefit through royalties. ♣

## Computerized System for MBBS/BDS Admissions

**T**he National Informatics Centre has successfully designed and implemented an on-line computerized allotment and display system for the all-India undergraduate quota for admission to MBBS/BDS courses, 1993.

Earlier, the Supreme Court of India had taken note of the problems in the scheme for allotment of MBBS/BDS seats and ordered modifications. The Directorate General of Health Services (DGHS), Ministry of Health and Family Welfare, Government of India, which is responsible for allotment of seats under the scheme, entrusted NIC with the task of designing and implementing an on-line computerized allotment and display system.

The System designed by NIC provides an on-line computerized seat-allocation system along with teletext display of the latest seat status in each college, on multi-television monitors.

The computerized system maintains a database of approved colleges and respective vacancies, in the computer. It also contains details of candidates such as rank number, roll number, name, address etc. For allotment of seats, candidates have to appear in person in front of a committee as per the schedule announced by DGHS. On the day of personal appearance, the

candidate is called in order of merit and can choose any one of the seats available for allotment at his/her rank. The choice is fed on-line into the computer, and the allotment process is completed by upgrading the database. The overall process executed in the computer is also shown on-line on a large screen-projection system attached to the computer. The system thus provides a transparent allotment process.

In the teletext display, multiple television monitors are hooked on to the main computer. These TV monitors display the seat status in screens, and the candidates are able to view the latest number of seats vacant in various MBBS/BDS colleges. Each TV screen shows the vacancies for eight colleges, and in each monitor, several screens roll one after the other at 25 seconds intervals. The number of seats for a particular college decreases with each allotment for that college. The college, against which the code **NA** is displayed on the screen, has no more seats available for allotment.

The teletext display helps the candidates in selecting a college of his/her choice based on the availability of seats. The computerized allocation system not only makes the admission procedure foolproof but also cuts down on the time required to a great extent expediting the entire process. ♣

## Structural Analysis of HMT PC-10 Machine

**T**he Hindustan Machines Tools (HMT) and the Computer-Aided Design (CAD) Group of the National Informatics Centre are jointly carrying out a structural rigidity analysis for the **Precision Chucker-10** (Lathe Machine). This Computer Numerically Controlled Lathe, designed by HMT, Bangalore, has a precision as high as 15 microns. Though HMT possesses some other commercial Finite Element software, NIC was approached for the analysis of this type of huge structure because of its technical expertise in the field.

The main objectives of the Project are to:

- obtain the deflection pattern of the Lathe
- get the dynamic behaviour
- achieve material optimization

The data, presented in the form of machine drawings, is transformed to Finite Element

Model by using the SESAM software. The SESAM Preprocessor Modules PREFEM, PREFRAME and PRESEL are used for creating the Finite Element Module. The work is being done on the CYBER-180/830 computer system.

For ease in modelling, seven different components of the Lathe are modelled separately and then assembled using Superelement Technique. The components are Cabinet Base, Bed, Intermediate Block, Headstock, X-Slide, Z-Slide and Tool Post Assembly. The complexity involved in this modelling can be appreciated by the fact that 2,360 points, 4,424 lines, 2,442 surfaces and 385 bodies had to be defined to create the Finite Element Mesh. The Finite Element Mesh consists nearly of 2,300 elements. The type of elements used in-

clude solid, shell and beam elements.

At present, the Finite Element results are being compared with the experimental results. ♣

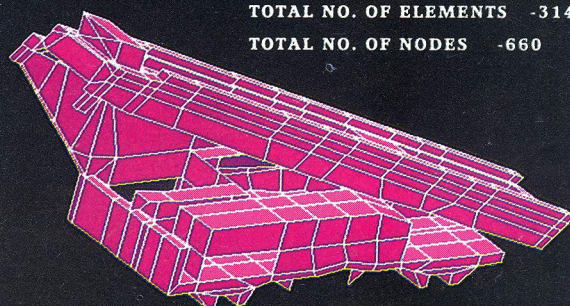
### STRUCTURAL ANALYSIS OF HMT PC-10 MACHINE USING SESAM

#### LATHE Z-SLIDE

##### FE MESH DETAILS

TOTAL NO. OF ELEMENTS - 314

TOTAL NO. OF NODES - 660





## NIC in Nagaland : Where there is a will ...

**C**ouched in the farthest corner of the Northeast, the hilly State of Nagaland with its capital at Kohima is more known for its colourful people, their exquisite dances and intricate handicraft. Nagaland is also considered to be one of the most remote States of the Country. Out of its total population of 12,09,546 around 10,60,822 are classified under the category of Scheduled Tribes and are broadly called the Nagas. Administratively, Nagaland is a tough State by any standards. The inaccessibility of its interiors makes any effort at development difficult to achieve, and the people of Nagaland had been long deprived of the facilities of modern technology.

It is in this context that the presence of the National Informatics Centre (NIC) in Nagaland acquires added significance. NIC District Computer Units are operational in most of the Districts of Nagaland. The NIC Nagaland State Unit in Kohima is the apex NIC Centre in the State and co-ordinates the working of all the District Centres. In addition to this, NIC is maintaining a training and maintenance centre at Dimapur which is considered to be the gateway to Nagaland.

### Investments in Dedication

The going was tough at the beginning. Sites had to be selected and developed for the computer centres, machines and equipments had to be transported through difficult terrains where modes of transportation were at the best primitive. Mr K Murugesan who was the first NIC Officer-in-Charge of Nagaland, along with his colleague Mr A Loyla George Amirtham, laid the foundation of informatics in the State. Thanks to the massive infrastructural support and the efforts of the beginners, today Nagaland is at par with the rest of the Country as far as the use of computers and modern satellite-based computer-com-

munication facilities are concerned. The Nagaland State Government is availing all NIC facilities to the fullest extent and is helping NIC in the spread of the new working culture of informatics in the entire State.

### The High-water Mark

At the request of the Nagaland State Government, NIC played a major part in computerization of census operations of the State. Census data for Nagaland was released in February 1993. The Director of Census Operations, Nagaland, in his inaugural speech on the occasion, praised the co-operation accorded by the NIC Nagaland State Unit in co-ordination of census operations. For the first time floppies containing census data were also distributed amongst officials.

### NICNET Utilization

NIC's satellite-based computer-communication network, NICNET, is widely used in Nagaland and has assumed an important status because of the State's remoteness and under-development of other means of communication.

NICNET is utilized for message transmission between Kohima and the District Headquarters on one hand and between the State and Central Administrations on the other.

### Implementation of NIC National Projects

Many of the national projects of NIC have been taken up and successfully implemented in the State.

The National Watershed Development Project for Rainfed Areas (NWDPR), which falls under the AGRiculture Informatics Division (AGRID) of NIC is being co-ordinated by the State Unit. Data from the Agriculture Department of the State is fed into NIC systems every quarter and sent to AGRID through NICNET. Training programmes were organized for State Agriculture Department personnel.

An Agricultural Census Software Package, developed by the Western Regional Centre of NIC has been implemented in Nagaland. Data entry for the 1990-91 agricultural census has already started. The complete data will be transmitted to Krishi Bhawan, New Delhi, over NICNET.

The Computerized Rural Information System Project (CRISP) software has been taken up in the State. Data entry for CRISP has been started after providing the required training to state personnel concerned.

A discussion with the Regional Transport Officer and the Deputy Transport Commissioner paved the way for computerization of the transport system of Nagaland. The Transport Information System under the District Information System of NIC (DISNIC) has been implemented, and the data is being entered into NIC systems.

### For the State Administration

In the States, the primary aim of the National Informatics Centre is to assist the state Administration in overall computerization of different administrative processes and procedures so that information for decision making is readily available at all levels. In Nagaland also, the NIC Nagaland State Unit has undertaken some major projects exclusively for the State Administration.

Work for computerization of the educational statistics of the State is under way. The processes of data collection and data entry are going on simultaneously. The data is collected through printed forms specially designed for the purpose.

The Co-operative Department of Nagaland approached the State Unit with a request for computerization of the process of codification of Blocks and Primary Agricultural Co-operative Societies (PACSS). NIC took up the job, and the first phase of computerized codification has been completed.

On the request of the Reader and Head, Department of Linguistics, North East Hill University (NEHU), the NIC Nagaland State Unit has taken up a project which envisages the computerized processing of data collected for sociolinguistic studies. The data collected through a questionnaire is now being entered into NIC systems for processing.

### A Matter of Resolve

*In Nagaland, NIC has proved once again that modern technology knows no barriers. All that is required is a little effort and dedication. The way the Nagaland State Government has welcomed the modern science of informatics is but an indication of the Country's triumphant march towards progress. The hurdles will always be there; so will the pioneers who dare to take the jump. For where there is a will there is always a way.*



Mr Z Obed, Minister of Planning, Nagaland, visits NIC Kohima State Centre