

INTERAFRICAN BUREAU FOR ANIMAL RESOURCES (IBAR) / OAU/ PROJECT

DESIGN OF ANIMAL HEALTH AND RELATED MANAGEMENT INFORMATION SYSTEM DATABASE

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19th APRIL 2002

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Dear Sir,

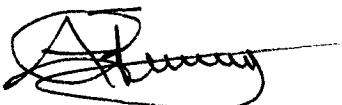
**RE: TENDER FOR THE DESIGN OF ANIMAL HEALTH AND RELATED
MANAGEMENT INFORMATION SYSTEM DATABASE**

Thank you for the opportunity to tender for the design of Animal health and related management information system database.

We are pleased to submit our proposal to your good office for consideration.

Thanking you once again for the opportunity given to us and looking forward to hearing from you.

Yours faithfully,



JOSHUA ABEKA
OPERATIONS MANAGER

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INTRODUCTION

The European Development Fund (EDF) of the European Union has provided fund for the design of Animal Health and Related Management Information System Database. The programme is to be coordinated by OAU/IBAR through national, sub-regional and regional programmes.

Jolema Technologies (JT) is qualified to tender for the Animal Health and Related Information Management System. We confirm that we have all the qualifications and experience to take up and perform the technical services envisaged in the terms of reference.

PROJECT EXECUTION METHODOLOGY

In the proposal, we have described the conceptual design, application software and packages required to run the system.

We also feel that it would be cheaper to implement the Geographical Information System (GIS) from the beginning instead of having it implemented after completion of the database design. We have therefore included the conceptual design of an alternative-reporting format.

According to our proposed implementation plan, the system could be completed in 20 months (less than two years).

We have designed our implementation plan in such a manner as to take advantage of the expected technological changes in the market.

We have also included some software utilities that would be used to support the execution of the managerial duties associated with the project. This includes software for Electronic mail services and integration of voice and video signals to facilitate long distance video Teleconferencing between the headquarters and various sub-regions.

Organization of the document

The proposal has been organized into the following selections:-

- a) Conceptual Design of the proposed system
- b) Application software and packages to be used for implementation of the system.
- c) Detailed description of application software to be used.
- d) Design of the Animal Health and Related Management Information Systems architecture.
- e) Animal Health Related Management Information System Solution incorporating Geographical Information System (GIS).
- f) Annex

Glossary of Abbreviations

MIS	-	Management Information System
GIS	-	Geographical Information System
PACE	-	Programme for the Control of Epizootic
IBAR	-	Interafrican Bureau for Animal Resources
OAU	-	Organization for African Unity
EDF	-	European Development Fund
AHRMIS	-	Animal Health and Related Management Information System
SADT	-	Structured Analysis and Design Technique
ERA	-	Entity Relationship Approach

COMPOSITION OF TEAM MEMBERS

Our staff of highly skilled database designers and system developers have succeeded in breaking down the barriers between business and technology to create and implement innovative solutions that meet the unique business challenges of our clients.

Unlike many consulting firms, it is the philosophy of Jolema Technologies to work jointly with your staff (be it in training or general consultancy) as much as possible. This way, we believe eventually you will be more independent and only engage our consultants where necessary. To us, this is more practical, realistic, long lasting and eventually cheaper on your side.

It is our professional commitment to manpower development that we should in the long run work ourselves out of your job for your personnel to replace us, or work jointly with us through process consultancy approach, hence transfer of technology.

Jolema has a group of professionals capable of integrating technologies and ideas to offer her clients competitive solutions and efficient services. Jolema is specialized in information technology, consultancy services that embraces Training, Network integration, software Development, implementation, database design, hardware services and parts replacements.

The following are going to form the team members for this particular project. The team members have been carefully selected, their qualifications have been matched with the project requirements and found matching. The team members are as follows:

Kate Litondo – Team Leader: Lecture at the University of Nairobi, Faculty of Commerce. She holds Masters degree in Computer Science from Ball State University Indiana, USA. Currently she has enrolled for Ph.D. Programme in Entrepreneurship and Information Systems at the University of Nairobi. She has consulted for many local and international organizations including Kenya Institute of Management, PRIDE, USIU, Total Oil Company among others. Kate is the Chief Executive Officer and heads our business consulting division.

Joshua Abeka – Deputy Team leader. Has headed several computer departments in both local and international companies. He has gained wide experience from private sector, manufacturing and public sector. Prior to joining Jolema he worked with Kenya Medical Research Institute (KEMRI), University of Nairobi, Del Monte Kenya Limited, Kenya Postel Directories Limited, Cosmo Plastics Limited. He has attended several courses both locally and overseas. He has over 16 years experience. Joshua is a diploma graduate in Computer Studies from Kenya Polytechnics Nairobi. He is versed with structured systems analysis and design methodologies, structured systems development using modern systems development tools and GIS related applications.

Robert Obwocha Oboko – Postgraduate Diploma in Computer Science and Bachelors degree in Education. Has had remarkable achievements in database design using Oracle 8, Ms-Access, Ms-Foxpro both on Windows NT and Linux platforms. Production of reports based on SQL.

Steve Richard Obbayi – Has developed several websites, which are database driven. The following are the examples: www.afya-net.com which features large database of drugs, health institutions, health companies and health service providers. www.dawadepot.com a B2B php SQL database driven online chemist. This website has a large database with over 12000 drugs including manufactures trade and retail prices, active ingredients and therapeutic class among others. Steve has consulted for websites like www.nubianunderground.com: a database content driven website geared towards young generation to promote their enthusiasm in the music entertainment industry. Others are www.pinye.nubianunderground.com and www.socialmisfits.com.

Judith Adhiambo Ndiege – A Higher Diploma Graduate in computer science. She has undergone all the Institute of Management Information Systems (IMIS) stages and passed. She has done several projects in Visual Basic.

CHAPTER ONE

1.0 PROFESSIONAL QUALIFICATION

Jolema Technologies opened her doors for business in September 1999 as an Information Technology and Communication Consultancy firm. Our core area of business is diversified but is within Information Technology and Communication Consultancy services that embraces, Training; Networking; Computer Services & Maintenance; Software Development, database design, Internet/Intranet Solution Development; Computer Hardware and Parts Supply and replacement and Supply of Computer Accessories, General Stationery and Printing.

Since our founding we have consistently maintained the philosophy that is deeply rooted in customer service excellence and in the success of our clients. From technology consulting to staff augmentation, we bring IT talent to help you meet your business goals. Secondly, we consider our staff as the biggest asset that we have and therefore lay much emphasis on the quality of manpower engaged to undertake individual projects. This ensures that all our clients maintains the lowest possible Total Cost of Ownership (TCO) in their IT projects and achieve Return On Investment (ROI) in the shortest time possible.

IT is the main component and key factor in our solutions. We keep constant pace with development in technological trends paying particular attention to the technologies which enhances effective and efficient access to information and to the infrastructure technologies which make it possible to manage the efficient information systems cost-effectively.

Our primary line of business is IT consultancy services that embraces Training; Network Integration; Computer Services & Maintenance; Database Design and Implementation, Software Development, Internet/Intranet Solution development. Our main areas of activities are:

- Network solutions for integration and heterogeneous infrastructure and environments, the automation of intercompany processes, the integration of systems and workstations.
- System technology to exploit data resources and rationize existing systems.
- End-user technology solutions combining the benefits of personal productivity tools with simple and flexible access to information and data.
- Software technologies and modular solutions and complex solutions application tailored to specific user situation.

CHAPTER TWO

2.0 PROPOSED WORKPLAN

A standard format has been used to present the conceptual design of the Animal Health and Related Management Information System.

2.1 ORGANIZATION OF THE CONCEPTUAL DESIGN

Data Management Unit (DMU) which is one of the seven units comprising PACE programme has a major role of advising, facilitating, supporting, harmonizing catalyzing and informing PACE National Programme and Coordination units in appropriate collection, transmission and analysis and information dissemination systems making use of appropriate information Technology.

The DMU has come up with the following components to form the whole database:-

- a) Disease surveillance
- b) Other routine reports
- c) Rinderpest eradication and progress of PACE
- d) Baseline data of animal resources
- e) Veterinary structure and service delivery
- f) Country profile and travel information
- g) Staff and contact address.

The analysis of each of the above mentioned modules has been done using the following arrangement:

- General description of the module
- List of activities involved in the module
- Decision support information required in the module.
- Output expected from the module
- Summarized high level functional hierarchy for the module.

Output from Disease Surveillance Reports

- Distribution of outbreaks by specific disease, a period of time (month or year), for a region in a country, country or continent, displayed as a map.
- An overview of all disease outbreaks (number of outbreaks, morbidity, mortality and case fatality rates) by specific disease, region, country, period of time, etc.
- Number of control and prophylactic vaccinations conducted during certain period of time per disease or species of animal or combination of these.
- Disease ranking by the number of outbreaks, number of cases or deaths or by morbidity, mortality or case fatality rates for a region, country, period of time, etc.
- Comparison for number of outbreaks, cases, deaths, or morbidity, mortality case fatality rates in a form of graph.

Below are brief description of various activities that have been performed by Jolema.

School Management Database

This is a database designed to assist in the management of schools. It has the following modules:

- School fees management system
- Students continuous assessment tests
- End term exams processing and generation of end term reports among others

Networking

- Design and implementation of TCP/IP network protocol using windows 2000 network operating system (NOS)
- Since the year 2000 Jolema has been supporting Transcom Sacco hardware and network system.
- Designed and implemented a peer to peer network architecture using windows'98 at Professional Training Consultants in Westland Nairobi.
- Integration of Ochacho Enterprises and Professional Training Consultants.

Individual members of the team have done a lot in their respect areas of specialization as you will in their curriculum vitae

Below is a partial list of clients

1. Professional Training Consultants
2. Moroko Instruments Advisory Services
3. Ochacho Investments Ltd.
4. Berice Insurance Brokers Ltd.
5. Transcom Sacco Ltd.
6. Faro Security Services
7. Fantex Agencies
8. Mbita High School
9. Nyang'ieia Secondary School
10. Mititi Secondary School
11. Nyatindo Secondary School
12. St. Teresa's Opanga Secondary School
13. Kambui Enterprises
14. Ntimaru Medicare
15. Dynamics General and Heavy Industries Ltd.
16. The Screen Magazine
17. Penguin protection systems
18. Dol Ade Chemical Industries

- o Between months of the same year (seasonal influence)
- o Between same months but different years
- o Between regions, countries, etc.
- o Between different years
- o Between different production systems

Objectives of Rinderpest Surveillance

- Identify herds with rinderpest-infected animals first clinically and then by laboratory investigation of samples, including serology.
- Establish possible sources of infection.
- Contain the progress of infection at the earliest stage as possible.
- Verify the absence of rinderpest (disease and infection) and support the declaration of disease and subsequently infection free status.

Output from Rinderpest Sero-Surveillance Report

- Proportion of sera collected from the total number planned for the year.
- Proportion of sera received by laboratory in good condition from the total amount collected from field.
- Proportion of sera tested by laboratory from the total amount collected from field.
- Days elapsed between dates of sera collection from field to submission to laboratory, between this last and processing of samples and finally between sample processing and submission of results.
- Summary results of laboratory findings such as in-herd sero-prevalence and between herd sero-prevalence rates.
- Distribution (map) of rinderpest sero-positive herds.
- Explanation of positive cases (if any) and final conclusion.

Output from Wildlife Surveillance Reports

- Rinderpest Sero-prevalence among wildlife species investigated.
- Relationship between this and rinderpest in neighbouring herds.
- Inference to the length of infection and its dynamics within wildlife population.
- Spillover of rinderpest infection from wildlife to cattle or vice-versa by epidemiological studies.

Output from Meat Inspection Reports

- List of abattoirs and slaughtering slabs reporting during the month. This will enable to see reporting rate and generate automated letter to those failing to report.
- Number of days elapsed between filing the report and receiving at central veterinary level and from here to IBAR.
- Number of animals per species slaughtered at abattoirs per region or per country.

- Proportion of rejected animals at ante-mortem inspection and main reasons for this and sources of these animals.
- Ranking of organs affected or rejected per region or country.
- Ranking of organs condemned per region or country. (Based on these figures and the estimated price of organ and carcass one can calculate (roughly estimate) the economical loss caused by pathology leading to organ (s) condemnation.
- Ranking of major lesions per region, country, month or year.

Output from Rinderpest Eradication and Progress of PACE

- Historical data on last rinderpest outbreaks can allow retrospective analysis of the situation.
- Similarly, the progress along the OIE pathway and sequence of PACE launching will allow better understanding of country situation and plan technical support.
- Concise country report can be updated regularly from reports received from countries and this will serve the purpose mentioned under the previous point.

Out from Baseline Data of Animal Resources Reports

- The role of livestock in Agricultural GDP and national GDP in each country.
- Livestock numbers and distribution at the lowest possible administrative level by species and for different years. (Density maps can be generated and laid over other parameters for analysis using GIS)
- Map of livestock movement patterns (trade, transhumance and rustling) and production system.
- Information on livestock production systems, breeds in the country and wide ranges of livestock economics information can be extracted.

Out from Veterinary Structures and Service Delivery Reports

- Capacity of the veterinary services measured as budget per TLU, different levels of veterinary human resource per TLU, etc. compared to international standards as to know its capacity.
- Capacity of the national veterinary laboratory to conduct diagnostic tests, especially for rinderpest.
- Capacity of the national veterinary laboratory to conduct differential diagnostic tests.
- Enabling environment and ease with which the private veterinarian function.
- Number, distribution and functions of the CAHW

CHAPTER THREE

3.0 PROPOSED APPROACH

With regard to development methods, particularly important for the reliability, accessibility, flexibility and controllability of the system, it will be necessary to adopt appropriate methodologies and standards to support all the phases of system development.

Oracle 8 has been chosen as the as the database for the design of the AHRMIS database because it:

- Flexibly allows multi-user environment
- Enables quality deliverables from the information system.
- Runs on free platform
- Robust language
- Capable of handle huge database like this one
- It is versatile and allows data interchange between applications e.g. MS-Access, Ms-Excel, Ms-Word ASCII etc.
- Oracle 8 can manage large and complex projects using quantitative measures of progress. As it uses Top Down approach all details are captured and the high level outreached will present the whole subject, in a modular, hierarchical and structural way.

3.1 SADT METHODOLOGY

We are proposing to use SADT (Structured Analysis and Design Technique) for designing functions and the ERA (Entity Relationship Approach) formulation for designing data. It guarantees the following:-

- Modular definition of functions required of the system.
- Construction of a project model of the system which simultaneously takes into consideration aspects relating to the functions data and their correlation
- An unequivocal formalism support by appropriate forms for the dissemination and comparison of ideas

The following are some advantages of the methodology:

- It supplies a standard language between all the players of the system (users, analysts, designers and developers), with obvious advantage of being much more error free than natural language.
- All the system design is tested and received at the project analysis level.
- The user is supplied with all the documentations before the development takes place, therefore he knows perfectly well what he is getting and can check all its phases and modify them before they are actually in place.
- Any procedure is detailed to the end user product before any development takes place.

It has the advantage of obtaining well-defined intermediate products, which help to monitor the development of activities and the ERA (Entity Relationship Approach) conceptual method, will facilitate exchange of information with other team players.

The SADT is an integrated approach to performing Systems Analysis and Design, producing documentation concurrently with the on – going development, helps communication among the Analysts, Designers, users managers thus ensuring the quality and configuration control via continuous reviews and approvals. Data are analyzed with ERA.

Structured Analysis means that all the technical choices are clearly documented and that the maintenance of the system will be extremely simple. Any future changes and integration can be carried out without cumbersome re-thinking of the functions.

The SADT follows two separate – phases:-

- First (analysis phase) it defines the functions model containing the Systems functions.
- Second (designing phase) defines the systems construction.

By separating the two phases, the designing phase cannot start before the problem has been studied in depth during the analysis phase. It first identifies the macro functions so as to give a general description of the system and then provides a more detailed description of each function. Figuratively, a single block is described which is subsequently broken down into various blocks containing a larger amount of information.

This leads to the construction of a data model which meets the following requirements:-

- Accurate presentation of relationships between objects and activities of the real world without false relationships.
- Semantic definitions of data easily and consequently understood by every body.
- Possibility of integrating new elements without modifying the original model.

3.2 QUALITY AND ISO 9000 CERTIFICATION

Product control is made up of all the activities carried out to continually check during the production and functioning process. Product quality according to pre-defined quality profile with the aim of meeting user demands and proposing product development methods in the long term.

According to the methodology, in compliance with the quality assurance procedures based on standards EN29000, product quality is defined using a set of attributes called quality factors correlated to the functions and objectives of the product.

The product control process is made up of the following activities:-

- Checking and testing of application modules by checking relative quality,
- Software testing which is carried out at various levels during the production process, from planning to implementation to evaluation of test sessions.
- Monitoring of product in use, both from a functional (service level) and architectural (deterioration level) point of view, in order to identify any possible maintenance requirements.

Systems quality characteristics control will be carried out using the following two additional methods:-

- Quality Control or static product analysis through application, in appropriate sessions of servicing or inspection of check-list retrieved from the interaction of project quality factors and criteria which will be jointly defined with the technical control organs appointed by the contracting body.
- Testing or dynamic product analysis using test cases.
 - a) Taken from the sphere of possible inputs whose products may be exposed, and compare them with the expected output.
 - b) Obtained by running through all processing paths.

The quality control procedure of software product is carried out in the following stages:-

1. Definition of procedural prerequisites, i.e. identification of product quality profile, professional characteristics of those participating in the procedure and local standards.
2. Carry out of control activities starting with the identifications of evaluation criteria to completion of control. This is the basic care of the entire procedure and covers:-
 - The necessary preparatory activities for the establishment of checklists, takes into account the specific project requirements.
 - Organizational activities of quality control meetings
 - Examination of the product, at first individual and then joint, according to predefined rules and having assigned roles and responsibilities to the various participants (author, reviewers moderator).
 - Drafting of reports of quality control meetings
 - Control of changes made to products by the author subsequent of observations made during review.
 - Reporting of quality control activities, aimed at taking stock of activities carried out, recording quantitative data (errors subdivided by typology cost, etc) and pointing out any proposals to modify the procedure and/or tools (product, standards, checklists, etc)
 - Checking of results obtained by quality control which, using quality control reports as a starting point, leads to statistical data processing on activities carried out and the approval of any proposals to amend both production standards and quality control tools.

For the supply of external products and services, there are appropriate testing procedures which vary according to the nature of the product and/or service made up of:

- a) Preliminary checks
- b) Functional checks of the product
- c) Operating checks in response to required standards.
- d) Support documentation checks.
- e) Drafting.

3.3 CASE TOOLS AND SOFTWARE ENGINEERING

In any analysis, design and implementation of any information system, there is the need to emphasize on a systematic thorough approach.

This can be achieved through the usage of CASE tools (computer Aided Software Engineering). The region/sub-region case tools will definitely increase productivity, communicate more effectively with users and head office and integrate the work that they do on the system from beginning to end of project life cycle by using CASE Tools.

CASE Tools also facilitate interaction between team members by making the diagramming a dynamic interactive process. In order for the proposed system to come into being and actually be used. It is essential that the excellent communications between the field people and the head office through out the system development life cycle. The use of CASE forsters greater, more meaningful communication among field staff (users) and head office. Upon viewing the users may request corrections or changes that would have taken too much time with the manual system.

The other reason for using CASE tools is to use them throughout the system development life cycle in order to integrate activities and provide continuity from one phase to another.

To summarize, the three main reasons for adopting CASE tools are increasing analyst productivity, improving communication among team members and integrating life cycle activities.

3.4 SOFTWARE DEVELOPMENT

Our software development team works closely with the customer to match technology with business needs to create intuitive and innovative solutions. From custom database solution to package enhancements, we have full range of technical capabilities to help you every step of the way. This covers:

- ❖ Process modeling and requirement definition
- ❖ Custom database design and implementation
- ❖ Application integration and enhancement

Our application developers are well versed in the latest database technologies. Our expertise span a wide array of cutting edge software tools and we continually refresh our technical knowledge to bring the most up-to-date skills to our clients.

The greatest design is still flawed if it is not successfully implemented. Often the difference between the success and failure of a project lies in day-to-day management and quality assurance.

At Jolema Technologies, we utilize structured methodologies to manage every aspect of the development cycle from conception and requirement definition to implementation.

Software will be developed in terms of user friendly, easy to use, effective and efficient in provision of the necessary functions for the OAU/IBAR functions to be carried out timely and in an orderly manner.

Systems development phase will continually allow the involvement of the users. The best and most current technology based software will be used.

Platform

The platform chosen for the design of the database will be Oracle 8 running on Windows NT server as the network operating system. This will allow remote access of data and information through RAS/RRAS etc. Oracle 8 has been recommended due to the large volume of data expected to be generated and it's ability to handle large volumes of data. This will be interfaced with SQL for query and reporting purpose. At lower levels we can as well use Visual BASIC or MS Access. The reports from these will have to be published in the web. We recommend the use of Internet Service Provider (ISP) to host the website for the purposes of cost saving.

Database Access Level

With Windows NT the file system, you can specify the users or groups that are allowed access to specific files or directories. In a similar manner you can limit access to selected programs to certain user groups.

Program level

All the application users will have a login procedure where the user will provide a valid password before being allowed access to the system. The password will have different access rights to the system utilities and files and will be administered corporate at the central, regional and field offices

The security measures can be implemented at server or client site. The Windows NT File System (NTFS) is resistant to many known viruses unlike classic file Allocation Table (FAT) system of many other PC based operating systems. Highly effective Windows NT anti virus are available to make virus infection even less likely.

The designed database will have security set up according to the specific requirement. We have the ability to design security levels as follows:

- Full access to the database i.e. those who can open the database, update, query, print reports, delete records etc.
- Those who can open the database, query and print the from it without saving or making alterations
- Those who can open the database and make data entry without permission to delete records but are able to save the entered data

Data Entry

- To enhance the data entry accuracy we shall design the database to allow choice in look-up combo boxes which shall be designed depending on the need
- Control mechanisms for entering numeric fields such that the value entered in one-field dictates the subsequent entries.
- The system will have a built in mechanism to control the logical flow by time. This will stop data entry personnel from entering wrong dates of events.
- Further control measures shall be taken where data entry depends on the entry of the previous field. If it is something else then the field must be blocked (gray, not active) for data entry.
- To improve on data entry accuracy and saving time, there shall be a mechanism to copy already entered data to the corresponding fields without waiting for another entry.

Uploading data from source to central database

Data shall be collected and loaded into computers situated at the regional veterinary offices. These data will be appended to the national veterinary office electronically. The later will also be appended to the continental database at OAU/IBAR in digital form.

Data Analysis or Query

SQL shall be use to query the database and produce elementary and/or adhoc reports that are not included as standard reports in the main system. SQL is capable of combining several complicated parameters to easily produce the desired results.

Link to other files.

The size of the database should be made as small as possible. To achieve this, a link shall be established to store the text, maps, etc and access them only when necessary.

Intermediate results

For information that are better visualized in graphic or map form the design will allow the export of the data into other packages for charting or mapping etc.

Final output (results)

The final results of analysis displayed shall have the facility to be:

- Printed
- Published in the web
- Exported to other packages e.g. excel
- Or any other required output media

All reports will highlight the main achievements of the reporting period, and will give advance warning of any anticipated problems or difficulties. The reports will form the basis of regular liaison meetings chaired by the regional or sub-regional heads, during which the progress made will be analyzed and operational decisions taken.

3.5 PROTOTYPING METHOD

For this information system, we intend to use the prototyping method. Prototyping of information systems is worthwhile technique for quickly gathering specific information requirements. By using the prototyping technique, we will be seeking user's reactions, suggestions, innovations and revision plans in order to make improvements to the prototype and thereby modify system plans with a minimum of expense and disruption. We plan to use effective prototyping in the systems development life cycle, during the requirements determination phase.

The three advantages of the prototyping technology are the potential for changing the system early in its development, the opportunity exists to stop development on a system that does not respond positively to the users requirements and develop one that more closely address users' needs and expectations.

The users' role in a prototyping technique is the most vital one. The users will be involved in each stage of design, development and implementation. They will be able to provide fast feedback to performance of prototype, by experimenting with it. The users will be able to give open reactions to the prototype due to their continuous involvement in the development. Suggestions on the additions or deletions (any user requirement changes) to the prototype will be relayed.

3.6 QUALITATIVE COMPONENT OF THE PROPOSAL

The set of project proposal outlined is characterized by some qualitative components which make it possible to:-

- Optimize the efficiency of the system
- Offer the highest capacity for future developments (structured and managerial) as well as the highest possibility of correlation to external systems e.g. the web, GIS, ASCII, Excel, Access or dBase.

From this point of view, the proposed system is characterized by the following components:

Quality and Flexibility of the Proposed Application

Oracle 8 guarantees quality and flexibility of the products/services offered, moreover, oracle 8 contributes in assuring complete and consistent quality as is defined in the ISO 9000 series of standards.

Modularity

In general, when investments have to be made, both in the hardware and software, not only do solutions have to be found for current problems of which one has a sufficiently clear idea but it is equally necessary to envisage how the said investments will be safeguarded for future needs.

In short, technological architecture must not create ties but on the contrary allow the user to benefit from as much flexibility as possible when making current and future choices. To respond to this requirement, it is therefore necessary to adopt computer technology based on open systems and strictly linked to a particular demand, which today is considered top priority. It is important to create architectures capable of evolving in a consistent manner.

The architectural choice of the system will determine the development capacity in relation to identified needs and resource availability, thus guaranteeing the protection of investment made.

User Friendly to end-user

The most recent developments in computer technology, especially in the field of personal computing, have highlighted how productivity when using computer systems, is definitely influenced by the features of man-machine interface, especially in the case of applications oriented for more regular users or for those who cannot be classified as “operators” or “experts”.

In these cases, the interface effort has to be carried out by the system e.g. by the software designer rather than by the user. This requires the availability of workstations equipped with good processing speed and graphic capabilities and software capable of fully exhibiting these qualities thus giving efficient support to user computer interaction.

To this end, the proposed application will be operating in a Windows environment. Equipped with map and graphic interface where the applications can be simultaneously active and where mechanisms and protocol exists for data sharing and communications among the various applications. Interaction will consist of the use of the mouse and the keyboard and developed through the typical mechanisms of the graphics and maps type of user interface: menu, keys, lists, dialogue box and icons.

Up to date and Modern Proposed Technical Architectural Solutions

The choice of Windows NT as the reference operating system for the PC client is in keeping with the current market trends. At present, windows makes up almost all installations on PC based on CPU Intel. *Interlia* the choice of windows enables the user to have available an enormous range of application software for the most varied needs.

With regard to the operating system, the window environment, connectivity, basic services and administration tools with which to distribute company services through a computer network. This is particularly suitable for small to medium sized networks and provides considerable possibilities of upgrading by virtue of its availability on processors of grouping capacity.

Opening to and Compatibility with standard Platforms

The development of computer systems is now open system oriented in compliance with standards and models generally accepted and recognized internationally.

The system described in this document will be set up with an architecture which will promptly seize the opportunity to offer new services in as far as:-

- The use of network based on protocols and standard communication interfaces enable to provide computer services to a vast range of users.
- The interoperability between systems and applications makes it possible to have immediate integration with information systems belonging to other organizations or institutions.

What is more the outlined architecture represents a technical choice in keeping with market trends and options of several public administration world wide.

In Europe a study was launched in 1986 on standardization of information technology especially designed for the exchange of information, data and the interoperability among information systems of the member states. The EPHOS document (European Procurement Handbook for Open Systems), of the European Union Commission defines the guidelines for future telecommunication research and development activities, all programs developed subsequently like ENS (European Nervous System) or IDA Interchange of Data between Administration) have adopted European Standards.

When computerizing Public Administration it is therefore necessary to insert the real information structure in the widest context as described above and make it interoperable with other national entities. For these reasons, the acquisition of hardware and software components for the developments of Animal Health and Related Management Information Systems database project must necessarily comply with “dejure” or “defacto” standards: the forms of referring to standards officially published and generally assimilated by developers; the latter relating to standards applied on the market because of their widespread support.

Rapid Development

Limited delivery times of the products will allow quick use of the capacities provided by the new information system, thus putting to better use the investment made.

Maintenance of Proposed Application

The experience and marketing of Jolema Technologies are a guarantee of competence and professionalism, capable of making available qualified personnel to assist in all the implementation phases of the project.

CHAPTER FOUR

4.0 GEOGRAPHICAL INFORMATION SYSTEM

The terms of reference in the Animal Health and Related Management Information System provides for Geographical Information System (GIS) in future. However, we feel that it would be cheaper and easier for the GIS and the rest of the systems to be implemented simultaneously due to the following reasons:

1. The activities have high degree of independence and therefore can be carried out in parallel.
2. Some modifications and additions to the database would be required in order to fully exploit the GIS features. But the required additions cannot be determined in advance before implementation of the GIS system
3. The total cost of implementing the database design and GIS system together would be much lower as compared to implementing the two systems at different times.
4. The GIS would provide a perfect geographical user interface for accessing various types of information from the database.

4.1 GENERAL DESCRIPTION

The GIS would allow the entry of geographical maps and aerial photographs into the system.

The maps and aerial photographs would then be converted into a special digital format through a process called digitation.

Once a map has been digitized, it is possible to associate every point on the map with a data item. For example, you would associate several information items with just a single line, which may represent a distribution of a disease in a region or country

Advantages of the GIS System

1. Several information items about say a particular region can be obtained just by pointing and clicking on the region from a map displayed on large computer screen.
2. Decision support information can be presented on a geographical map in a manner which is much easier to understand and visualize.
3. GIS could also be used to provide information for other sister departments within PACE

4.2 CONCEPTUAL DESIGN OF THE GIS INTERFACE

The Geographic Information System would get its data inputs from the following sources:-

- 1) Input from Geographic maps and aerial photographs of various abattoirs Game Reserves etc.
- 2) Direct data input into the database.

4.3 OPEN GIS ARCHITECTURE

Unlike most other GIS systems that are based on proprietary non – standard operational software and hardware, Intergraph adopts an open systems Architecture which enables it to provide GIS systems that run on standard hardware equipment running standard software applications and operating systems such as windows NT. Integraph also supports open GIS which is an industrial GIS standard that allows transparent inter operation of software tools and sharing of data resource at the end user level across various hardware and software platforms.

Proposed GIS Software Product

We are proposing the following GIS product families for implementing the database. GIS interface

- Modular GIS Environment (MGE) family of mapping and GIS application.
- Scanning products for GIS mapping and cartographic applications.
- Free GIS that is not tied to any particular GIS.

GIS Office

GIS office permits a complete workflow to be performed within virtually any GIS project.

It can be used to:-

- Set up and manage GIS projects
- Perform data entry, digitary, data clean up, and data management.
- Covert GIS vendor data (e.g. Map information etc) into MGE project.
- Build the first node of an enterprise wide GIS
- Perform image display and analysis on scanned drawings, aerial photographs and satellite imagery.
- Query, analyse, display and report on topological data.
- Compose thematic maps interactively
- View WYSING (what you is what you get) maps before plotting.

GIS office is prepackaged with a modular GIS Environment (MGE) consisting of fine integrated applications:

- MGE for project and system management, data entry and query
- MGE ASCE loader for easy data import
- MGE Analyst for advanced spatial query analysis
- MGE map finisher for cartographic quality output

CHAPTER FIVE

5.0 SUPPORT AND SUSTAINABILITY

The software chosen to design, develop and implement the system will fulfill the users' requirements. The selection criteria considered the most suitable software for the computerized system, so as to reach its objectives. It takes into consideration the most modern ways and technology in the software development. This will be beneficial for the survival of the system.

Most suitable Operating System and applications will be installed, with the user requirements in mind. Software will be developed, in a user-friendly manner, easy to use effective and efficient in providing the necessary functions for units with OAU/IBAR and PACE.

The product will be guaranteed to work, as it will be developed as per the user specification, with constant feedback from the users, which the methodology provides. Full testing of the system, in terms of file transfer, etc. at each centre will be taken into consideration.

Software Maintenance will take into consideration any changes required by the users of the software. Priority will be given to solving all software problems depending on the rate of urgency, from the users' point of view.

5.1 SYSTEMS TESTING

System testing will be carried out throughout the systems development life cycle. Testing is an essential series of steps that helps assure the quality of the eventual system. The testing phase will include the testing of the interface between subsystems, the correctness of output, and the usefulness and understandability of the systems documentation and output.

Testing will be carried out firstly with the Test Data, later with the real data, before the release of the modules.

5.2 SYSTEM TRAINING

Training forms a fundamental part of our total solution approach. To us, training forms a very important part of any solution that we propose and develop since it touches on the most neglected yet very important part of any implementation – investing in human resource.

Our training services are aimed at producing competent, dependable, growth oriented and productive personnel. We'll design and develop courses with a difference due to the in-depth coverage coupled with highly trained, competent, motivated and result oriented tutors who have very good track records of academic excellence.

We conduct training based on the Training Needs Assessment (TNA) with emphasis on Hands On Computers (HOC) and strictly one computer one student approach.

Training, being a vital stage in the systems development project, will be implemented with an intensive training programme.

It will involve training of the management personnel, the operational personnel, and supervisory level staff. This will ensure that the system is fully understood and felt as part of the daily work.

One major problem when introducing a computerized system, is the resistance to change at all level. Consultants will therefore dedicate a special schedule for training on functions, trying to stress the benefits coming from the system.

The consultants will manage and conduct training for Managers, users, Supervisors as required to ensure that the system is operational and the staffs are competent in their uses.

The consultants will advice the department in choosing and training the right supervisors for the new information system.

The Training Programme will be completed by the production of User Manuals, Operational and Maintenance manuals, for the specific groups. These manuals will be designed, developed and provided for their quick reference purposes.

e	Objective	Course Content	Target group	Prerequisite	Duration Days
roduction to s	This course will aim at providing a computer literacy and understanding of some components	Introduction to common concepts and terms, hardware configuration and terminology.	All those affected and are involved in the computerization of the project	◆ None	2
-Windows	To provide participants with the knowledge of the Windows operating system	Introduction and definition of windows, purpose of the operating system. Windows fundamentals control panel and printer installation and configurations	All personnel in AOU/IBAR who will have direct contact with the computers	◆ Introduction to PCs	1
IS Word	To provide training on the Word processor	Creating documents, file management, format layout, document organization	All personnel involved in the project users	◆ Introduction to PC ◆ Ms Windows	5 days
Excel	To provide participants with the knowledge of the Spreadsheet	Creating worksheets, file management, formatting, printing, utilities, logical functions, Graphs, String functions, macros.	Personnel's who will have direct contact with computers.	◆ Introduction to PC ◆ Ms Windows	5 days

le	Objective	Course Content	Target group	Prerequisite	Duration Days
Power Point	To allow personnel's to produce high quality presentation slides	Creating and editing text slides, creating graphs and data table, printing the slide.	Only those who need the graphical training.	<ul style="list-style-type: none"> ◆ Introduction to PC ◆ Ms Windows 	3 days
Project	To allow project leaders to manage projects properly and effectively.	Creating work plan, projects, with tasks, milestones, deadlines, resources and costs	Regional Project leaders	<ul style="list-style-type: none"> ◆ Introduction to PC ◆ Ms Windows 	2 days
Schedule+	To allow personnel's to manage and share calendars, tasks, and contact for better personal and team productivity	Task manager, Contact manager, Meeting Wizards.	All Regional project leaders	<ul style="list-style-type: none"> ◆ Introduction to PC ◆ Ms Windows 	3 days
mposium	To allow communication remotely via Audio and Video teleconferencing.	Remote communication incorporating voice data and video signals. Basic communication principles will also be addressed.	Regional representatives	<ul style="list-style-type: none"> ◆ Introduction to PC ◆ Ms Windows 	3 days

Title	Objective	Course Content	Target group	Prerequisite	Duration Days
Database management system	To enable the database Administrator, to manage and administer the application database of the AHRMIS database	Relational Database principles, AHRMIS database schema description and architecture, database administration principles.	Those in charge of maintenance of the database	<ul style="list-style-type: none"> ◆ Introduction to PC ◆ Ms Windows ◆ Networking & Operating systems 	5 days
Internet	To enable the DMU personnel to access and retrieve data from the Internet.	General overview of Global networking; introduction to the World Wide Web, surfing the Internet, E-mail services.	Those who will be communicating over the internet	<ul style="list-style-type: none"> ◆ Introduction to PC ◆ Ms Windows 	5 days

Module	Objective	Course Content	Target group	Prerequisite	Duration Days
GIS End user training	To enable personnel to access relevant information for the Geographical Information System	Basic GIS principles, accessing data from the GIS, preparations of reports via GIS queries	Those who will be responsible the use of GIS	<ul style="list-style-type: none"> ◆ Introduction to PC ◆ Ms Windows 	3 days
GIS Management	To enable personnel to administer and manage the entry of data into the GIS system	GIS data capture technique, digitalization of images, GIS macro programming, GIS system administration	Regional leaders	<ul style="list-style-type: none"> ◆ Introduction to PC ◆ Ms Windows ◆ GIS End-user training 	10 days
Introduction to AHRMIS Health and related management information system		General overview of AHRMIS design general documentation flow data entry procedures and remote data acquisition	Those involved in the direct operation of the system	<ul style="list-style-type: none"> ◆ Introduction to PC ◆ Ms-windows 	1 day
Disease surveillance	To enable personnel to use the Disease Surveillance module of the system	Module access data entry reporting, data inquiry and general specification, reporting system	Those involved in the direct operation of the system	<ul style="list-style-type: none"> ◆ Introduction to PC ◆ Ms-windows 	2 days

e	Objective	Course Content	Target group	Prerequisite	Duration Days
Baseline data on animal resources	To enable personnel to use the Baseline data on animal resources module of the system	Module access, data entry, general specification and reporting system	Those involved in the direct operation of the system	<ul style="list-style-type: none"> ◆ Introduction to PC ◆ Ms-windows 	1.5 days
Veterinary structure and service delivery	To enable personnel to use the veterinary structure and service delivery	Module access, data entry and general specification and reporting system	Those involved in the direct operation of the system	<ul style="list-style-type: none"> ◆ Introduction to PC ◆ Ms-windows 	2 days
Rinderpest eradication and progress of PACE	To enable personnel to use the rinderpest eradication module	Module access, data entry and reporting	Those involved in the direct operation of the system	<ul style="list-style-type: none"> ◆ Introduction to PC ◆ Ms-windows 	1 day
Country profile and travel information	To enable the module users to run it efficiently	Module access data entry reporting and general specification	Those involved in the direct operation of the system	<ul style="list-style-type: none"> ◆ Introduction to PC ◆ Ms-windows 	2 days
Mail and contact address	To equip participants with the knowledge to send mails and put labels		Those involved in the direct operation of the system	<ul style="list-style-type: none"> ◆ Introduction to PC ◆ Ms-windows 	2 days

CHAPTER SIX

6.0 IMPLEMENTATION PLAN

We have proposed an implementation plan for the entire system over a period of 20 months (less than three years).

We have also proposed an alternative solution, which incorporates a GIS interface. We felt that it would be a good idea to implement both systems simultaneously due to the associated cost and time saving benefits.

Moreover including a GIS system interface does not affect our implementation period of 20 months due to the parallel development approach that we intend to use.

Implementation of the Application Modules

We have organized our project plan such that the various modules would be available for prototyping at different times depending on their level of priority.

The following table shows the duration after which the completed application modules would be available for testing and prototyping purposes. The following table shows duration after which the completed application modules would be available for testing and prototyping purposes. The duration has been measured as from the start of the project.

Module Name	Duration after which mode would be available for testing prototyping
1. Disease surveillance	3 months
2. Baseline data of animal resources	3 months
3. Veterinary structures and service delivery	3 months
4. Rinderpest eradication and progress PACE	4 months
5. Routine reports	3 months
6. Country profile and travel information	2 months
7. Staff and contact address	2 months
Total	20 months

Design of Initial Operations Workflow Methodology

We have realized that the entire project would not wait for the completion of the database design since even at the moment some countries are processing their data some using MS-Excel others using MS-Access and others manual.

We shall therefore formulate a methodology to capture these data in a way that will facilitate processing.

Once analysis of a module is completed, then the design and subsequent implementation starts right away. Thus making the operations running in parallel and makes the operation takes a shorter period of time

The data processing methodology would be adopted immediately after completion of the user Requirements Analysis and presentation of the revised proposal after starting the project.

Application Testing

We have set aside a minimum period of one month for carrying out testing activities on the designed database modules. During this period, any desired system modifications can be implemented. This testing period would also provide the DMU personnel with an opportunity to contribute to the design of the database.

Training

The training programme shall be scheduled according to the implementation of the design and modules. Our scheduling shall commence after a delay of one month from testing completion date. This has been done to allow for the preparation of the relevant training material and coordination of the trainers.

The training would be carried out in two phases as follows:-

The first phase shall be as follows:-

- a) General training on the concept of computerization to allay fears related with job security and minimizes resistance to the expected changes.
- b) Training on basic computer concepts, which would include hardware, software, user interfaces and general application packages.

The second phase shall cover the following:-

- a) Usage of the designed modules.
- b) Training of DMU staff on a wide range of productivity and decision support software products.
- c) Specialized training for database Administrators and Supervisors.

ID	Task Name	Duration
	Needs Analysis	
	First Prototype design	
	Training plan	
	Prototype system	
	1 & 4 sub system	
	4 & 3 sub system	
	6 & 7 sub system	
1.	Disease Surveillance (sub system)	150D
	Analysis	40
	Design	30
	Development	60
	Test and Installation	20
2.	Baseline data of animal resources	150D
	Analysis	40
	Design	30
	Development	60
	Test & Installation	20
3.	Veterinary Structured and service delivery	150D
	Analysis	40
	Design	30
	Development	60
	Test & Installation	20
4.	Rinderpest eradication and Progress of PACE	150
	Analysis	40
	Design	30
	Development	60
	Test & Installation	20
5.	Country Profile and Travel Information	150
	Analysis	40
	Design	30
	Development	60
	Test & Installation	20
6.	Staff and contact address	150D
	Analysis	40
	Design	30
	Development	60
	Test & Installation	20
	Overall testing	60
	Acceptance	0
	Data entry of old data	100
	Data conversion from Access to Oracle8	30
	1 st Phase Training	100
	2 nd Phase Training	100
	GIS	760
	Database definition	40
	Customization	40
	Mapping	40
	Flight planning	40
	Aerophotography	200
	Digitization	200
	Data link	200
	GIS Acceptance	0
	Support & Maintenance	1200

7.0 FINANCIAL PROPOSAL

The European Development Fund (EDF) of the European Union has provided 72 million Euros for the Design of Animal Health and Related Management Information System Database Design. This programme will be coordinated by OAU/IBAR through national, sub-regional and regional programmes.

We propose to spend the fund on following modules:

- Disease surveillance
- Baseline data of animal resources
- Veterinary structures service delivery
- Rinderpest eradication and progress of PACE
- Country profile and Travel information
- Staff and contact address.

The funds shall be spent on each of the above modules for:

- Investigation and fact recording
- Analysis of the facts
- Design of the alternative system
- Implementation of the optimal system
- Training of users

Investigation and fact recording

The purpose of this stage is to conduct a detailed and comprehensive study to fully understand the existing system and to identify the information requirements.

Analysis

Analysis of the full description of the existing system and the objective of the proposed system which will lead to a full specification of the users' requirements. Requirement specification will be examined and approved before system design is embarked on. This is meant to ensure that all the user requirements are incorporated.

Design

The purpose of design is to work from the requirement specification to produce a system specification. This will be a detailed document, which provides details of all features of the system. All the necessary inputs are identified here.

Implementation

This is where the outputs, reports and queries shall be designed using SQL and data from oracle database.

Training

As has been explained elsewhere, users will be trained on the general concept of computers to allay fears and on the operation of the developed system.

Broadly the following will be the financial proposal.

The Budget

We have intentionally left out preliminary and feasibility study because in our view this has been done and justified and you are committed to the computerization process.

The currency used is in million Euros

ANNEX

CURRICULUM VITAE

Name: KATE LITONDO (Ms)

ACADEMIC BACKGROUND

M.A (Computer Science & Business), Ball State University USA
B.Sc. (Computer Science & Business), Anderson College, USA
Registered as Ph.D. student at the University of Nairobi taking
Entrepreneurship and Information systems

Address P.O. BOX 51420, NAIROBI, Tel:732160-4

CAREER INTERESTS

Institution strengthening and capacity building for business,
government, development and relief communities.

OPTIONS

- System Design, Training, Installation and Implementation
- Management and Management Training
- Appropriate Technology
- Systems Audit and Evaluation
- Consultancy

MAIN AREAS OF SPECIALIZATION

- ◆ Accounting, Management and Financial Controls
- ◆ Personnel Management Models
- ◆ Computer Science & Business

QUALIFICATIONS

1) Professional Membership/Fellowships:

- ◆ Kenya Computer Institute (KCI) – the National Computer Association
- ◆ Association of African Women for Research and Development (AAWORD)
- ◆ Examination Committee, University of Nairobi.
- ◆ Kenya Examination Council
- ◆ Kenya Economics Association

2) 15 Years as Management Science Lecturer at the Universities of Nairobi, Kenyatta and the United States International University, and the Kenya Institute of Management.

- 3) 11 Years as Examiner with the Kenya National Examination Council
- 4) Several Years of design, training, installation and implementation of computerized accounting, management, financial and administrative systems.
- 5) Experience in using both the Mainframe in Time Sharing Environment and Batch Environment and Several Micro-Computers – IBM, Apple, Compaq, Mackintosh, etc.

Languages

- ◆ English
- ◆ French
- ◆ Kiswahili

PROFESSIONAL PAPERS & WORKSHOPS

1. **Choice of Technology in small scale Enterprises** in Kenya A Paper present to a workshop of Policy Planners and Development Agencies at the Silver Springs Hotel, Nairobi, 1993. On Request from the Kenya Economic Association Compiled and edited the report on the proceedings of the workshop.
2. Compiled and Edited: **Report of Proceedings of a Follow-up Workshop on the "Role of Co-operatives In Development of the Kenyan Economy"**, for the Kenya Economic Association
3. Compiled and Published: **Integrated Management Information Systems, Project Planning, Management & Evaluation** for UNESCO as a contribution to Intergovernmental Informatics Program for Kenya.
4. Carried out a study and presented findings on: **Computer Vendors and Users Expectations**, as a Contribution towards curriculum development for Training of Managers and Supervisors in Kenya. This was an initiative of the Kenya Government.
5. Prepared and edited the report on the proceedings of **Recurrent Costs of Public Investment and Budget Rationalization in Kenya** Workshop sponsored by the World Bank.
6. Presented a paper on the **Privacy of Information In Management Information Systems** to UNESCO Sponsored workshop for Intergovernmental Informatic Program for Kenya.

7. Presented a paper on **Management Information Systems for SACCOS**
8. Presented a paper to a workshop on **Database and Web design** for the University of Nairobi Library.
9. Field Officer for SAP (Supply of Academic Publication).
Representing University of Nairobi.
10. Co-authored a report entitled: **A Report on Computer Requirements in the Faculty of Commerce University of Nairobi**, at the request of the World Bank on 4/8/1990.

PERSONAL DETAILS

Name : ABEKA, JOSHUA OUYA
Date of Birth : September 1960
Nationality : Kenyan
Marital Status : Married with three children
Religion : Christianity

ADDRESS

P. O. Box 13127
Nairobi-Kenya
Tel: 312757, Mob: 0722-675314

KEY QUALIFICATIONS

- I have installed and configured Microsoft Windows NT 4.0 on different protocols. Right now I'm supporting a number of Windows NT sites.
- I have in-depth working knowledge and skill of Scala ERP Manufacturing and Accounting System right from design to maintenance and support.
- I have designed, developed and implemented systems using Microsoft Access database system and dBase III+ interfaced with Clipper
- I have set up Omicron and supported Accounting package
- I have set-up and supported Systematics Accord accounting system
- Designed, developed installed and maintained Novell 3.11 LAN system
- Hardware and Software troubleshooting and taking the necessary steps.

Currently

- Designing different network architectures and topologies;
- Supervising the network design implementation and making sure that standards are met;
- Network configuration using the right network protocol for the design
- Liaising with the clients to make sure that all their challenges are sorted out within the required time frame
- Supervising and ensuring that all service maintenance contracts are carried out on time.

2002 Feb. Designed and implemented TCP/IP Windows 2000 network architecture at Mbita High School, Suba District, Kenya.

2000 August Designed and implemented a pear to pear network architecture using Windows'98 at Professional Training Consultants in Westland Nairobi.

2000 Todate Joined Jolema Technologies where my responsibilities are:- Network topology design; Supervising the network design implementation; Network configuration using the the right network protocol for the design; Liaising with the clients to make sure that all their challenges are sorted out within the required time frame; Supervision of software installations at the customers' site; Supervising and ensuring that all service maintenance contracts are carried out on time.

Limited, Cosmo Millers Limited and Kenya Millers Limited as Systems Administrator in charge of Computerisation of the group. My broad responsibilities are: to set up Microsoft Windows NT Local Area Network (LAN) at Cosmo Plastics Ltd and Cosmo Millers Ltd.. Oversee the implementation of Scala integrated accounting and manufacturing package at Cosmo Plastics and Cosmo Millers and Systemtics Accord at Kenya Milers Ltd.. Evaluate potential computer application areas, staff development, advice management on IT issues. IT policy formulation.

- 1996 - 1997 An Associate Consultant in Information Technology (IT) with Professional Training Consultants (PTC) in charge of IT unit. Duties include: Evaluation and designing of appropriate Management Information Systems (MIS) to satisfy clients' requirements. Repair and service of our machines and customers computers; Systems Analysis and Design; Develop, design and implement training programmes as per the clients' MIS training needs and requirements; IT Policy formulation both for the company and clients.
- 1992 - 1996 Systems Supervisor - Kenya Postel Directories Ltd. My first assignment was to set up a computer department and oversee a twenty-user Novell 3.11 Local Area Network (LAN) installation. Duties included: LAN Administration; IT Policy Formulation; Systems Analysis and Design; Supplementary software development to run around the core system using Clipper 5.01; Production of timely reports to effect strategic and tactical decision making; Payroll Administration using TurboSoft payroll package; Systems security and safety; Staff development; Hardware and Software trouble shooting, Service and repair where necessary and liaising with service contractors in case of major breakdowns, installation of hardware and software, Procurement of software, hardware and stationery and keeping inventory of the same, Supervision of seven members of computer staff.
- 1990 - 1992 Technician (Computer) - University of Nairobi in charge of Faculty of Commerce computers. Duties included: IT policy formulation; Systems Analysis and Design; Programming in 4GLs; Hardware and Software trouble shooting; Repair and Service of computers (where necessary) and liaising with vendors for repair; Hardware, Software and Stationery procurement and taking inventory of the same; Installation of packages; Ensuring safety and security of the system; Staff development; Supervision of two computer rooms, one had eight stand alone computers and the other had seven VAX terminals running on VMS Wide Area Network (WAN) platform and IBM System/34 mini computer; Control of the computer vote; Advice the Dean of the Faculty of Commerce on the IT matters. Made the faculty of commerce to be the first Faculty in the University of Nairobi to have computerised Students' Examination Results and Students Transcripts.

(KEMRI). My duties included: Systems Analysis and Design; Research data analysis using Statgraphics and Minitab Statistical packages; Budgeting; Hardware and Software trouble shooting and promptly reporting to the right authority; Software, Hardware and Stationery procurement and keeping inventory of the same; Production of timely reports to effect objective decision making in areas of Finance and Research. Successfully provided information requirements for Sporozoite Research Studies for Centre for Disease Control and Prevention of Atlanta Georgia in collaboration with KEMRI.

1981 - 1984 Clerk - Then Kenya Canners, currently Delmonte Kenya Ltd; Duties were: Computer data preparation involving payroll, stock inventory, planing daily, weekly and monthly operations and preparation of production reports, efficiencies and manpower scheduling.

EDUCATION

1987 - 1989 Kenya Polytechnic College Nairobi, Kenya on day release basis to take Ordinary Diploma in Computer Studies, Main subjects studied were: Computer Programming, Data Processing, Quantitative Techniques, Computer Applications, Computer Technology, Mathematics and wrote a project entitled **Measures of Central Tendency and Dispersions.**

1984-1985 under went a General Computing course at The Kenya Polytechnic College, Nairobi. The course covered: Computer Programming and Computer Technology.

1978 - 1979 Nyabondo Boys School: Attained East Africa Certificate of Education.

1976 - 1977 Otok Harambee Secondary School: Obtained Kenya Junior Secondary Examination Certificate.

1969 - 1975 Otok Primary School: Achieved Certificate of Primary Education.

TRAINING

1984 August: Underwent a formal training in the operation of IBM System/34 Minicomputer.

1992 November: Trained by Software Applications Limited (SAL) in the Administration of Payroll using TurboSoft payroll application package.

1994 March: Attended training on management of large databases and data telecommunication in Lisbon Portugal. This was an in-house programme organised at the head office.

1994 August: Took Omicron General Ledger and Financial Reporting (Power Ledger) Accounting Package course from Microlink Research and Consultants.

Computing (ARCC).

- 1997 Trained by Scala (E.A.) Ltd in the parameter set up and operation of Scala integrated accounting and manufacturing package.
- 1998 February: Took Administration of Windows NT course at Institute of Advanced Technology.
- 1998 June: Attended an AITEC Kenya '98 Conference entitled **Developing an IT Strategy for the New Millennium**
- 1998 October: Attended **Practical Internal Auditing Skills** organised by Essential Management Consultancy Services

MAJOR PROJECTS UNDERTAKEN

- 1991 Designed students examination results database at the University of Nairobi. This database used to produce examination results,
- 1992 Designed the Kenya National Telephone Directory Database. This listed both the white and the pages and the yellow pages (companies by category of the business they are doing).
- 1996 Amended a manufacturing Foxpro database running on Unix to produce targets per machine production per machine and per shift per day and per month.
- 1997 Designed a database to order processing right from receipt of the order, the stages in production process delivery and invoicing

OTHER ACHIEVEMENTS

- 1990 Co-authored a report entitled: **A Report on Computer Requirements in the Faculty of Commerce University of Nairobi**, presented to the World Bank on behalf of the University on 4/8/90.
- 1990 Gave a two and half hour lecture on the **System Development Life Cycle** to post graduate students taking Masters in Management Information Systems at United States International University (USIU) then at Parklands, Nairobi, Kenya.
- 1991 Analysed a World Health Organisation (WHO) sponsored project research data for Population and Development Consultancy Ltd (POPDEV) on **A Survey to Evaluate the Impact of Radio Programme on the Control of AIDS in Kenya.**
- 1992 Analysed data on the **Product-test Survey** for Colgate Palmolive (E.A.) Limited on behalf of Promin Consultants Limited.

The Extent to Which Commercial Banks in Kenya Use The Promotion Mix Element to Market Their Services.

- 1992 Analysed data on an MBA project by Sammy Chepkwony entitled **Segmentation of Television Audience using Demographic Data - A Case Study**
- 1995 Board Member Otok Secondary School.
- 1998 Appointed to be in charge of Y2K in the three companies. Key responsibility was to study the whole system software and hardware a like, design questionnaire to customers and suppliers to ascertain their level of preparedness for Y2K.

CURRICULUM VITAE

FOR

ROBERT OBWOCHA OBOKO

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Email: roboko@uonbi.ac.ke

PERSONAL INFORMATION

DATE OF BIRTH August 8, 1972
CITIZENSHIP Kenyan
LANGUAGES English, Kiswahili, Ekegusii
MARITAL STATUS Single
SEX Male
PERMANENT ADDRESS 902, Nyamira, Kenya
NEXT OF KIN Benard Omwancha Oboko, Box 902, Nyamira

EDUCATION BACKGROUND

SEPT 1998-SEPT 1999 **University of Nairobi**
Postgraduate Diploma in Computer science
Pgdip CMPSc Distinction

DEC 1990-MAR 1995 **Kenyatta University**

Bachelor of Education

Second Upper

FEB 1986-NOVE 1989 **Riokindo High School**

K.C.S.E

Grade B Plain

OTHER COURSES

- DEC 1994 CPA Part One
- JULY 1997 Kenya Red Cross Society

Training of Trainers Refresher Course in
Community Based first aid

HANDS-ON EXPERIENCE

Oracle 8, Ms Access, Ms Foxpro, Borland Delphi, SPSS, Ms Excel, Ms Powerpoint, Ms Word, Windows 95/98/2000, Windows NT, Linux, Sage Sterling

PROFESSIONAL QUALIFICATIONS

- Systems analysis , Design and Development
- Teaching/Training
- Statistics
- Accounting

INFORMATION SYSTEMS PROJECTS

- Staff Education Support Fund Information System between February and April, 2001
- UMIS-University Management Information System since June 2000 using Oracle
- Stores accounting information System for the HQ store of TelkomKenya, using Oracle 8 (Final Semester Project)
- A Co-operative society Information System in Jan 1999 to March 1999 using Oracle 8
- Systems Analysis for a city of Nairobi Matatu Route (237 from Nairobi to Thika and back) in October 1998

EMPLOYMENT HISTORY

JUNE 2000-Now

Chief Analyst/Programmer

Institute of Computer Science, University of Nairobi

Responsibilities

- Systems Analysis, Design ,Development and Training

JAN 1998-June 2000

IT Lecturer

Kenya College of Accountancy

Responsibilities

- Lecturing in IMIS(U.K)-Programming projects(**Foxpro**), Applications Development, Systems Analysis and Design and Accounting
- Syllabus Design and Implementation for Short and Long Term courses
- Co-ordination of training for a section of the IT students
- Teaching Packages

JUN 1995 - JAN 1998

Mathematics Teacher

Riokindo High school (Teachers' Service Commission)

VOLUNTARY TRAINING EXPERIENCE

Trainer in Community Based first Aid with the Kenya Red Cross

REFEREES

Mr. Christopher Moturi,
Institute of Computer Science,
P.O. Box 30197,
Nairobi.
Tel 447870, 444919 Ext 115

Mr. Elisha Opiya,
Institute of Computer Science,
P.O. Box 30197,
Nairobi.
Tel 444919,447870

CURRICULUM VITAE

NAME: STEVE RICHARD OBBAYI

AGE: 28

NATIONALITY: KENYAN

MARITAL STATUS: SINGLE

ADDRESS: P. O. BOX 55787, GPO 00100 NAIROBI

EMAIL: sobbayi@yahoo.com

TELEPHONE: 0722 627691

OBJECTIVES

To have a fulfilling career in the Internet and I.T industry and to bring to light the view the world has towards Africa in terms of the world knowing that we too have the abilities to keep up with them on a level playing field in terms of software development.

WORK EXPERIENCE

2000 - : Web developer with Scientific Media Services Ltd responsible for developing and maintaining various web sites as follows:

- a. www.afya-net.com: A php, mySQL database driven web site geared towards the health industry. This web site features a large database of drugs, health institutions, health companies and health service providers. Included is a large base of health articles with custom search capabilities.
- b. www.dawadepot.com: a B2B php, mySQL database driven online chemist. This web site has a large database with over 12000 drugs including the manufacturers, trade and retail prices, active ingredients and therapeutic class among others. This is a secure password protected member web site that is fully automated including intelligent error handling capabilities.
- c. I am currently involved in the laying of the foundation of the following web sites... scientisgroup.com, africanworldview.com, scientificmedia.com, kotecpharma.com, afya-mail.com, rainydayinvestments.com, scientisdiagnostics.com, tov-artrecords.com and andaiconsulting.com all of which are under construction.

1999 - : Independent web developer involved in developing and giving technical

consultation for various web sites which include:

- a. www.nubianunderground.com: a database content driven web site geared towards the young generation to promote their enthusiasm in the music entertainment industry.
- b. www.social-misfits.com: Gave technical consultation for the developing of the Social Misfits Recording Studios' web site in various capacities.
- c. www.pinye.nubianunderground.com (www.djpinye.com): Gave technical advice to the developing of a Music Dj's official web site.

1994 - 1998: Food Production trainee and professional

EDUCATION

1994 - : Self trained Programmer and web developer.

1994 - 1996: In house Food Production

1989 - 1992: Nairobi School.
Certification: K.C.S.E C+ mean grade.

1980 - 1988: Hospital Hill Primary School.
Certification: K.C.P.E 71 points.

ABILITIES

HTML (XHTML, DHTML, CSS)

JAVASCRIPT

SQL (Structured Query Language)

ASP (Active Server Pages); a server side language

PHP (Pre Hyper-text Processor); a server side language

JAVA

C/C++

GRAPHIC APPLICATION SUITS FOR WINDOWS AND MAC

INTERESTS

Software development, general cooking and baking, swimming, rugby, drama, fine art, computer animation, programming and Christianity.

REFEREES

Willie Gachora,
Webmaster, Wananchi Online Ltd.,
Tel: 313985.

Everlyne Wekesa,
Systems Administrator, Figcamm Bureau,
Everlyn@yahoo.com,

James Mbuthia,
Operations Manager, Scientific Media Services Ltd.,
Tel: 242233.

Washington Odhiambo,
Systems Administrator, Wananchi Online Ltd.,
Tel: 313985.

Daniel Duwa,
I.T Journalist, Market Power Ltd.,
Tel 0733 767945.

Kevin Obbayi,
Consulting web developer, Andai Consulting,
1614 SUMMIT AVE #204,
SEATTLE WA 98122,
U.S.A

afya-net.com - The Online Healthcare Information Portal for the Public - Microsoft Internet Explorer

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(Posted April 16, 2002)
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Use of Herbal Drugs Advised

(Posted April 16, 2002)
The struggle for free and affordable health care delivery in Africa can only be won through the recognition and use of affordable

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Medical term of the moment

Juvenile angiofibroma

A noncancerous growth of the back of the nose or upper throat (nasopharynx) that contains many blood vessels.

Internet

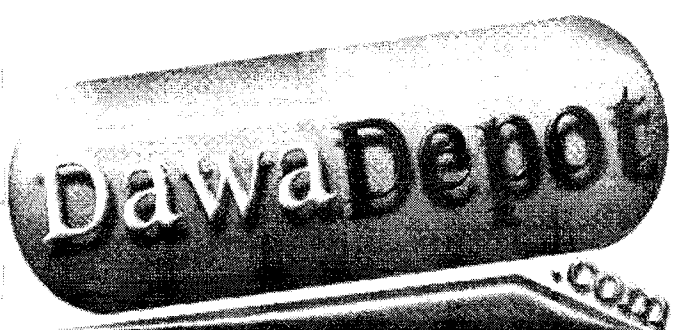
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Nubian Underground - The definitive source for African hip-hop - Microsoft Internet Explorer

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Tuesday, April 16, 2002 Volume 3, Number 4

Nubian Underground is the definitive source of ethnic African hip-hop music and culture. This site is updated on a regular basis and features the latest news and information on African hip-hop music and culture.

The Phat Sound Department

The State of Malawi Hip-Hop

Our man, Johnny Fever was down in Malawi a while back and sent us this two part report of the Malawian scene. Sounds like things are really kicking down there.




It's ten o'clock Saturday night, and I'm in the studios of Power 101 FM with Dr. Gwynz. He's about to launch into a program catering to rap music, from the most current singles to the classic "old school" sounds of the 1980s. The show intro—produced by Gwynz and featuring his own rhyming skills—fades out and he announces the first cut. Another weekly installment of "HipHop Konnection" is officially underway.

[read more >>](#)

Nubian Underground Internet

Pinye.nubianunderground.com - Microsoft Internet Explorer


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Get all the exclusive scoops on Dj Pinye right here!

Get exclusive info on the groove squad entertainment crew!

This is the official web site for East Africa's #1 dj



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CONRAD TOVAR
My Kind of Music


Welcome to the music.

TOV-ART RECORDS™ is proud to present "My Kind of Music" - the debut CD from Conrad Tovar.

This music is performed with wonderful instrumentation, new arrangements and a rich pure voice compared to Mel Torme, Jerry Vale or Matt Monroe.

Conrad Tovar debuts "My Kind of Music"

Conrad Tovar's CD well received!



Internet

CURRICULUM VITAE

Judith Adhiambo Ndiege
P. O. Box 00515 - 1122
BURUBURU
NAIROBI

TELEPHONE: 799245/789806
E-MAIL: judiendiege@hotmail.com

PERSONAL INFORMATION

DATE OF BIRTH : 28th November 1980
GENDER : Female
NATIONALITY : Kenyan
MARITAL STATUS: Single

ACADEMIC QUALIFICATIONS

June 1999 to Date: **VISION INSTITUTE OF PROFESSIONALS**
Institute for the Management of Information Systems (IMIS)

Examinations Taken:-
Foundation Diploma
Diploma
Higher Diploma

1995 – 1998 : **NJORO GIRLS SECONDARY SCHOOL**
Kenya Certificate of Secondary Education

1986 – 1994 : **KIMATHI PRIMARY SCHOOL**
Kenya Certificate of Primary Education

WORK EXPERIENCE TO DATE

Worked as a Receptionist cum Secretary for five months with Property Afrique Limited during my college vacation. My duties included making and receiving telephone calls, attending to all the clients and visitors and taking down messages for employees while they were away.

Currently working for Nation Broadcasting Division as a Researcher.

DUTIES AND RESPONSIBILITIES

Making and receiving telephone calls for the company members as well as arranging for meetings and booking appointments at appropriate and convenient time for the Manager.

Filing information. This is done by the use of files, folders and floppy disks.

HOBBIES

Participating in community work, reading and travelling.

REFEREES

1. Ms. B. Rotich
Head IT Department
Vision Institute of Professionals
P. O. Box 27651
NAIROBI
Tel: 243117/247102
2. Mr. F. L. Farouk
General Manager
Property Afrique Limited
P. O. Box 51758
NAIROBI
Tel: 714403/072-741913
3. Mr. Harry Njagi
Statistical Analyst
Nation Media Group
P. O. Box 49010
NAIROBI
Tel: 221222