

FINAL REPORT

ON

IT DATABASE CREATION

First Phase

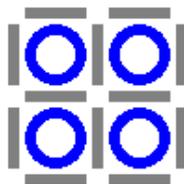
Need Analysis and Work Plan

Presented to

The Ministry of Science and Technology

SinghDurbar, Kathmandu

Submitted by



IT Professional Forum of Nepal

June 2001

Acknowledgements

The paper is an overview of the first phase, (need analysis and work plan), done by IT professional Forum of Nepal for Ministry of Science and Technology discussing the creation of an IT database. The phase was completed in six weeks from starting date. Within this time period, we have received remarkable contribution from different IT Professionals executives, organizations, associations, and senior executives. Their contribution was invaluable in creating this report. We would like to express our sincere gratitude to all of them.

TABLE OF CONTENTS

Introduction	4
Background	5
Terminology.....	6
Current Situation	7
Infrastructure and Services.....	7
Existing IT Surveys.....	7
The National IT Database Objectives	9
Data Components	10
Basic Data Components	11
IT Human Resource Information	12
IT Infrastructure Information.....	13
IT Industry Information	14
Software Developers and IT Enabled Service Exporters	14
ISPs and Internet users data	14
IT Related Equipment Vendors.....	14
IT Training Institutes and Trainee List with Nature of Training.....	14
Additional Data Components	15
The Deliverables of the Proposed Work	16
Requirement Analyses and Planning.....	16
System Design.....	16
Data Collection.....	18
Software Development and Testing	19
System Implementation and Training	20
Data Entry	20
Maintenance of National IT Database.....	21
Sustainability and Policy.....	21
Budget.....	22
Project Plan.....	22
ANNEX 1 Study of Previous IT Surveys	
ANNEX 2 Status of Computerization in Nepal	
ANNEX 3 List of Districts with POP	

Introduction

The aim of this paper is to provide sufficient information to be used by the government of Nepal, mainly Ministry of Science and Technology as well as other IT related organizations, associations, forums and their executive professionals and any potential international counterparts.

This report covers the following topics:

1. IT Database – description on a general level, components, work effort
2. The requirements of necessary data components
3. Motivation of necessity
4. Cost calculation and general project plan

The phase was completed systematically within an exact time period. The following activities were our main sources of information:

1. Meeting with MOST Secretary and Officials
2. Meeting with CAN Executives
3. Meeting with Key IT Personalities
4. Study of existing IT survey reports
5. Brainstorming with Stake Holders

On the context of rapid proliferation of information technology in all sectors of the country, the necessity of National IT database is fundamental. Simultaneously, both the private sector as well as international IT organizations and joint venture companies are showing a growing interest to invest in Nepal's IT industry. In this situation, an IT database plays a powerful part. It is also a matter of survival in a technology driven society of today and the near future. The availability of accurate data within this field is of paramount importance for every country.

Background

Computerization of Government Organizations and Public Sector Entities started back in 1974 with the establishment of National Computer Center. All the Government Organizations and Public Sector today use computers for Word Processing, Communication, etc. Applications in Accounting, Personnel Record etc are the first application software implemented in these institutions:

The National IT database would show the IT status and environment in the country. The Information Technology sector is trying to kick-start itself in the country, and in the present scenario rapid changes are a fact. The overall computer scenario in the country is changing rapidly and the users of computers are also increasing in number. But, keeping this in view, our country is far behind in global competition. At this stage, it is necessary to know what we ourselves have and what our capabilities and prospects are regarding IT sector.

The IT data base is not just about the IT status and environment of the country, but it is also about providing data for developing all fields of the IT sector, since development requires pre-assessment of various factors governing it.

Terminology

In this report we use a set of terminology as defined below.

IT or information technology	computer or telecommunication based industry covering system design, project management, application and software development, graphic and visual design, programming and coding.
Database	A register or resource of information collecting all relevant information and data related to a defined area.
NITD	Nepal Information Technology Database
Component	With component we mean the area or field of information and data to be collected. We divide components into <i>basic</i> and <i>additional</i> components. <i>Basic</i> components are those essential for achieving the objectives set for the National IT database. <i>Additional</i> components give added value to the users of the database.

The current situation

The current situation in Nepal is that there are no proper records of IT related data available. Finding out and studying IT situation in the country, the infrastructure, the level of skills etc is not possible at the moment. It is essential to design and create a national IT database for this purpose.

The scenario now includes computer vendors representing almost all global brands (Compaq, Dell, Fujitsu, HP, Canon, NEC, Acer, Epson, Toshiba, etc.) as well as local assembling of computers. The total number of private firms working in computer sector exceeds 500, with more than half of these providing training programs of one type or another. The total number of computers in use may have exceeded 50,000, with a majority of these concentrated in Kathmandu valley. There are 12 ISPs with cumulative bandwidth of more than 10 Mbps, and only one telecom service provider, with Tele-density (telephone penetration density as proportion of population) of 1.25%.

Infrastructure and Services

Four Nepalese universities are offering IT related academic courses with annual intake of about 2000 students. The number of students going out of the country to study IT courses is not included in this figure. The number of colleges offering IT courses, and their capacity is growing every year. There are also a number of colleges being opened with affiliation from foreign universities offering IT courses.

Private training institutes are now offering long-term professional training courses. Several training institutes in Nepal have been franchised from top class institutions from India, Singapore & UK.

Nepalese software development and production companies have been successful in meeting the national software development demand and do small volume of software exports.

1000s of man-hour worth software and services are exported every day including development service to reputed companies like Toshiba. It also includes services like medical transcription, call centers and GIS.

Foreign investment on software development industry had started since 1983. A software company has been established with full US investment and successfully running with Nepalese software developers since 1997. Now, we have Software and service Joint Ventures with US, Japan, India and others.

The trend of opening up companies offering software application services such as digitization, medical transcription etc especially for export purpose is growing.

Highly advanced e-commerce portals are also developed here for the US and Europe

Nepal Telecommunication Authority (NTA) has been established in order to facilitate and regulate privatization of telecom & communication facilities (ISP, VSAT, Paging, and Cellular, WLL & ultimately fixed line services).

There are 12 ISPs who have received the License & 9 ISPs are already up and running very actively. Estimated number of Internet users is more than 100000.

According to a press release from NTC, all 75 districts have telecommunication infrastructure, 1528 VDCs out of 4000 have PCOs. NTC aims to have at least two telephone lines in each VDC by 2004 AD.

MM CD-ROM of Nepal has acclaimed International BEST Award

Off-the-shelf software products from Nepal are also being used abroad

Existing IT Surveys

- Surveys done by NCC
No information available
- Surveys Done by CAN
Subject: IT training institutes. Status: incomplete
Subject: Available IT service & their number in the country. Status: complete
- Survey Done by IT Park, Industrial Enterprise Development Center
No information available
- Biscons Survey
Subject: Policy and IT Movement in Nepal. Status: complete
- KU Survey
No information available
- CORExpress Computer Magazine
Subject: IT training and training institutes. Status completed
Subject: Number of hardware vendors in the country. Status: completed
Subject: Market realities of PC. Status: completed
Subject: Computer and IT manpower in the country. Status: completed

The National IT Database Objective

We have already entered the millenium of information technology. For a country like Nepal, information technology can be a miraculous tool to escort the nation into development and prosperity. To embark into the field of information technology as an internationally important contributor, we first need vital facts and figures showing our existing strength and capacity. Based on this we can design a realistic plan that can be successfully managed and implemented.

The objectives of the National IT Database are hence:

1. To assist the government with important statistics in planning and implementing IT policy
2. To assist the industry and investors by providing important information for their expansion and investment plans.
3. To promote Nepal as a venue for IT related services by showing the strength available in the country.

Data Components

To meet the set objectives, the NITD should consist of components from at least three categories of information:

- IT human resource information
- IT infrastructure information
- IT industry information.

Regarding IT, the data components have been divided into two parts, basic and additional data components, according to their value and importance. By basic components we mean all the data that are fundamental and essential for obtaining the objectives set for the National IT database. Without this data the database would not serve its purpose.

The additional data would offer added value for the users of the database, providing them with a wide range of information. It would be a good marketing factor and build a centralized platform for all IT related tasks.

The basic and additional components can be collected in different phases, but the existence of additional components should be taken into consideration in planning phase and system design.

There are some open questions concerning collection of the data. The IT industry might find giving out information concerning their employees

as a threat, as this type of information can be considered to be business secrets.

One possibility, concerning the human resource data of IT professionals, could be collecting all information on voluntary basis directly from individuals. Every individual would be a member of this IT database, as if members in an IT related association.

The IT industry would provide information concerning their business idea, products and other statistical data valuable for the database.

Basic Data Components

IT Human Resource Information

The data of IT professionals show the present status concerning human relation information within the field of IT. Based on this type of a database accurate prognosis for the future can be made.

In this component, we are storing human relations data available in the country, including personal qualifications. Qualification data will be divided into three parts:

1. By academic qualification, i.e. B.E, B.Sc. BCA etc.
This category will be divided into two sub-parts.
 - engineering faculty, I.e. B.E, M.E
 - general degree, i.e BSC,BCA,MSC
2. By training (with academic background in computer science), i.e. Diploma- level course in some computer training centre
3. By working experience

Data Sources: Reasons for selecting data sources and details of the scope needs to be specified. Mechanisms for collection should also be detailed out. The main source for collecting data are as follows:

1. Direct approach to the IT related organizations. They would provide all necessary information about their employees.
2. IT Graduates from Universities/Colleges offering IT related degrees, their capacity, and infrastructure. The development of the IT environment in Nepal, its status and future is also depending upon the education, capacity, and infrastructure offered by the universities/colleges and the level of degrees possible to obtain

To obtain these data, following approaches could be used:
Approach national established universities and colleges with a questionnaire for collecting required information.

Contact to the national educational board and government authorities.

IT Infrastructure Information

The national telecom infrastructure in Nepal is a necessary part of the IT database.

The telecom infrastructure, cables, networks, satellite connections, line capacities and other detailed technical information should be collected. This type of information is fundamental for planning future development of telecommunication and data communication. The foreign investors could be provided with more accurate information concerning the current efficiency of communication.

Data source: NTC and NTA

IT Industry Information

Software Developers and IT Enabled Service Exporters

There is no doubt that the computer software development is the main part of IT Industry. The records of software development and its exporters show the scope of the IT development. Without the information from this category, the IT database would be very incomplete.

Data source: Fields survey

ISPs, Number of Internet User List

The total number of Internet Service Providers and the number of internet service users in the country is a fundamental part of the national database. This can be used for future development plans and for policy making.

Data source: NTA

IT Related Equipment Vendors

The records of IT related equipment vendors show the status of national IT infrastructure.

Data source: Fields survey or Rastra Bank, taxation information etc.

IT Training Institutes and Trainee List with Nature of Training.

The role of IT training institutes is also very powerful in the context of IT development. The universities/colleges are not sufficient and fast moving enough for responding the needs of IT education. It is a proven fact, that the IT training institutes are more capable and flexible in this field. The data to be collected from IT training institutes would be the records of their total student number, personal details, intake capacity, courses provided.

Data Source: Field survey, questionnaire

Additional Data Components

Additional data components can be collected later in the second phase of the project. It should be defined what kind of additional data will be included in the database, who is going to provide and update the data etc. The additional data with significance could be found from the following fields:

- IT related associations/organizations
- IT related survey reports.
- IT related publications.
- Web hosting and designing companies.
- IT related equipment producers
- Nepalese IT related web sites
- Institutional user of IT, computerized areas.
- Official record of computer import
- Major software used in the country, locally developed Vs imported
NRN data

The Deliverables of the proposed work

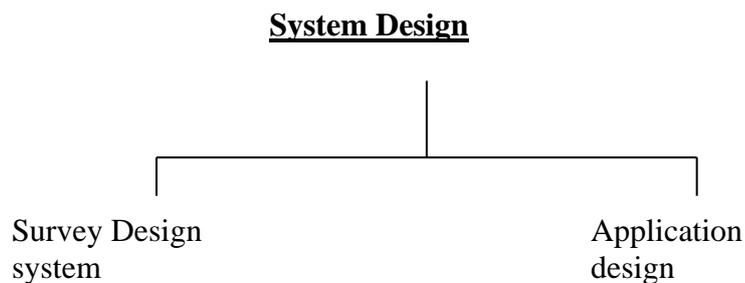
v Requirement Analysis and Planning

This phase involves determining the goals of the National IT database establishments by its stakeholders; conducting a background study of the IT situation in Nepal by summarizing previous studies and reports completed in this field, identifying the scope of work; identifying information requirements for the National IT database and preparing a plan for its implementation.

This involves discussion with MOST officials and other stakeholders of the National IT database. It should include a proposal for the process of maintaining and updating the National IT databases for its long-term sustainability. This phase will also try to envisage what form of application system (LAN based information system, Internet/Internet based etc) would be required to be developed.

v System Design

As per the requirement of the National IT database, Survey design and application system design needs to be carried out in order to achieve the goals.



Survey Design & Testing

This phase involves planning and designing the roadmap and scheme to build-up the database. This should also propose ways to update the data collection by the first survey. Questionnaires need to be designed for acquiring information on different components such as IT professionals, IT companies etc and from the viewpoint of recording it in the computer system. Designed questionnaires need to be field tested and finalized.

Resource Requirements for Survey Design:

Manpower

Job description	Required no	Required duration
Information system	1 person	1 month
Analysis		
Statistician	1 person	1 month
Enumerator	1 person	1 month

Estimated cost:	100,000/
------------------------	-----------------

Deliverables:

- i. Questionnaires (regarding computer fields)
- ii. Sampling and estimation details
- iii. Pilot test
- iv. Survey user manual with design details on surveys.

Application System Design

As per the information requirements of the National IT database and according the designed questionnaires, an application software system needs to be designed. It involves design of Architecture of application system, Outputs, Database and writing program specifications.

Resource Requirements for software system Design

Manpower

Job description	Required no	Required duration
System Analyst	1 person	2 months
Analyst/Programmer	2 persons	2 months

Estimated Cost: 3,20,000/-

Deliverables:

- i. A system manual including application architecture and programming language
- ii. Database design
- iii. Software specification
- iv. User interface design
- v. Intranet/Internet web application design
- vi. Hardware/Software network specification.

v Data Collection

As per the survey design, data needs to be collected from all the information sources. Field visits to other districts and towns of Nepal to collect data are expected during this phase. Providing training to the enumerators, data coding, field checks and table validation will also be a part of this phase.

Resource Requirements for data collection phase

Manpower

Job description	required no	Required duration
Trainer/Supervisor	1 person	1 month
Enumerators	4 person	1 month

Estimated cost: NRS 100,000/-

Deliverable:

- i. Edited and coded questionnaires form

v Software Development & Testing

As per the application system design accomplished, software development will be carried out for the prescribed hardware and software platform. Quality testing of the software will be done (WHAT STANDARDS AND METHODS?) and testing of the software will also be done with the sample of data collected from the survey forms.

Resource Requirements for Software development and testing phase

Manpower

Job description	required no	Required duration
System Analyst	1 person	3 months
Programmers	3 persons	3 months

Estimated cost:	600,000/-
------------------------	------------------

Deliverables:

- i. Software
- ii. User manual
- iii. Test results
- iv. One year warranty

v System Implementation & Training

Procurement of hardware, software and installation of application software will be done in this phase. Training to support personnel and users at MOST will also be needed during this phase.

Resource Requirements for System Implementation & Training phase

Manpower

Job description	Required no	Required duration
System Analyst & Trainer	1 person	2 weeks

Estimated Cost:	30,000/- (excluding the cost of hardware and software as well as networking)
------------------------	---

Deliverables:

- i. Installation, and commissioning
- ii. Training

v Data Entry

Data entry of all the collected survey forms will be done. Verification of data entry will also be done as per the survey forms.

Resource Requirements for Data entry phase

Manpower

Job description	required no	Required duration
Data entry operators	2 persons	1 month

Estimated cost:	30,000/-
------------------------	-----------------

Deliverables:

- i. Verified data in prescribed form and media

v Maintenance of National IT database

The National IT database needs to be maintained on a continuous basis.

Proposal for maintenance of database should also be specified including at least the following areas:

- Hardware maintenance
- Application maintenance
- Upgrading of data and application
- Replacement of data fields or components
- Technical support
- Further development of the database
- Help desk

v Sustainability and policy

By creating one/window policy, the government is able to create modern policy for the whole sector of information technology. Provisions such as compulsory registration through the National IT database to the Ministry of Science and Technology, are the major tools to be used in achieving a sustainable source of information in this field. The private sector can react in a positive way to this kind of a change, because at the same time the government is providing them with essential information through the database.

This project can be the basis for creating and developing a new type of policy.

