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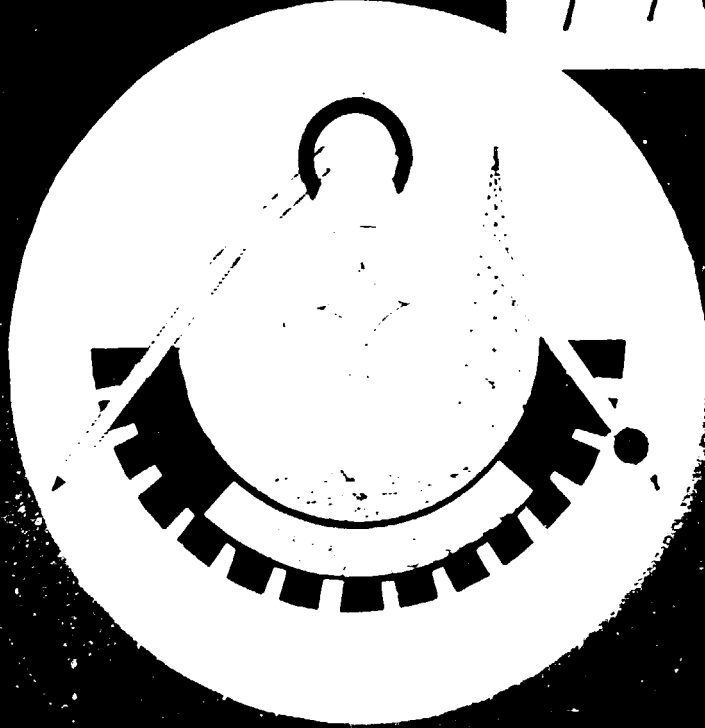
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FINAL REPORT

ON THE

**DEVELOPMENT OF COMPUTERISED
MANAGEMENT INFORMATION SYSTEM
FOR THE NEW NIGERIA DEVELOPMENT
COMPANY LIMITED, KADUNA**

(DP/NIR/85/023 - Contract No. 90/051)

SUBMITTED TO

**THE UNITED NATIONS INDUSTRIAL
DEVELOPMENT ORGANISATION
(UNIDO)**

**VIENNA INTERNATIONAL CENTRE
AUSTRIA**

BY

**COMPUTER CENTRE
FEDERAL UNIVERSITY OF TECHNOLOGY
P. M. B. 65
MINNA
NIGER STATE, NIGERIA**

APRIL, 1992

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SYNOPSIS

The Computerisation of the Management Information System of the New Nigeria Development Company (NNDC) Ltd, covered the implementation of various activities which constituted the project components. Being the overall achievement of this project, almost all Management decisions at NNDC Ltd., Kaduna are presently based on outputs from the Computer Systems.

Among others, the implementation problems that were generally encountered relate to logistics, communication facilities, postal facilities, beneficiary's mobilization, and end-users' pace of systems assimilation. These slowed down the pace at which implementation would have normally proceeded, thus, a resultant delay in project completion time was experienced. In conclusion, Federal University of Technology, Minna has recommended that, a project of this scope and enormity should be construed for a minimum of Twelve (12) months implementation period so as to ensure quality and purpose of implementation capable of satisfactorily sustaining the achievements of the project far beyond its implementation period.

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- APPENDIX I: A Copy of COMPUTER EQUIPMENT SPECIFICATIONS to Local Vendors
- APPENDIX II: A Copy of Uncompleted CHECKLIST applied for Quotations Evaluation
- APPENDIX III: Copies of all HARDWARE & SOFTWARE Bids
- APPENDIX IV: A Copy of Completed CHECKLIST used for Evaluation of Quotations
- APPENDIX V: A List of Procurred HARDWARES and SOFTWARES
- APPENDIX VI: A copy of proposed WORKPLAN RESCHEDULE
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1. INTRODUCTION

The Federal University of Technology, Minna (FUT, Minna) in May, 1990 received a notification from the United Nations Development Programme (UNDP) Resident Representative in Nigeria conveying that the University has been approved by the United Nations Industrial Development Organisation (UNIDO) for award of contract for the implementation of PROJECT DP/NIR/85/023 - "COMPUTERISATION OF THE MANAGEMENT INFORMATION SYSTEM OF THE NEW NIGERIA DEVELOPMENT COMPANY (NNDC) LTD" at a total cost of US\$136,000 plus N450,000 based on the proposal submitted to NNDC.

Being the outcome of the implementation of the project, this Final Report is presented to detail records of achievement, highlights of common problems encountered during the implementation, and recommendations on some possible ways of how similar projects may be construed for easier implementation in the future.

The report has been so arranged that individual activity undertaken is focused independently, giving details of the methodology for its implementation and achievements recorded on its completion.

2. PROJECT OBJECTIVES

While ensuring adequate security and privacy of data/information through the protection of Information System from unauthorised people, this project is summarily conceptualised around achieving for NNDC Ltd., a Computer-

based Information System that will support timely and more effective management decision making. It is aimed, among other things, at providing useful and timely information for management decision making on issues that relate to (though not limited to):

- (a) increasing the overall productivity of available workforce of NNDC.
- (b) long term reduction in manpower cost by a tangible percentage.
- (c) reduction in cost of unit information processing/maintenance.
- (d) improving operational strategies and control
- (e) enhancing the integrity and consistency of corporate and related information of NNDC
- (f) identifying and applying modern and sophisticated investment management techniques from time to time.

3. PROJECT SCOPE

In scope, the project implementation broadly covers the whole activities of equipment procurement, supervision of computer room facilities adptation, equipment installation, standard softwares procurement and installation, design, development and installation of customised softwares, computer literacy training, training in the use of operations of all items installed (hardwares and softwares) and, Integration of the Management Information System (MIS) into a Local Area Network.

4. PROJECT COMMENCEMENT

Following Federal University of Technology, Minna's letter accepting the approval of award of contract, a Contract Agreement was signed in August, 1990 between UNIDO and FUT, Minna to officialise the effective commencement of the project implementation. However, within the months of June and July, 1990 (i.e. prior to the signing of the Contract Agreement), preliminary activities were undertaken in close collaboration with NNDC Ltd towards evolving a suitable implementation strategy.

5. IMPLEMENTATION STRATEGY

Deriving from its wealth of experience in implementing similar computerisation projects in the past, FUT, Minna adopted an implementation strategy of constituting within its team a sub-committee of technical experts to handle a specific technical activity under the directive, coordination and supervision of the Team/Project Leader.

In addition, towards facilitating the coordination of essential inputs as would be necessary from NNDC for the success of the MIS implementation, an NNDC MIS Team was constituted under the chairmanship of one of the Company's Executive Director, and having a representative of each of the Company's Department/Directorate as members.

Bi-monthly meetings between FUT, Minna and NNDC MIS Team were earmarked for the periodic review of progress made.

With this strategy, implementation proceeded smoothly at the initial stage until certain unforeseeable circumstances (as highlighted in section 6) prevailed to constrain smooth implementation progress.

6. ACTIVITIES

6.1 Hardware Selection and Procurement.

Effective effort to assess and identify reliable computer and peripheral equipment was involved by FUT, Minna. Outcome of the overall careful assessment in this regard was the identification of products of FOUNTAIN COMPUTER SYSTEMS INC (which is based in Kansas, USA but locally marketed and implemented in Nigeria by several suppliers) as offering the relevant computing technology suitable for the implementation of the computerisation of NNDC Management Information System.

Specifically, the following presents the hardware equipment that were selected:

- . FOUNTAIN MICROCOMPUTER SETS (80286 - 16mhz processor) -
as Workstations
- . FOUNTAIN SUPER MICROCOMPUTERS (80486 - 25mhz processor)
- as Central File Servers
- . PANASONIC DOT MATRIX PRINTERS (PS1624)
- . PANASONIC LASER PRINTER (PS4420)
- . BEST TECHNOLOGY UPS (QME 500VA).
- . NETWORK INTERFACE CABLES & ADAPTORS.

Towards procurement, open bid invitations were extended

to local suppliers along with details of equipment specifications. A total of Eight (8) Quotations were received and professionally evaluated. See appendix III for copies of all Hardware and Software Bids. Result of the evaluation saw Yamashid Fountain Computer services (a Nigerian Franchise representative of FOUNTAIN COMPUTER SYSTEM INC.) as the successful bidder. Appendix IV presents the completed CHECKLIST used for the evaluation of Quotations

Order for procurement of computer and peripheral equipment was thereafter firmly placed.

Attached appendix I presents a copy of the COMPUTER EQUIPMENT SPECIFICATIONS used for bids invitation.

Also attached is appendix II which presents a copy of the CHECKLIST applied for the evaluation of received Quotations.

6.2. Computer Appreciation Training.

The Computer Appreciation Training was focused primarily on both the Top and other Management officials of NNDC Ltd who basically, constitute the company's decision makers and operations staff. Altogether, a total of 45 NNDC officials participated. For effectiveness, the 45 participants were trained in three (3) separate batches of two (2) weeks per batch.

The overall objectives of the appreciation training were -

- (i) to arouse the enthusiasm of the concerned officials in

the computerisation of the Organisation's Management Information System.

(ii) to enhance the concerned officials' ability in the effective communication with computer professionals.

These objectives were successfully achieved, as was noticed by Federal University of Technology, Minna during the system investigations for the various implemented customised applications that, the NNDC officials were able to easily identify and separate facts from opinions.

At the end of the appreciation training, each participant was awarded a Certificate of Attendance.

6.3 Hardware Shipment.

Bearing in mind the essence of implementation effectiveness and timeliness, FUT, Minna successfully negotiated with selected local supplier to make services of equipment shipment form part of the Order for equipment procurement.

Thus, following the placement of firm Order in early July, 1990 by Federal University of Technology, Minna shipment of equipment was effected as part of the local supplier's assignment. Within six (6) weeks, Hardware equipment were fully shipped to the Nigeria port.

6.4 Computer Room Facilities Adaptation.

By strategy, Federal University of Technology, Minna intended that necessary and suitable room facilities should be put to place well in advance of the arrival of computer

equipment.

To this end, as early as mid-June, 1990, Federal University of Technology, Minna triggered the necessary machinery with the NNDC MIS team towards mobilising NNDC to commence the adaptation exercise under FUT, Minna's supervision.

However, due principally to the fact that NNDC management needed to decide and approve, the number of computer sets which should be allocated to each Department within the company, and which room within such a Department should accommodate the computer so allocated, the effective commencement of the room facilities adaptation was delayed till end of August, 1991 when the company's decision on the subject was eventually communicated to Federal University of Technology, Minna.

Following NNDC management decision in this regard, Federal University of Technology, Minna promptly assessed the approved rooms and presented essential suggestions/recommendations to NNDC on the lacking facilities which should be provided. In broad summary, the computer room facilities adaptation which were effected by NNDC under the direct supervision of Federal University of Technology, Minna included:

- (a) Installation of Burglar proofs on the doors and windows (as security against theft).
- (b) Installation of non-dust absorbing carpet (as security against accidental fall resulting from possible

slippery on the floor).

- (c) Provision of appropriate computer table furnitures (to hold the System Units, Monitors, UPSs and Printers).
- (d) Provision of dedicated electrical power supply lines to the computer rooms.
- (e) Installation in each room of adequate airconditioners (to promote cooling effects as suitable for computers within the rooms).
- (f) Installation of tightly sealed doors and glass windows (as additional security against dust and possible flood getting into the computer room).
- (g) Provision of appropriate chair furnitures for computer users.
- (h) Adequate separation of Users workstations (to prevent accidental falls).
- (i) Installation of insulated materials on windows directly exposed to the sun (as security against possible damaging effect of heat energy from sun light rays).

Also recommended for implementation as additional room facilities were:

- (a) Provision and laying of PVC cable pipes for the protection of electrical wires and communication cables.
- (b) Provision of Antistatic covers as security against possible electrostatic shock (especially during harmattan).

6.5 Hardware Clearing and Delivery.

For ease of handling, equipment clearing formed part of the services which were negotiated with the local supplier by Federal University of Technology, Minna, and for which a comprehensive firm order was placed. Within two (2) weeks of arrival of their shipment, all equipment were completely cleared by the supplier and ready for delivery by end of August.

However, delivery was constrained for several weeks afterwards because Federal University of Technology, Minna was not in a disposition to fulfil the supplier's term for deposit payment on all the equipment ordered.

The incapability of Federal University of Technology, Minna in this regard was the direct implication of the operational logistics of UNIDO whereby the Vienna headquarter was unable until October, 1990 to clear submitted invoice and release approval to effect the deposit payment.

Federal University of Technology, Minna finally received the cheque for the deposit payment in November, 1990 and thereafter promptly effected deposit payment to the local supplier so as to be able to take delivery of all the cleared equipment.

On completion of the relevant protocols of delivery and assessment of all equipment delivered by the local supplier, Federal University of Technology, Minna in December, 1990 promptly delivered all the needed equipment to the NNDC MIS

Team at Kaduna.

Appendix V presents the list of all equipment and Softwares procured and delivered for the MIS project.

6.6 Revised WORKPLAN Schedule.

The explicit implication of the implementation delays witnessed on some activities as highlighted in sections 6.4 and 6.5 above was the cumulative loss of considerable length of weeks in the implementation schedule.

In adherence to its commitment of ensuring qualitative and purposeful implementation, Federal University of Technology, Minna had to, in close collaboration with NNDC MIS Team, propose for UNIDO's approval, a revised WORKPLAN that would approximately accommodate the lost weeks. The proposal received UNIDO's blessing.

Attached appendix VI presents a copy of the submitted WORKPLAN RESCHEDULE PROPOSAL.

6.7 Equipment Installation and Testing.

Following the completion, about November, 1990 of the bulk of works required on computer room facilities adaptation, and the successful delivery to Kaduna by mid-December, 1990 of all equipment, Federal University of Technology, Minna was able to secure the readiness of NNDC for the effective commencement of installation and testing without delay.

The installation and testing exercise which commenced by end of December, 1990 lasted till the first week in

January, 1991, when all equipment were fully installed and successfully tested. They were found to be satisfactorily functioning well.

By mid-January, 1991 all computer and peripheral equipment were put to use in NNDC by some officials who had acquired some capability during the appreciation training.

6.8 Standard Softwares Installation and Testing.

Closely following the completion of the hardware installation and testing, Federal University of Technology, Minna proceeded with the execution of Installation and Testing of all the Standard Software Packages procured for the successful implementation of the Computer-based Management Information System of NNDC. The exercise which lasted for about one week (in mid-January, 1991) witnessed the successful installation and testing of the following standard softwares:

- (a) Disk Operating System (DOS) version 4.0
- (b) WORDSTAR 5.5
- (c) LOTUS 1-2-3 (release 3)
- (d) VENTURA PUBLISHER 3 (GOLD series)
- (e) dBASE III+ with CLIPPER
- (F) NOVEL NETWARE (Adv.286 version)

All the standard softwares are Local Area Network (LAN) compatible editions.

6.9 Core Training On Operations of Standard Softwares.

To assist actualize the application of their capability

(as acquired during the computer appreciation training) on the installed MIS hardware and software systems, Federal University of Technology, Minna organised for NNDC a further three (3) weeks core training on the understanding, use and operations of the standard softwares. This training was focused on the company's operations staff and junior staff who constitute the usual source of information for management decisions.

In specific terms, the core training concentrated on the following:

- . Microcomputer Operations Using DOS 4.0
- . Use and Operations of WORDSTAR 5.5
- . Use and Operations of LOTUS 1-2-3 (release 3)
- . Understanding dBASE III+
- . Understanding Ventura Publisher.

The success recorded by this core training was the commencement of intensive use of the computer systems by officials of NNDC immediately after the training. The training ended by the last week of February, 1991.

6.10 Development of Customised Softwares.

Following the constitution of the NNDC MIS Team and the completion of Computer Appreciation Training, Federal University of Technology, Minna endeavoured to review, in close collaboration with NNDC, the overall MIS manual operations of the company to ascertain whether there were any changes from what was contained in submitted proposal, and which was approved by UNIDO. The outcome of this was a

confirmation of no changes; rather, a re-arrangement of the concerned operations in their order of company's priority was effected.

At the end of this review, Federal University of Technology, Minna through its technical expert sub-committees, working under the coordination and supervision of the project team leader, and in close collaboration with NNDC officials, effectively commenced detailed system investigation/survey of each of the MIS manual operations slated for customised applications using computers.

Attached appendix VII presents a copy of the Facts Finding CHECKLIST applied by Federal University of Technology, Minna for the System Survey.

On completion of the survey, and based on their findings and analysis, each technical expert sub-committee designed (in terms of input, output and processing specifications) and developed a computer-based Customised Software application for each of the manual operations assigned. By the end of January, 1991 all the Customised Software Applications were completely developed.

This activity which proved highly challenging and interesting resulted in the successful development (directly or indirectly) of the following specific customised applications:

- (a) Computerised Personnel Information Management System
- (b) Computerised Stock/Inventory Control System
- (c) Computerised Payroll, Loans & Rent Systems

- (d) Computerised Integrated Accounting System (Comprising:)
 - * Comprehensive Ledger System (Trial Balance, Profit & Loss, Balance Sheet & Final Accounts)
 - * Investments Records & Monitoring System.
- (e) Computerised Library & Research Data Bank System
- (f) Computerised Budget & Financial Planning Systems
- (g) Computerised Legal Records System
- (h) Computerised Publishing System (through the use of VENTURA Software)
- (i) Computerised Administration of Meetings Minutes/ Proceedings (through the use of WORDSTAR 5.5 Software)
- (j) Computerised Project Appraisal System (through the use of LOTUS 1-2-3 R3 Software)
- (k) Computerised Appointment/Diary Database System.
- (l) Computerised Mail System (through network communication).

For the purpose of Customised Software development, all programs were written using dBASE III+ with CLIPPER.

6.11 Customised Software Installation and Testing.

Although the development of Customised Softwares were rounded up by end of January, 1991, their installation and testing on the NNDC MIS computers were not effected until after the completion of additional three (3) weeks core training organised for NNDC officials. This strategy was to allow the concerned officials have adequate familiarisation with their Computer systems before being requested to understand the operations of the customised Softwares.

The installation and testing exercise which eventually commenced during the last week of February, 1991 was very

successful. In each case, 'life' data that were already previously implemented manually were used for testing. This parallel approach was adopted to ensure that a reliable change-over from the manual to the computer-based operations is achieved.

6.12 Data Conversion and Training on Customised Softwares.

Due to the lost of several weeks of implementation schedule, Data Conversion and Training on Customised Softwares were arranged to proceed almost simultaneously with their installation and testing. Federal University of Technology, Minna noted that in spite of the involvement of the end-users in the whole process of systems survey, analysis and design, the art of practically understanding, using and operating the evolved Computerised Software Systems was not easily impacted.

Furthermore, the task of mobilising the end-users to effectively collate comprehensive and perfect 'life' data for conversion via keyboard entry was tedious.

Summarily, this activity witnessed a generally slower pace than anticipated in the achievement of the following elements:

- end-users assimilation of the overall operations of the developed customised Softwares.
- Collating and perfecting data in readiness for conversion.
- Conversion of data via Keyboard entry (a direct

implication of the former).

Being its determination to adhere to high quality and purposeful implementation, Federal University of Technology, Minna resolved to proceed at the end-user's pace.

At the time of this Final Report, Data conversion and training have been successfully completed for all the developed Customised Softwares.

6.13 Integration to Local Area Network (LAN).

In line with networking standard, Federal University of Technology, Minna recommended to NNDC, the provision and laying of insulated PVC cable pipes, as part of required environmental facilities adaptation. This is to adequately offer protection for the RS32 coaxial cables used for implementing the Local Area Network. Protection is specifically intended against communication interference, accidental marching, tampering or destroying, direct exposure to heat, and, direct exposure to flood or rain, each of which is capable of disrupting the functions of the Local Area Network and resulting, in some cases, in the loss of vital data/information.

The effective implementation of this activity was delayed for several weeks principally due to the following factors:

- (a) protracted delay by NNDC in providing the environmental protective facilities through which the coaxial cables are to pass;
- (b) holding of the COMFAR course at NNDC which disrupted

implementation for over three (3) weeks;

- (c) protracted construction works for the renovation of the whole building of the NNDC Headquarter in which the implemented Computerised MIS is accommodated.

However, following the completion (by end of March, 1992) of the provision of the appropriate protective facilities by NNDC, Federal University of Technology, Minna successfully integrated the entire NNDC MIS into Local Area Network using the Novell Netware software. The integration, which was highly successful, witnessed among other things, the achievements of the following:

- i) Sending of communications and messages from the dedicated File Server to the Workstations and vice versa
- ii) Sharing, by Workstations, of files stored in the dedicated Server
- iii) Sharing, by Workstations, of peripheral resources
- iv) Attachment of appropriate Security Privileges to individual MIS files so as to prevent them from unauthorised access

6.14 Documentation and Run Manuals Preparation.

Following the successful installation and testing of developed Customised Softwares, Federal University of Technology, Minna endeavoured to prepare Documentation and Run Manuals on each of the developed customised applications.

While the Run Manuals provide the summarised steps to follow in each case for the operations of the Customised Software, the Documentation Manuals each present details of Files specifications and System overview on each customised

applications.

By design, the Run Manuals are to assist and guide NNDC computer operators in the day-to-day operations of the customised softwares, while the Documentation Manuals are to offer support to NNDC Software specialists for the long term maintenance of the Customised Softwares.

Copies of the Documentation and Run Manuals, are submitted along with this Final Report.

6.15 Final Report Preparation.

Having fully reached the ultimate end of the MIS project, Federal University of Technology, Minna proceeded to prepare this Final Report in compliance with the terms of its Contract Agreement with UNIDO.

UNIDO's comments and suggestions on the Draft Final Report (submitted earlier on) have been fully incorporated to the Final Report .

It is pertinent to mention that the delay till April, 1992 for the completion of the compilation of this Final Report was principally due to the delays encountered in the completion of the integration to Local Area Network.

7. Samples of Documentation Produced By The MIS

Following UNIDO's useful comment on the Draft Final Report suggesting that "Samples of Documentation Produced by the MIS for NNDC Management" be included in the Final Report, FUT Minna endeavoured to compile a separate document

containing the Samples. This is submitted along with the Final Report.

8. Product Support Services

In strict adherence to its warranty obligations, Federal University of Technology, Minna consistently, during the one year warranty, offered full support to NNDC on the maintenance/services of all Hardware and Software products implemented. These services, among others, include Routine services of hardware equipment, repair or replacement of faulty hardware components, generation of one-off specialised information reports, day-to-day assistance in the operation of customised softwares whenever called upon.

Federal University of Technology, Minna is willingly determined to offer these support services for as long as NNDC chooses to explore it.

9. Extended Warranty Services

To enable NNDC Ltd, Kaduna adequately complete necessary arrangements for her post-warranty maintenance and/or services agreement for all the MIS equipment and softwares, FUT Minna willfully and at no extra charge, accepted NNDC's request for the extension by six (6) months of the one year warranty period. Thus, a total warranty period of 1½ years was enjoyed by NNDC.

This was offered in keeping with FUT, Minna's commitment of ensuring that the achievements of the MIS

project are sustained well beyond its implementation period.

10. Implementation Problems Encountered

Although implementation was generally effective and qualitative, the following problems were encountered during implementation:

- (a) Due to the very long period between the time Federal University of Technology, Minna submitted its proposal for the project, and the time contract was awarded, a generally increased implementation cost resulting from inflation was witnessed.
- (b) The protracted delay caused by UNIDO's operational logistics in getting the headquarter to clear and release deposit payment for equipment in time, resulted in loss of several implementation weeks, and thus, a distortion on the Workplan schedule as relates to completion time.
- (c) Coordination between Federal University of Technology, Minna, NNDC Kaduna, UNIDO Lagos Office, and UNIDO Vienna were generally constrained by poor telecommunication and postal facilities. This contributed immensely to implementation delay.
- (d) The slow pace with which by end-users of assimilate the overall operations of developed Customised Softwares resulted in the extension of the project completion time beyond Consultant's anticipation.
- (e) The task of mobilising end-users for Data collation and

perfection was a tedious encounter (this was because they were engaged in so many other assignments at the same time).

- (f) Implementation delays were suffered from the very slow manner in which end-users arrived at decisions on issues relating to the provision of Computer room facilities, and environmental protection facilities for network cabling.

11. Recommendations

- (a) Bearing in mind the possibility of unforeseeable logistics and operational problems that could arise from any of the concerned parties (project sponsor, project consultant, or the beneficiary), it is recommended that a project of this scope and enormity be construed for implementation over a minimum period of 12 months.
- (b) To keep implementation cost within an easily accomodatable variation, it is recommended that decision in the future on appointment of consultant(s) for project(s) of this nature should as much as possible be made about the time the consultant(s) proposal(s) is submitted.
- (c) To considerably reduce possible loss of implementation time, it is recommended that, as much as possible, major decisions relating to directives and clearance that are tied to the project sponsor (i.e. UNIDO)

should be entrusted to the sponsor's local office in the Project Area (e.g. UNIDO office in Nigeria)

- (d) It is recommended that to a very large extent, the involvement in the future of end-users in providing any critical facilities demanding expenses, should, if not eliminated, be reduced to the barest minimum. This is to facilitate prompt project completion.
- (e) To facilitate the consistency of collation and perfection of manual data for conversion into computer files, it is recommended that for similar projects in future, any officials assigned by the end-user should be freed from attending to any other assignment, so as to have dedicated attention for the MIS implementation.

12. Conclusion

In line with preconceived objectives, the implementation of this project has been greatly successful. The manifestation of this success lies in the fact that, presently almost all Management decisions in NNDC Ltd, Kaduna are based on outputs from the Computer Systems.

It is also an added achievement worthy of noting, that, the functionally implemented Computer-based Management Information System of NNDC Ltd has satisfactorily accommodated all the previously existing computing facilities of the Company.

Finally, Federal University of Technology, Minna likes to conclude this report by sincerely acknowledging UNIDO's

demonstrated patience and cooperation during the execution of this project. Also emphatically registered and fully appreciated is the sincerest cooperation and support which NNDC Ltd extended to Federal University of Technology, Minna throughout the cause of implementation.

Appendix

Appendix I through Appendix VII are subsequently presented from the next page.

APPENDIX I

1st June, 1990

COMPUTER EQUIPMENT SPECIFICATIONS

Item No	Description	Qty
1.	<p>COMPUTER SETS</p> <ul style="list-style-type: none"> * AT COMPUTER (100 & IBM Compatible) * Intel 80286 Processor * 16 MHz with zero-wait state * 1 x 1MB RAM * 1 x 30 MB Hard Disk Drive * 1 x 1.2 MB Floppy Disk Drive (5.25") * 1 x 360 KB Floppy Disk Drive (5.25") * Enhanced Keyboard (101 keys) * 2 Serial, 2 Parallel Ports * Monochrome Adapter * 14" Monochrome Monitor (Amber) * Intel 80287 Coprocessor Support * Real-time Clock/Calendar with Battery Backup 	12
2.	<p>UNINTERRUPTIBLE POWER SUPPLIES</p> <ul style="list-style-type: none"> * Minuteman UPS or Equivalent (500 VA) 	14
3.	<p>PRINTERS</p> <ul style="list-style-type: none"> a) PANASONIC 15" (LQ 2500 Equivalent) b) PANASONIC (or HP IIp) LASER JET 	6 1
4.	<p>STANDARD SOFTWARES</p> <ul style="list-style-type: none"> * DOS 4.0 * WORDSTAR PROFESSIONAL * DBASE III PLUS * LOTUS 1 2 3 * DESKTOP PUBLISHING SOFTWARE 	1 SET

APPENDIX I CONTD.

Item No	Description	Qty
5.	<p>NETWORK DEDICATED FILE SERVERS</p> <ul style="list-style-type: none"> * AT COMPUTER (100 & IBM Compatible) * Intel 80486 (32-bit) Processor * 25 MHz with zero-wait state * 1 x 8MB RAM * 1 x 650 MB Hard Disk Drive * 1 x 1.2 MB Floppy Disk Drive (5.25") * 1 x 360 KB Floppy Disk Drive (5.25") * 1 x 1.44 MB Floppy Disk Drive (3.5") * Enhanced Keyboard (101 keys) * 2 Serial, 2 Parallel Ports * Monochrome Adapter * 14" Monochrome Monitor (Amber) * Coprocessor Support * Real-time Clock/Calendar with Battery Backup 	2
6.	<p>NETWORK INTERFACE CABLES AND ADAPTORS (As would be adequate to implement NETWORKING for about 12 users)</p>	
7.	<p>NETWORK STANDARD SOFTWARE</p> <ul style="list-style-type: none"> * NOVELL NETWARE (For 12 users or more) 	1 SET

H. A. BABAGBALE
PROJECT LEADER

APPENDIX II

10th July, 1990

COMPUTERISED MANAGEMENT INFORMATION SYSTEM FOR THE NEW NIGERIA DEVELOPMENT COMPANY LTD.

CHECKLIST FOR THE
"Benchmark" Comparative Analysis of Computer Equipment & Supplier

S/NO.	CHECK ITEM	COMPETITORS' CHECK BOARD							
		TRONIK	YIL	CSC	MBM	YFCS	MTL	DSNL	SANI
1.	Evaluated Total Cost (not > \$136,000 or N1,360,000)								
2.	Equipment Trade Mark (must be specified)								
3.	IBM Compatibility (100 % reqd)								
4.	Attchment of Equipment Brochure								
5.	Warranty Period (1 yr required)								
6.	Product Support Offer (Maintenance/Service)								
7.	After Sales Installation Offer								
8.	Delivery Date (not > 4 wks from date of order)								
9.	Adherence to Equipment Config.								
a.	WORKSTATIONS								
b.	FILE SERVERS								
10.	Training Offer (after sales)								
11.	Evidence of Prev. LAN Implement.								
12.	Evidence of Manufacturer' Status								
13.	Professional Presentations (unit cost, item amount, total, e.t.c)								
14.	Equipment Performance Evaluation (Brochure evidence suffices)								

PROJECT LEADER

APPENDIX III

Copies of all HARDWARE & SOFTWARE
BIDS

Copies of all HARDWARE & SOFTWARE Bids are submitted
along with this Final Report as a separate document on
its own

APPENDIX IV

10th July, 1990

COMPUTERISED MANAGEMENT INFORMATION SYSTEM FOR THE NEW NIGERIA DEVELOPMENT COMPANY LTD.

CHECKLIST FOR THE "Benchmark" Comparative Analysis of Computer Equipment & Supplier

S/NO.	CHECK ITEM	COMPETITORS' CHECK BOARD							
		TRONIK	YIL	CSC	MBM	YPCS	MTI	DSNL	SANL
1.	Evaluated Total Cost (not > \$136,000 or N1,360,000)	—	X	✓	X	✓	X	✓	✓
2.	Equipment Trade Mark (must be specified)	—	X	✓	✓	✓	✓	X	✓
3.	IBM Compatibility (100 % reqd)	—	X	✓	✓	✓	✓	X	✓
4.	Attachment of Equipment Brochure	—	X	X	X	✓	X	X	✓
5.	Warranty Period (1 yr required)	—	✓	X	X	✓	X	X	X
6.	Product Support Offer (Maintenance/Service)	—	X	✓	✓	✓	X	✓	✓
7.	After Sales Installation Offer	—	X	X	✓	✓	✓	✓	✓
8.	Delivery Date (not > 4 wks from date of order)	—	X	X	X	✓	✓	✓	X
9.	Adherence to Equipment Config.	—	✓	✓	✓	✓	✓	✓	✓
a.	WORKSTATIONS								
b.	FILE SERVERS	—	✓	✓	✓	✓	✓	✓	✓
10.	Training Offer (after sales)	—	X	✓	✓	✓	X	X	X
11.	Evidence of Prev. LAN Implement.	—	X	X	X	✓	X	X	✓
12.	Evidence of Manufacturer' Status	—	X	✓	✓	✓	X	X	✓
13.	Professional Presentations (unit cost, item amount, total, e.t.c)	—	✓	✓	✓	✓	✓	✓	✓
14.	Equipment Performance Evaluation (Brochure evidence suffices)	—	X	X	✓	✓	X	X	✓

PROJECT LEADER

115 sent
120 submission

40 90 100 150 70 70 120

** Keys

each ✓ = 10 points

each X = 0 points

** Result: 115, with the highest score of 150p. among the eight vendors.

APPENDIX V

LIST OF ITEMS PROCURED

Item No	Description	Qty
1.	<p>COMPUTER SETS</p> <ul style="list-style-type: none"> * FOUNTAIN MICROCOMPUTER SETS * Intel 80286 Processor * 16 mhz with zero-wait state * 1 x 1MB RAM * 1 x 30 MB Hard Disk Drive * 1 x 1.2 MB Floppy Disk Drive (5.25") * 1 x 360 KB Floppy Disk Drive (5.25") * Enhanced Keyboard (101 keys) * 2 Serial, 2 Parallel Ports * Monochrome Adapter * 14" Monochrome Monitor (Amber) * Intel 80287 Coprocessor Support * Real-time Clock/Calendar with Battery Backup 	12
2.	<p>UNINTERRUPTIBLE POWER SUPPLIES</p> <ul style="list-style-type: none"> * BEST TECHNOLOGY UPS (QME 500VA) 	14
3.	<p>PRINTERS</p> <ul style="list-style-type: none"> a) PANASONIC 15" (PS 1624) b) PANASONIC LASER PRINTER (PS 4420) 	6 1
4.	<p>STANDARD SOFTWARES</p> <ul style="list-style-type: none"> * DOS 4.0 * WORDSTAR 5.5 (LAN edition) * dBASE III + (LAN edition) * LOTUS 1-2-3 release 3 * VENTURA PUBLISHER SOFTWARE 	1 SET

APPENDIX V CONTD.

Item No	Description	Qty
5.	<p>NETWORK DEDICATED FILE SERVERS</p> <ul style="list-style-type: none"> * FOUNTAIN SUPER MICROCOMPUTER SETS * Intel 80486 (32-bit) Processor * 25 MHz with zero-wait state * 1 x 8MB RAM * 1 x 650 MB Hard Disk Drive * 1 x 1.2 MB Floppy Disk Drive (5.25") * 1 x 360 KB Floppy Disk Drive (5.25") * 1 x 1.44 MB Floppy Disk Drive (3.5") * Enhanced Keyboard (101 keys) * 2 Serial, 2 Parallel Ports * Monochrome Adapter * 14" Monochrome Monitor (Amber) * Coprocessor Support * Real-time Clock/Calendar with Battery Backup 	2
6.	<p>RS32 COAXIAL CABLES AND ADAPTORS (adequate to implement the Networking of a minimum of 12 users)</p>	1 SET
7.	<p>NOVELL NETWARE (advanced 286)</p>	1 SET

PROJECT LEADER

APPENDIX VI

NEW NIGERIA DEVELOPMENT COMPANY LTD MIS PROJECT
 (PROJECT NO. DP/NIR/85/023 *** CONTRACT NO. 90/051)
PROPOSED WORKPLAN RESCHEDULE

Date	Activity/Path	Description
27th - 31st, December, 1990	E	Equipment Installation
14th - 25th January, 1991	F	Standard Softwares Installation & Testing
4th - 22nd February, 1991	F continued	Core training In the Use and Operation of Standard Softwares
25th February - 30th March, 1991	H & I (simultanerously)	Customised Softwares Installation & Data Conversion (Training on Customised Softwares commences)
25th February - 30th March, 1991	I Continued	Training in the operations of Customised Softwares (This would continue till end of April, 1991 for effectiveness)
1st - 12th April, 1991	J	Integration to Local Area Network
15th April, 1991	-	Submission of Draft Final Report
30th April, 1991	-	Submission of Final Report and Documenta-tion.

*** IMPORTANT NOTES

- (1) Activity/Path K had been successfully completed.
- (2) Customised softwares are already presently developed
- (3) Training on Customised Softwares had been progressing since we started the Analysis, Design and Development of the Systems (these were conducted in close collaboration with operating staff of NNDC).

(Project Leader)

APPENDIX VII

CHECKLIST ADOPTED FOR THE SURVEY OF CUSTOMISED SOFTWARES

- 1) Summary of the various Operations/Activities undertaken by each Section/Unit/Department
- 2) Outputs/Reports usually generated on each operation (if any) and their distribution trends.
- 3)
 - a) Input sources to the activities of each section
 - b) Mode of collection of these inputs
 - c) Any FORMS being used presently
- 4) Various type of records being kept
- 5) Are there any difficulties faced in the generation of some specific reports ? What are they (if any) ?.
- 6) Operations costs (e.g cost of stationary, cost of staffing, e.t.c).
- 7) Are there any reports desired, but which are not being generated yet ? . If any why ?
- 8) Any suggestions on the computerisation of the activities in general.