MINISTRY OF EDUCATION AND CULTURE

Education Sector Development Programme

Information and Communication Technology (ICT)

Education Management Information System (EMIS) Development Plan
2004-2007

29 November 2004

Executive Summary

The Education Management Information System (EMIS) Development Plan aims at developing capacities in the Ministry of Education and Culture (MOEC) to make it more efficient in executinng its core functions of policy formulation, monitoring and evaluation, standards setting, providing regulatory frameworks, co-ordination and optimization of resource use through improved access to and use of EMIS at all levels of education. .

In particular, the EMIS plan aims to develop as well as expand capacities at all levels that will provide for;
- Accurate and timely statistical information to support educational reform efforts, programme implemation as well as to guide decision making,
- .Routine collection, processing, storage, dissemination and utilization of important EMIS data/information,
- Comprehensive and coordinated data collection, processing, storage and dissemination mechanism for the education sector and other relevant department and institutions.

The EMIS plan revisits briefly the roles it is given and expected to play in various government policies and frameworks. Of particular importance is the National Communication and Technology Policy. This policy, among other things, defines the roles which EMIS should play in enhancing education access and learning across all levels. The EMIS plan also underscores its roles in other government frameworks like Poverty Monitoring Master Plan (PMMP), National Stratergy for Growth and Reduction of Poverty (NSGRP), Education Sector Development Programme (ESDP), Primary Education Development Plan (PEDP), Secondary Education Development Plan (SEDP), Adult and Non formal Education Development plan.

In view of the education set-up, its context and the shortcomings of current data management systems, this EMIS plan is modeled to be district (local government) driven, user/dissemination oriented, ensuring sustainability with friendly interfaces, ensuring validity and accuracy of data, highly compatible with the other government databases such as PO-RALG database, comprehensive to cover various needs, corresponding with the government framework and based on the previous achievements of MOEC.

EMIS development plan proposes four main strategies to realize the ideal EMIS in MoEC. Those strategies are capacity building and institutionalization, development of software system, hardware procurement and installation, and program management and monitoring. Specific objectives are set for each strategy with sequential activities. The estimated total cost to implement the plan from 2004 to 2007 is US$ 4.709,443. The budget has been planned . in respect of EMIS objectives, its activites and schedule of implementations.

In the capacity building stratergy, stakeholders will be provided with orientation about EMIS and its development. Regional and district officers will be trained on how to operate the systems and analyze the data and information. Heads of schools/colleges will be trained on how to properly fill in data forms and analyze data on their own schools to know the status and produce district education

reports. For system development, the software will be developed to greatly facilitate operators in districts and regions to process, report and disseminate the data and information. For hardware procurement, a minimum package of two computers and a printer are planned to be installed in districts and regions. EMIS staff in MOEC will support all activities at all levels. The team will carefully monitor the progress of the implementation and quality of data at short intervals.

This plan takes on board other programmes under the Ministry of Education and Culture that are quite significant in the development and expansion of EMIS in the education sector. These include:

a. the implementation of Information Communication Technology (ICT) in teachers colleges project. Through this project, the ministry will introduce ICT in the education sector as well as produce qualified ICT personnel for sustainable take up of computer studies in primary and secondary schools.

b. The Secondary Education Development Plan (SEDP) provision for EMIS development have been provided for.

Details on these projects are provided in the respective project write ups.

The importance of a well established EMIS, needs no emphasis. The plan envisages that when EMIS is effectively put in place problems associated with lack of knowledge on the status of education development at a given time and on what real needs to be done will be solved. It is with these considerations in mind that development of EMIS has to be done very urgently. With a well established EMIS, it will be possible to know the status of education development and manage it in an effective and efficient way at various levels. There is no question that MOEC efforts in developing EMIS directly contributes to ensure access and quality education for all children in Tanzania.

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Annexes

Acronyms

ANEIP	:	Adult and Non Formal Education Implementaion Plan
BSE	:	Basic Statistics in Education
PSM	:	Public Service Management
DB	:	Database
DED	:	District Executive Director
DEO	:	District Education Officer
DPLO	:	District Planning Officer
DPP	:	Department of Policy and Planning
DPE	:	Department of Primary Education
DSLO	:	District Statistics and Logistics Officer
EC (EU)	:	European Commission (European Union)
EMIS	:	Education Management Information System
ESDP	:	Education Sector Development Program
ES	:	EMIS Staff
ICT	:	Information and Communication Technology
LGM&E	:	Local Government Monitoring and Evaluation
MOEC	:	Ministry of Education and Culture
MOF	:	Ministry of Finance
MOH	:	Ministry of Health
MSTHE	:	Ministry of Science, Technology, and Higher Education
NBS	:	National Bureau of Statistics
NSGRP	:	National Strategy for Growth and Reduction of Poverty
PEDP	:	Primary Education Development Plan
PO-RALG	:	President's Office Regional Administration and Local Government
PRSP	:	Poverty Reduction Strategy Paper
PMMP	:	Poverty Monitoring Master Plan
PO-PP	:	President's Office Planning and Privatization
RAO	:	Regional Academic Officer
REO	:	Regional Education Officer
SE	:	System Engineer
SED	:	Socio Economic Database
SEDP	:	Secondary Education Development Plan
SLO	:	Statistics and Logistics Officer
SM/MP2	:	School Mapping and Micro Planning Phase 2
TEMP	:	Teacher Education Master Plan
TOR	:	Terms of Reference
TSED	:	Tanzania Socio-Economic Database
WEC	:	Ward Education Coordinator

1-0   Introduction
1-1   Background

Information Communication Technology (ICT) encompasses the broad fields of data/information processing, transmission and communications by means of computer and telecommunication techniques and these modern tools are being increasingly used for organizational/personal information processing in all sectors of economy and society. Educational Management Information System (EMIS) is significantly improved and expanded by embracing ICT. On one hand, the management and internal processes towards availing those services may be strengthened by investing in the appropriate use of office systems to support internal information flows, teaching and learning, leading to greater accuracy, efficiency, effective for executive decision-making, resource allocation, risk management and operational control

Management Information Systems (MIS) are emphasized in all main government ICT policy statements eg. National Vision 2025, NSGRP, National Information and Communication Technology Policy,, etc.

Thus successful management of education systems today, require effective use of the ICT tools for providing smooth operations to enhance policy-making, teaching and learning research   and monitoring and evaluations through data and information. To this end, countries around the world have invested significant resources in collecting, processing, and managing more and better data through Education Management Information System (EMIS). However, all too often EMIS design and development has been limited to information technology enhancements, and/or data storage and maintenance, with insufficient attention being paid to the management environment in which EMIS operates and data utilization for policy decisions. The technical, organizational, and institutional conditions need to be examined in order to enable information-based decision-making to be made for effective system management. This requires technical capacity building accompanied by creation of the demand for information and nurturing of a culture of open communication, information sharing, and information use.

Therefore establishment and operationalision of modern MIS which employs current ICT capabilities is an endeavour which MOEC is focusing on.

1-2   What is EMIS?

Education Management Information System (EMIS) is an institutional service unit which produces,and manages educational data and information. It is normally established within a national Ministry or department responsible for education.

The focal functions of EMIS are the collection, processing, utilizing and diseemination of educational data and information and avail it to educational stakeholders on a timely, routine, reliable and predictable basis via uncomplicated and user friendly interfaces..

In its normal operation it employs both manual and ICT through computerised systems.

EMIS also includes a set of formalized and integrated operational processes, procedures, and cooperative agreements by which data and information about schools; educational resources and infrastructure; other learning activities, and evaluative outputs are regularly shared, integrated, analyzed, and disseminated for educational decision making at each level of the educational hierarchy.

EMIS also is an institutional culture that perpetually advocates data and information use and seeks to ensure it through the creation of an environment which permits information systems to flourish (requiring institutional and organizational commitments), while creating and sustaining demand for information products.

Accurate, reliable and timely statistical information on education is crucial to support educational reform efforts and to guide decision making at all levels. Strengthening EMIS has been a high priority not only in Education Sector Development Programme but also in the wider government framework such as Poverty Monitoring Master Plan. Its importance is mostly stressed in Primary Education Development Plan Review in 2003.

In order for EMIS to function properly, the three main functions which are data collection, data processing & management, and data utilization should be done. EMIS could be applied at any level.. As the amount of data greatly increases, equipment like computers are utilised to facilitate the system, to save and process the data faster and more efficiently

EMIS functions

Data collection

Data utilization

Data processing

Besides data and information which are routinely collected and processed, EMIS could also provide other important information, such as outcomes of findings of education researches, results of school inspectorates, newsletters, regulations, school mapping and micro planning reports, Public Expenditure Review, Education Acts and Seculars, budget speeches, ETP, ESDP and PEDP documents, BSE. These documents are archived in the system to which anyone can access to.
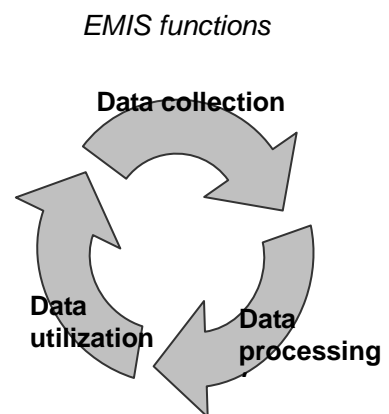
1-3 EMIS in the government frameworks

For effective implementation of EMIS plan it is imperative that the plan should take into account commitments stated by other national developmental policies/plans/guidelines. This is due to the prevailing mode of sectorwide approach in Tanzania. EMIS plan has identified and incorporated the commitments spelled out in Tanzania development vission 2025, National Information and CommunicationTechnology Policy (2003) National Stratergy for Growth and Reduction of Poverty (NSGRP), the Education Sector Development Plan (ESDP) with its sub sectoral plans such as PEDP, SEDP, Implementation of ICT in Teachers Colleges and Adult and Non Formal Education implementation Plan (ANEIP).

1-3-1 EMIS vs Tanzania Development Vision 2025

Tanzania Development Vision 2025 undelines the need to promote Information and Comunication Technology (ICT). Advanced micro electronic information and communication technologies are central to competitive social, economic and resultant profitability enhancement increasing. These technologies are the major driving force for the realization of vision. They should be harnesed persistently in all sectors of the economy and should be put to benefit of all social groups with the view enabling the meeting of the basic needs of the people, increasing productivity and promoting competitiveness.

1-3-2 EMIS vs National Information and Communication Technology Policy (2003)

The ICT policy elaborates that ICT encompasses the broad field of data/information processing transmission and communication by means of computer and telecomunication techniques and these modern tools are being increasingly used for organisational/personal information processing in all sectors of economy and society. The policy underscores the point that ICT can be used for enhancing education as well as improving and expanding all forms of public utilities and services. On the other hand, the management and internal processes towards availing those services may be strengthened by investing in the appropriate use of office systems to support internal information flows, leading to greater accuracy and timeliness of executive decision making, resource allocations, risk management and operational control.

The policy has pinpointed that educational and vocational training sectors are one of the main cornerstones for development in all sectors as well as for progressing towards a knowledge based environment.

One of these many challenges is the introduction of Management Information System (MIS) and ICT in education, training and tertiary academic sectors for all fields of studies. In its stratergies, the policy states that the government will promote the use of ICT to enhance efficiency effectiveness and sustainability in the provision of services and basic utilities by supporing the development and deployment of nationwide e-health, e-tourism, e-education and e-commerce

1-3-3 EMIS vs The National Strategy for Growth and Reduction of Poverty.

The NSGRP had realised that there is a need to promote yhe use of ICT in order to expand communication networks and supporting institutions which facilitate appropriate and enviromentally friendly technology development and transfer.

1-3-4 EMIS in Poverty Monitoring Master Plan

The National Strategy for Growth and Reduction of Poverty (NSGRP) provides a coherent framework for Tanzania's poverty reduction efforts. It provides an opportunity to adopt a more systematic approach to monitor and evaluate the

impact of Tanzania's fight against poverty. In 2001, Poverty Monitoring Master Plan (PMMP) was developed as the government monitoring and evaluation framework. In PMMP, EMIS is recognized as one of the main routine data systems.

Furthermore, PMMP mentions that routine data systems are of great importance for the poverty monitoring system for two major reasons. Firstly, the routine data systems provide data at regular intervals, such as, quarterly and annually, while survey and censuses can only provide data at relatively long intervals. Secondly, the existing routine data systems are national in their coverage and can provide disaggregated information at the district and ward levels. As the success of the Poverty Reduction Strategy depends to a large extent on appropriate actions by local government authorities, the data generated by routine data systems are of great importance.

1-3-5 EMIS in Education Sector Development Programme (ESDP)

The Education Sector Development Programme (ESDP) is a reform initiative that has been designed to bring about changes that will cover the entire education sector. The programme articulates the medium and long term education development strategy for the period 1999-2015.

For the Medium Term Plan 2000/01-2004/05 of ESDP, four priority areas were identified which focuses on:
 ‣ Increase enrolment and retention by improving the teaching-learning environment at all levels
 ‣ Strengthen the management capacity at all levels
 ‣ Improve the Education Management Information Systems
 ‣ Control the spread of HIV/AIDS/STIs through the education system at all levels of education

Development of EMIS is also highly prioritized in ESDP documents and in its review. In ESDP, it is expressed that accurate and timely information are essential for education managers and planners to effectively operate and develop the education system. It is also expressed that in a decentralized system, all stakeholders must see themselves as collectors, providers, and users of educational information. The followings are the vision, objectives and strategies for EMIS in ESDP.

VISION
To have an operationalized EMIS which is efficient and effective by the year2008

MISSION
To provide adequate, accurate, timely reliable data and information for effective education provision in a decentralised system.

OBJECTIVES
1. *To ensure that education stakeholders at all levels can generate and have access to reliable data and information about the education system.*
2. *To ensure that educational policy and planning are based on accurate and relevant data*

STRATEGIES
1. *The Education Management Information System (EMIS) will be developed to provide timely and relevant education data.*
2. *Adequate equipment and technology will be supplied and procedures will be also developed to ensure the appropriate flow of information and communication.*
3. *Training in potential and use of EMIS will be provided to users and stakeholders.*

1-3-5 (a) EMIS in Primary Education Development Plan (PEDP)

The PEDP stipulates that education managers and planners require accurate, timely information to effectively operate and develop the education system. The human aspect of this requirement is that in a decentralised system, all

stakeholders must see themselves as collectors, providers, and users of educational information. The technological aspect is to exploit the computer as a tool for creating an Education Management Information System (EMIS) which can organise and maintain educational data in a format that aids monitoring, evaluation and planning.

The main objectives of the plan are to ensure that education managers at all levels can generate and have access to reliable data and information about the education system, including statistics of AIDS-related deaths and educational planning and policy is based on up-to-date, reliable information across all key indicators.

1-3-5 (b) EMIS in Secondary Education Development Plan (SEDP)

This is a subsector reform plan for Secondary Education. The EMIS components had been included under the section of education management system improvement. In this section it has been highlighted that the overarching goal is to make sure that the Ministry becomes more efficient in executing core functions. In order to implement this, SEDP states that MOEC has to improve access to and use of EMIS at all levels and needs to establish communication and publicity in SEDP.

1-3-5(c) EMIS in Implementation of ICT in Teachers Colleges

The Teacher Education Department has developed a project which shows its aim of implementing the ICT/EMIS components for effective management of the subsector.

The project observes that MOEC has to promote the introduction of ICT in the education sector. One of the most crucial starting points in this endeavour is to introduce ICT in Teachers colleges. The purpose is to build a force of ICT tutors in MOEC with the capacity to provide ICT tutoring to students.

Also ICT should be introduced as a teaching and learning tool to all tutors. The proposed project will provide all teachers colleges with the latest ICT technologies.The project will take twenty two (22) months.

1-3-5-(d) EMIS in Adult and Non Formal Educatio Implementation Plan

The ANEIP (2003/04-2007/08 targets to improve adult literacy levels and clear the backlog of unschooled children and youth by 2007/08.

In its strategic program 1 under the component of access and equity, the plan envisages that it will strengthen and improve AE/NFE sub-sector system of data collection, processing and dissemination to have reliable data that enhance accountability and transparency, and which improves planning and implementation of the ANEIP.

The entry point for interpreting AE/NFE programs piloted at district level including that of UNESCO in Shinyanga will be identified, reviewed, revised and replicated to national AE/NFE EMIS.

AE/NFE EMIS with monitoring indicators will be integrated in the broader MoEC EMIS by 2005. In addition to this, an AE/NFE Information Education Communication (IEC) packages will be developed and mainstreamed in PEDP by 2004.

The plan will cost Tshs. 55.97 billion to implement over a period of 5 years.

1-3-6 EMIS and other governmental organization databases/Information

Various governmental organizations at the central level, are involved in education management and development. The data and information accumulated through EMIS need to be shared and linked to other governmental organizations. The targeted data will include pre-primary, primary, secondary, teacher education, non formal information.

The following are the main governmental organizations which can share database with EMIS as shown in the linking organizations below (also refer to Annex I).

Linking Organizations

Governmental Organization	Information / Database
National Examination Council in Tanzania	National examination results
National Bureau of Statistics (PO-PP, President's Office Planning and Privatization)	Population, Literacy, Household, Income, Economy (TSED)
Public Service Management (President's Office)	All civil servants in Tanzania
Ministry of Finance	Finance, Budget allocation, etc
President's Office Regional Administration and Local Government (PO-RALG)	Socio economic status of multi-sectors (LGMD)
Ministry of Science, Technology and Higher Education	Data on Higher Education (Database is not established)
Ministry of Health	School health (Database is not established)

1-4 Situation Analysis of EMIS in MoEC

The Ministry of Education and Culture (MOEC) has been doing great efforts in collecting education data and publishing Basic Statistics in Education for the last 20 years. A number of education data is being collected from schools.using various methods such as mail questionnaires, documentary, interview methods, telephone and fax/e-mail when necessary. Some of the instruments used are namely like TSA, TSS, TSM, and TVU. Data processessing is done electronically at central level using COBOL Software while at school, ward, council and regional levels it is done manually.

Other governmental organizations, such as Teacher Service Department, President's Office Public Service Management, Ministry of Health, National Bureau of Statistics, and President's Office Regional Administration and Local Government collect education data for their needs without coordinating or linking to one

another. With this approach,, data collected can overlap and oftenly can vary in values. Consequently, many data users are troubled by low validity of data as well as untimeliness and inaccessibility.

Inadequate human capacity to collect and process data at school, ward and district levels has also contributed to inaccuracy of the data and information. Some schools do not keep proper records, which makes difficult for heads of schools to accurately fill in the data forms. In some cases, inaccurate data and information are purposely submitted due to pressures or private concerns. This is probably magnified by lack of feedback and dissemination of data to the school level, as well as lack of motivation.

Moreover, various education data has been collected from schools. The very critical question is how much data was processed and utilized out of the collected data and how much data reached the policy makers and other users. Dissemination and utilization of data at various levels are the most lacking components in EMIS.

In view of the above challenges, there is a need to review the current system of data collection, processing/management, utilization, dissemination and storage and develop a comprehensive and user friendly EMIS systems, which allow an effective monitoring and evaluation of education for promotion of local reform and decentralization.

The standard EMIS will link with any or all of the following:

- School administration (student and staff records, budgets, etc)

- System administration (facilities, staff, financial administration, planning and monitoring etc)

- Communication (Networking all schools with MOEC reducing the use of paper communications)

- Document management

At the moment the existing system is networked to all departments at MOEC headquarter to give access to data, internet and e-mails. This success was due to joint efforts of the government of Tanzania and donor support mainly from European Union.

Apart from a well computerised, networked and internet connected sytem,it is also suggested that, other ways to access data should be made available. These include publications, newsletter/information booklets, popular versions on statistics books, as well as resource centres at national and regional levels.

Therefore, implementation of EMIS will ensure the availability and reliability of data and information at school and levels hence allowing an effective management of education system.

The existing data users include MOEC, PO-RALG, Poverty Eradication Division – Vice Presidents' Office, TIE, IAE, NECTA,TSC,PO-Public Service Management, MoF, National Bureau of Statistics, PO-Planning and Privatization, MOH, MSTHE, Ministry of Community Development, Gender Affairs and Children, Ministry of Labour, Youth and Sports Development, Universities, TLS, Donors and NGOs. Others are Regions, Districts, Wards, Adult Education Centers, Teachers Colleges, Pre-Primary and Primary Schools, Villages and Teacher's resource centres.

1-4-1 Strengths

Available strength for the EMIS plan include:
> * Existence of processed data and information within MOEC.
> * Existence of EMIS and Documentation centre.
> * Existence of other data and information collections and processors.
> * Availability of education data information providers and users.

Existence of MoEC and development partners with capacity and interest in EMIS

1-5 Designing of EMIS

> * The design of EMIS in MoEC is expected to be developed incrementally and could ultimately handle the following:
>   * Manipulating text and numerical data (word processing, spreadsheets, statistical and mathematical software, desktop publishing)
>   * Manipulating graphic information (scanning and drawing software)
>   * Capturing, Storing and analysing digitized information (databases)
>   * Accessing and disseminating information (audio-visual such as radio, television, newspaper, newsletter, world wide web, CD-ROMs etc)
>   * Communicating (telephones, radio call, e-mail, listservs, chatrooms, fax & e-fax, real-time conferencing, etc.)
>   * Instructional processes (teaching and learning specific skills)
>   * Document management (document management with full text retrieval)

The management, administrative and decision making specifically for planning and monitoring will be linked with any or all of the following
   (i)   School administration (student and staff records, budgets, etc.)
   (ii)   System administration (facilities, staff, financial administration, planning and monitoring, etc.)
   (iii)   Communication (networking schools (primary and secondary), colleges, districts, regional as well as zonal inspectors with the MOE, PoRALG, reducing the use of paper communications)
   (iv)   Document management.

1-5-1 Features of expected EMIS in MOEC

(*What kind of EMIS is suitable in the context of MoEC and government frameworks?*)
EMIS in MoEC need to satisfy the following
> * It needs to be a user and data dissemination oriented system. It needs to provide relevant, accurate and timely data whenever needed by any user. Data needs to be disaggregated by gender, geographical areas, and different levels to facilitate decision

making and planning. The report forms can be designed according to the needs of users at various levels. Internet will largely help all users to retrieve any information and data from the school, ward, district, regional and central levels.

➢ It needs to be user friendly so that everyone can easily operate (entry, processing, and retrieval data) it. Even when one is not adequately computer-literate, friendly and intuitive interface will guide one to operate and manage the system. Installation of the system needs to be simple and quick as well.

➢ It needs to ensure the validity and accuracy of data when data is collected, processed and disseminated. A simple and clear form in the system enhances the accuracy of data entry. While human capacity to operate the system and analyze the data is highly built, the system needs to have the facility to detect significant disparities in process.

➢ EMIS needs to be comprehensive. One of the serious problems in the current systems in Tanzania is that various organizations collect education data independently without any linking or sharing. EMIS needs to become the mainstream which covers the needs of many users, then various organizations will share the data of EMIS as the most reliable source. Various indicators from different data sources are currently taken to measure the situation of education and impacts of the development. Once a comprehensive EMIS has been established, the situation of education, its trend and the impact of various interventions will be firmly monitored and disseminated to stakeholders.

➢ EMIS also needs to provide information materials, research papers, regulation, Education Act, and other important documents as archived documents. Those documents are archived in EMIS at the central level and uploaded on internet. Archived documents are also brought from center to regions and districts. Any user at various levels can access to it through internet or at district/regional education offices.

➢ EMIS Plan needs to encourage and facilitate the use of the Internet as a research and communication tool among students, parents, teachers, principals, other MOEC officials, members of the community and stakeholders.

1-5-2 Data and information contained in EMIS

(*What kind of data and information is required in the system?*)

EMIS will strive to provide data required by users for the calculation of all key education indicators. The data and information required for EMIS fall into six categories. It is planned EMIS will provide for:
  ➢ Baseline education statistics and demographics, such as students, by age, gender, grade, teachers**,** textbooks and type of schools.
  ➢ Human resource information – teaching staff, non teaching staff, their qualification, experiences, status, service records, career development records
  ➢ Infrastructure and assets data – classroom, furniture, school area, other facilities and assets
  ➢ Performance measures data – results of national examinations and local examination , repetition rates, transition etc..

> ➢ Financial management information– cash flow of school finance, audit report, expenditure reports, implementation of school plans and school contributions.
> ➢ Studies, researches, information materials, results of school inspection, documents, education policy, acts and regulations.

Most of the information and data will be provided from schools and others will be archived at the all level.

1-5-3 Data and information flow in EMIS

(How the data should be collected, processed, utilized and disseminated?)

EMIS at the district level is the most emphasized in this whole EMIS development plan . In the case of pre-primary, primary and Adult and Non Formal Education, data and information forms are filled in annually at the school level and sent to Ward Education Coordinators (WEC's) for verification. WEC's then send the verified forms to the District. Trained Statistics and Logistic Officers in districts input the data into computer system and establish a district database. By using the district database, statistics officers and other education officers will make statistic booklets, district and ward school reports according to the needs of stakeholders in the district. (Refer to Figure 1)

Improving the process and quality control
The discussion on this should start as soon as possible after the consultants are recruited. A plan needs to be prepared for improving the process of data collection to ensure that data are captured accurately, that forms are returned and processed on time, and that adequate quality checks are built in the process. Data processing should be harmonised with a goal of having common data collection instruments for MOEC, PO-LARG and other data collectors and joint processing at District and Regional levels. In the whole process close consultation with stakeholders including POLARG, Regions and districts and schools should be maintained.
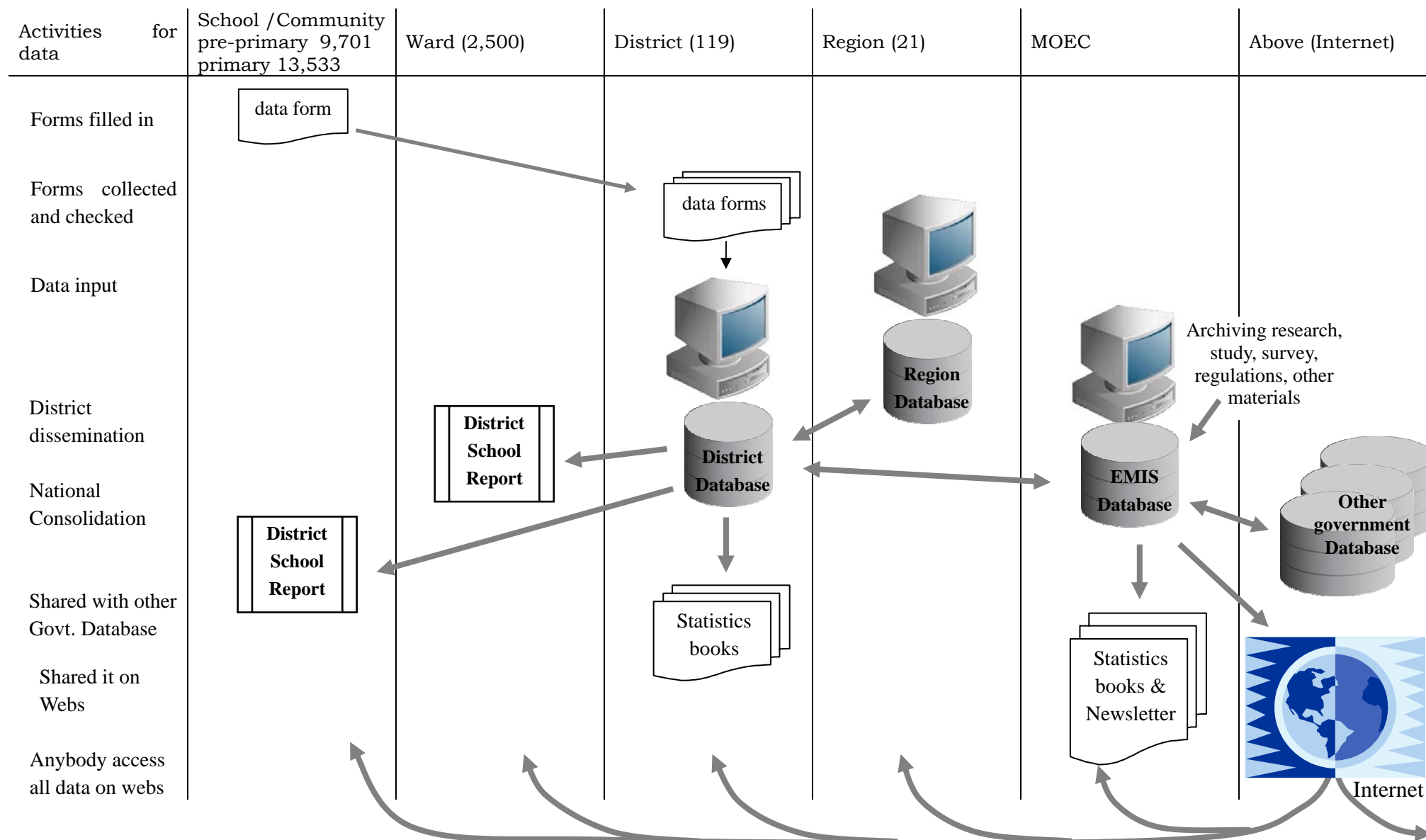
The database created at the district level is to be sent to MOEC at the central level. MOEC consolidates all databases from all districts in Tanzania into one national database. MOEC is able to publish national statistics booklets and popular versions annualy for all stakeholders and develop MOEC web pages and upload them on internet. Any user and stakeholder can access to them to obtain specific education data on their own. Moreover, after the national database is consolidated with other important documents, it is delivered and saved at the regional and district computers. Thus, even when districts do not have the access to the internet, they can fully refer to the data from all districts and regional offices for comparison and analysis. The feedback should be given to wards, school and community on all data processed and analysed by districts.

In the case of secondary schools and teacher colleges, the data and information filled annually. The completed forms are sent to the regional office. A trained academic officer at the regional office will input and process the data with the computer system to create regional database. The academic officer at the regional education office utilizes the database to develop regional education statistics and send the database to MOEC. The regional education offices could get all district database from the central level (MOEC) and
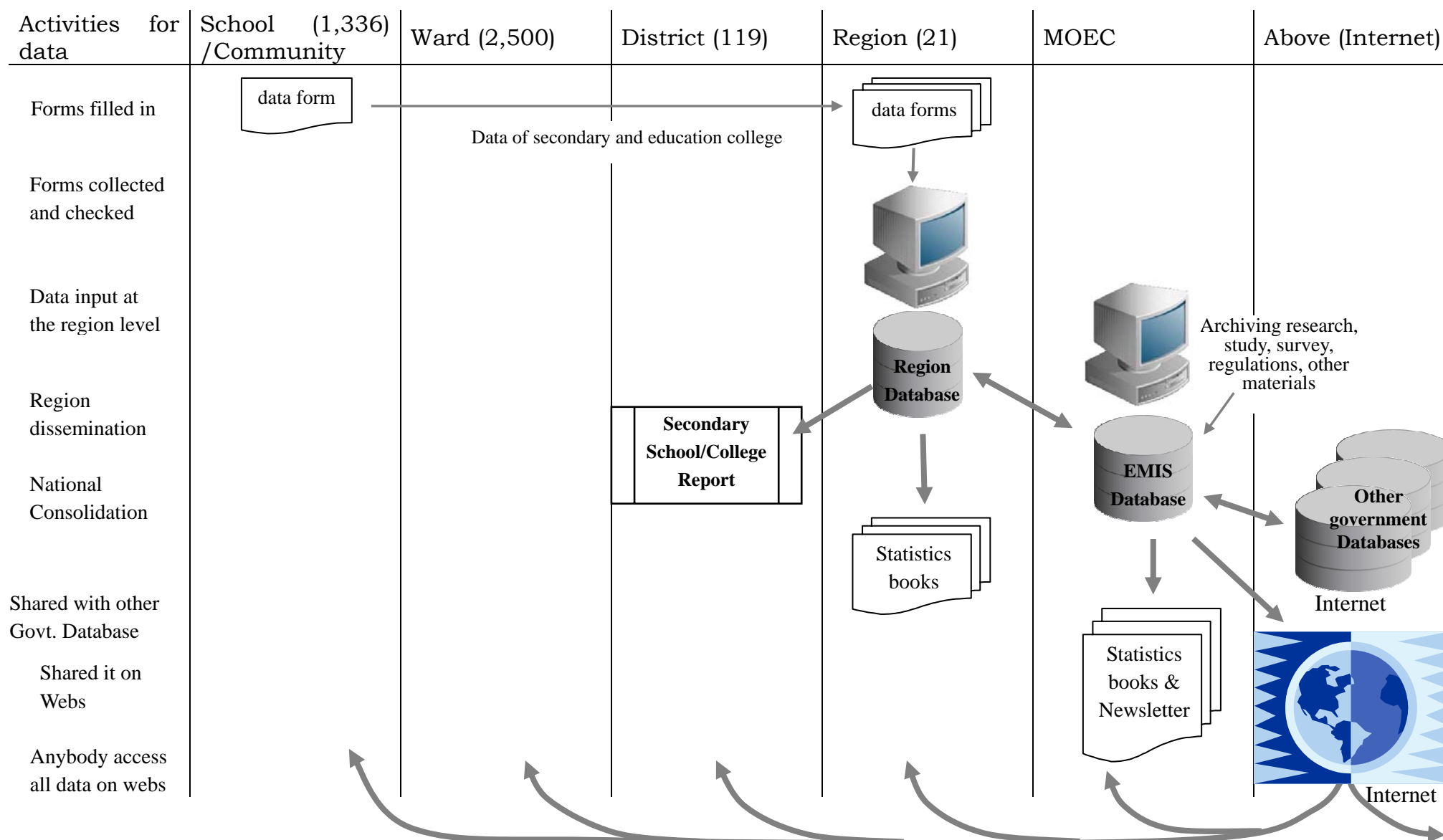
directly from the particular district in the region. (Refer to Figure 2) Regions should analyse the data and give feedback to districts.

In order to avoid overlap and duplication of efforts steps will be taken during EMIS implementation stage to harmonize education data collection with other data collectors such as PO-RALG.

Figure 1   Expected Data and Information flow of EMIS in MoEC (Case of pre-primary, primary, and Adult and Non Formal Education data) in 2007.

Activities for data	School /Community pre-primary 9,701 primary 13,533	Ward (2,500)	District (119)	Region (21)	MOEC	Above (Internet)
Forms filled in	data form					
Forms collected and checked			data forms			
Data input						
District dissemination		District School Report	District Database	Region Database	EMIS Database	Archiving research, study, survey, regulations, other materials
National Consolidation	District School Report					Other government Database
Shared with other Govt. Database			Statistics books			
Shared it on Webs					Statistics books & Newsletter	
Anybody access all data on webs						Internet

Figure 2   Expected Data and Information flows of EMIS in MoEC (Case of Secondary and Teacher Education data) in 2005

Activities for data	School (1,336) /Community	Ward (2,500)	District (119)	Region (21)	MOEC	Above (Internet)

Forms filled in — data form → Data of secondary and education college → data forms

Forms collected and checked

Data input at the region level

Region dissemination — Secondary School/College Report — Region Database

National Consolidation — Statistics books — EMIS Database — Archiving research, study, survey, regulations, other materials — Other government Databases

Shared with other Govt. Database

Shared it on Webs — Statistics books & Newsletter — Internet

Anybody access all data on webs — Internet

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1-5-4 Data entry and processing from 2004 to 2007

Tanzania has 119 districts (local government councils) and 21 regions in the main land. There are 9,701 pre-primary, 13,533 primary schools, 1,291 secondary schools and 45 teachers collegess for the year 2004. Therefore, it is very difficult to expand EMIS systems cover the country all at a go. Installation of EMIS systems in districts will be conducted in three phases, (30 districts in 2004, 60 districts in 2005, and 29 districts in 2006). Installation of EMIS system in all 21 regions will be conducted in 2005.

Data collection and processing should start in 2005. The data on pre primary, primary schools and Adult and Non Formal Education are processed in 30 districts and the data from 89 districts will to be processed at the central level in 2005. In 2006, the data on pre primary, primary schools and Adult and Non Formal Education are processed in 90 districts while data from 29 districts will be processed at the central level. Eventually, all data on primary schools will be entered and processed in 119 districts in 2007. Please refer to the table below and figures in Annex 2. Processing of data of all secondary schools will start at regional offices in 2005.

Data entry and processing

	At district offices	At regional offices	At MOEC
2005	30	21	89 districts
2006	90	21	29 districts
2007	119	21	0

1-5-5 Technical implication for system development

Data entry sheets should be simple for those at district and regional levels. Those operators receive the filled data forms from schools and enter data manually into the developed entry sheets in the software. The data forms and data entry sheets should have the same layout. In addition, built-in enforcement of data quality standards and practices needs to be developed so that error trapping can occur during and after data input. Other points to ensure data quality is also mentioned in Annex 3.

A function to make important education indicators[1] should be built in. After data is input into the system, the system can automatically process the raw data into education indicators. Functions to make reports for policy makers, planners and other stakeholders should be built in as well. The contents of reports should be arranged by the needs. Moreover, data in display in tables, graphs and thematic maps in the report should be cut and pasted on the other

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[1] An education indicator is often defined an index which gives an account of the situation of an educational system at a given moment; it is constructed from raw data or Information formulated so as to be able to study an educational phenomenon

documents, dissemination materials and yearbooks.

Data forms to be designed will take stock of the data form which are currently being used by EMIS unit in MOEC. The current forms have been in use for a long time and are familiar to those who fill in at school level. Introduction of new type of formats should be done gradually to avoid making errors into the data. However, we need to review the indicators which are currently collected with consultation with stakeholders and users.

We should then explore the possibility of cutting down the number of indicators so that we collect the high priority data and information aimed at increasing the quality by avoiding the burden of data suppliers.

In order to ensure compatibility with other government databases and other software, it is essential to select the software with Structured Query Language (SQL) which is the most common language for database and other applications. It would be possible to entrust local or international system engineering company to develop the software which runs on the SQL software. However, the negative aspects in custom programmed software are that it is rather expensive to develop and sustainability of the system is not high by looking into the past experiences in other African countries including Tanzania.

It is recommended to deploy existing software and adjust it to education contexts in Tanzania. In many African countries, EMIS has been one of the biggest concerns and challenges. Various software for EMIS have been developed in collaboration with the governments and donors. In particular, UNESCO has been contributing to develop EMIS in several countries in Africa under the initiative, namely National Education Statistics Information System (NESIS). Useful software, such as STATEDU, ED*ASSIST were developed and function in those countries which have similar context to that of Tanzania.

Coding is a very important key to establishing databases. Other governmental organizations which have already developed the databases have specific codes for region, district, ward, village, school, and others in their databases. For easy sharing of the databases, the codes currently used need to be followed.

1-6   EMIS Staff

The responsibility of implementing this plan is upon the EMIS staff in particular and all education stakeholders in general. The main objective of the plan is to strengthern capacities and efficiences of human resources for effective management. MOEC intends to build an EMIS which is managed by highly skilled and educated workforce with aptitude and skills in the application of ICT in everyday life. Sustainability of EMIS will greately depend on the combined skills and dedication of staff trained under MIS (EMIS plan) and ICT training (TTC plan) whose inputs will also greatly improve the capacity

for data collection, dissemination and utilization (SEDP plan) as well as the use of ICT as a teaching and learning tool for Teachers Colleges. Generally, central, regional and district government education staff will have already been trained in manual and computerised data management to different levels of proficiency by 2009; whereas college principals and all college tutors will progressively undergo a structured ICT training.

A core base staff of trained ICT experts and technicians will be established at Teachers Colleges for routine ICT equipment, operations and maintanance. Since there is a shortage of well qualified ICT professionals in Tanzania the MOEC will seek or procure the services of international consultant and local ICT expert team to facilitate the implementation of EMIS/ICT plan during its inception. Therefore establishment of a complete and sustaining EMIS staff plan will be a gradual and phased exercise. Details and specifics of staff recruitment and bugdets are incorporated and available in the respective implementation plans for EMIS and ICT.

It is envisaged that in the course of plan implemention EMIS staff will undergo specialised training such as programming, hardware & maintanance and system analysis

2-0 Objectives of EMIS Development Plan

2-1 General objective

To establish Education Management Information System (EMIS) which is managed by the trained staff at all levels, and fully utilized by any data user and stakeholder.

2-2 Specific Objectives

2-2-1 Capacity building and Institutionalization

Specific objectives for capacity building and institutionalization are as follows:
- By August of 2004, EMIS staff should develop a detailed annual activity plan.
- By the end of 2004, all stakeholders in education should be aware about EMIS and implementation of EMIS development plan.
- By 2007, all actors at national, regional and district levels should be able to operate the system with computers.
- By 2007, all heads of schools/colleges or other personnel should be able to fill in the data form properly.
- By 2007, all actors at regional, district and school levels should be able to produce, utilize and analyze the main education data and indicators.
- By 2007, all possible users and stakeholders should know how to obtain data and information on education.

2-2-2 Development of system software

Software facilitates data entry, storage, processing and reporting.
Specific objectives for development of software system are as follows:

▸ By the end of 2004, software for data entry, management and utilization at district and regional levels should be developed.
▸ By the end of 2004, software for data consolidation, management and utilization at national level should be developed.
▸ By the end of 2005 Data collection and processing should be carried out and EMIS database should be established.
▸ By the end of 2004, communication infrastructure should be researched and proper ways of data transmission are identified.
▸ By the end of 2005, web pages to show EMIS database should be accessible on internet
▸ By the end of 2006, linkages between EMIS database and other governmental database should be established.

2-2-3 Hardware procurement and installation

Main hardware is procured and installed at central, regional and district levels. The procurement will proceed with domestic or international tendering procedures. Since hardware procurement is closely related to capacity building components, prompt procurement and installation are essential. Specific objectives for hardware procurement and installation are as follows:

▸ By the end of 2004, all necessary equipment for EMIS implementation office (EMIS center) should be procured, installed and networked.
▸ By the end of 2005, all necessary equipment for regional offices should be procured and installed.
▸ By the end of 2006, all necessary equipment for district offices should be procured and installed.

2-2-4 Program management and monitoring

In order to ensure better implementation of EMIS, highly professional and technical staff should be involved in conducting monitoring of the planned schedule and ensuring smooth financial disbursements and sound accounting. Specific objectives for program management and monitoring are as follows:

▸ The progress of the implementation is monitored at regular short intervals and disseminated to all stakeholders through the plan

implementation period (2004-2007)
- ▸ Quality of data collection and processing is regularly monitored.
- ▸ Necessary staff with expertise are timely recruited or appointed through the program life period.
- ▸ Financial management is regularly monitored and reported.

3-0 Activities

3-1 List of activities

Capacity building and Institutionalization
C-1 EMIS staff to develop a detailed annual plan
C-2 Study trip to the country where EMIS is already well-established
C-3 Institutionalizing/sensitizing officers in MOEC on EMIS and its development
C-4 Institutionalizing/sensitizing other governmental organization, NGOs, and development partners on EMIS and its development
C-5 Institutionalizing/sensitizing regional and district officers on EMIS and how to fill in data form
C-6 Training heads of schools/colleges on how to fill in data forms and how to analyze the data report
C-7 Training regional education staff on how to operate the computerized system
C-8 Training regional education staff on how to analyze and disseminate data
C-9 Training district education staff to operate the computerized system
C-10 Training district education staff on how to analyze and disseminate data
C-11 Training central officials/ key policy makers/stakeholders on how to retrieve the data and analyze them in the system

Development of the software system
S-1 Needs assessment
S-2 Development of data collection standard form (data form)
S-3 Development of software for data entry and process
S-4 Development of software for data reporting
S-5 Piloting the software in two districts and revise for a national wide adoptation.
S-6 Data collection and entry
S-7 Design and development of web pages for data dissemination
S-8 Upload and maintain the developed web pages on internet
S-9 Development of linkages with other governmental database systems

Hardware procurement and installation
H-1 Procurement and installation of necessary equipment and software for the EMIS center in MOEC
H-2 Needs assessment of equipment in regional offices
H-3 Procurement and installation of necessary equipment for regional

office
H-4 Needs assessment of equipment in district offices
H-5 Procurement and installation of necessary equipment for district office

Program management and monitoring
M-1 Making quarterly progress reports on the plan implementation
M-2 Conducting quarterly meetings to present the progress
M-3 Monitoring of data process and data validity
M-4 Recruiting an international expert
M-5 Recruiting a local technical experts/company
M-6 Assigning tasks to EMIS staff
M-7 To meet administrative costs to run EMIS office

3-2 Brief description of activities

Each activity is briefly explained and the expected budget breakdown is shown in Annex 5.

3-2-1 Capacity building and Institutionalization

C-1 Assigning EMIS staff for developing a detailed annual plan
EMIS staff members are to meet regularly to make sure individual roles and schedules of the implementation are being met. A detailed annual plan for each year need to be developed. A program vehicle and furniture should be procured.

C-2 Study trip to a country where EMIS is already well-established
EMIS staff members and decision makers responsible for EMIS development are supposed to visit a country which has similar contexts to those of Tanzania and EMIS is already well established. Participants in this visit will observe and understand how the system works at central, regional, district and school levels for 10days. Participants are expected to gain experience to input data and operate the systems for data processing and reporting. The possible countries to be visited are Zimbabwe, Senegal, Burkina Faso and Mali.

C-3 Institutionalizing/Sensitizing officers in MOEC on EMIS and its development
One day workshop needs to be conducted for about 50 participants from all departments in MOEC, TIE, NECTA, ADEM and IAE in Dar es Salaam. The purpose of the workshop is to create awareness on EMIS and its development plan to all participants.

C-4 Institutionalizing/Sensitizing   other   governmental,   non governmental organizations and development partners on EMIS and

its development

One day workshop needs to be conducted with about 100 participants from governmental organizations, such as PO-RALG, NBS, MSTHE, MOH, MOF, Planning and Privatization, Civil Service Department, NGOs and donors in Dar es Salaam. The purpose of the workshop is to create awareness on EMIS and its development plan to all participants.

C-5 Institutionalizing/Sensitizing regional and district officers on EMIS and how to fill in the data forms

From each district (local government), District Executive Director, District Education Officer, Statistics and Logistics Officer will participate in the five-day workshop held in seven zones of Tanzania. From each regional office, Regional Education Officers and Academic Officers will participate. Participants will be given orientation about EMIS to be developed and its development plan and they will also learn how to fill in the data forms. Participants for this workshop are supposed to train WECs and heads of schools/colleges on how to fill the data forms. EMIS staff will visit seven zones to facilitate the workshops.

C-6 Training heads of schools on how to fill in data forms and how to analyze the data and produce reports

Statistics and Logistics Officers and District Education Officer will train heads of schools/colleges on how to fill in the data form properly and how to analyze the data on the forms in 2005. In 2006, they will be trained on how to analyze the district education reports and its dissemination to wards, schools and community. It is also recommended that WECs participate in this training. Monitoring will be followed by PORALG and MOEC in both years.

C-7 Training regional education staff on how to operate the computerized system

This training should be carried out in Dar es Salaam or elsewhere for five days. It will be joined with activity C-8. An Academic Officer and a trained Education Officer will join in this training to learn how to input and process data with the developed software. To ensure the quality of learning for each participant, 20 participants from 10 regions are trained in the first group and 22 participants from 11 regions are trained in the second group. Members of EMIS staff will be the trainers and participants will use computers at a local computer learning center.

C-8 Training regional staff on how to analyze and disseminate data

The training takes five days and should follow the activity C-6. Members of EMIS staff will train the participants with computers at a local computer learning center. Participants in the first group are trained for two weeks for C-7 and C-8. The participants in the second group will be trained right after the first group training is completed.

C-9 Training district officers to operate the computerized system

Statistics and Logistics Officers and other District Education Officer will be trained. It is planned that 60 district officers from 30 districts are trained in two groups in 2005, 120 district officers from 60 districts in four groups in 2006 and 60 district officers from 30 districts in two groups in 2007. (Refer to 1-5-4)

Like C-7 and C-8, the training is carried out in Dar es Salaam. EMIS staff members will train those district officers for 5 days on C-9 and for 5 days on C-10 using computers of a local computer learning center. District officers are supposed to stay in Dar es Salaam or other appropriate place for 2 weeks. Through this practical training, district officers will become fully able to enter the data from filled forms and process them to produce indicators. They will also learn how to analyze those data and indicators and report them for dissemination purposes.

C-10 Training district staff on how to analyze and disseminate data

This activity will be carried out jointly with C-9

C-11 Demonstrating and briefing central officials/ key policy makers /stakeholders on how to retrieve the data and analyze them in the system

While integrated database is established in 2005 for the first time, MOEC web pages for accessing the database will also be created and launched. How to use web pages and retrieve the data and indicators should be briefed to all central officials, key policy makers, stakeholders and data users. Since this demonstration takes only several hours, it should be carried out repeatedly in MOEC by inviting many stakeholders. In addition, two computers in EMIS section will be made available for this purpose whenever the center is in operation.

3-2-2 Development of the software system.

S-1 Needs assessment

It is important to know what kind of data and information are needed by various stakeholders at various levels. In particular, the needs at village and school levels have not been considered well so far. The needs at various levels should be well reflected in designing data input forms and data reporting forms.

Moreover, the conditions of communication infrastructure need to be surveyed. It needs to be clarified what kind of method is the most appropriate to transfer the database among district, regional and central levels.

S-2   Development of data collection standard form (data form)

The result of needs assessment and current data forms used by MOEC and other governmental organizations are important references to develop the data collection forms. It is recommended that staff from all MoEC departments, PSM, NBS, LGAs, NECTA PoRALG and others be invited to develop the data form. This activity can be effectively carried out during a five days workshop in the suburb of Dar es Salaam or any appropriate place.

S-3   Development of software for data input and process

Please refer to 1-5-4

S-4   Development of software for data reporting

Please refer to 1-5-5

S-5   Piloting the software

After the software is developed, it needs to be tested in two districts. The followings are among the most important factors to be tested:.

- ‣ Whether data form is easy enough to be filled by heads of schools/colleges
- ‣ Whether entering data with the software is easy enough
- ‣ Time taken to enter data from one data form
- ‣ Data processing and reporting is clear
- ‣ Discrepancies between input data and data on the form
- ‣ others

S-6   Data collection and input

Please refer to 1-5-4 and Annex 3. In 2005, data on primary schools in 89 districts needs to be input at the central level by local computer services. In 2006, data in 29 districts will be input at the central level as well. In 2007, since all data will be input at the district level, there will be no cost to input data at the central level.

S-7   Design and development of web pages for data dissemination

MOEC web pages could be developed with the assistance of local web developers. MOEC web pages need to be maintained by MOEC officers. Therefore the capacity to maintain web pages will be built in MOEC during the program life period.

S-8   Upload and maintain the developed web pages on the internet

It is essential to contract a very reliable local internet service provider (ISP) to host the pages. When web pages are out on internet, there are several tasks to be regularly done. One is to update the web pages and database. Second is to ensure the security for the computer virus and various kinds of worms at regular intervals.

S-9   Development of linkages with other governmental database systems

"Linkage" means data sharing rather than infrastructure in this activity. Population, result of national examination, economic status, geographical data and information are very important to create more meaningful education indicators. National Bureau of Statistics is in charge of coordinating the statistics and data of governmental organizations. EMIS staff need to closely work with NBS to establish the linkages.

3-2-3 Hardware procurement and installation

H-1 Procurement and installation of necessary equipment and software for the EMIS in MOEC

Computers and other equipment for EMIS documentation center were procured from 1999 to 2000. Conditions and status of the equipment and its network needs to be determined. The system and specifications are shown in Annex 6. The gap between the current system and expected system needs to be identified and make a detail procurement plan shuold be prepared. Procurement is to be carried out through official tendering procedures.

H-2 Needs assessment of equipment in regional offices

By sending to regions questionnaires on available computers, other equipment, their specifications, stability of electricity, the status of communication and internet access, the needs of the regional office will be looked into. Procurement plans for regional offices should be made based on the results of the needs assessments. To run EMIS system at regional level, two computers with standard software, printer, modem, two Ethernet card, UPS, and Voltage stabilizers are needed as a minimum package. The specifications for the equipment are shown in Annex 7.

H-3 Procurement and installation of necessary equipment for regional offices

Procurement and installation for regional offices are to be carried out in 2005. Timely procurement and installation are important. Since procurement with official tendering procedures takes longer time, EMIS staff needs to prepare the clear procurement plan and monitor it daily. EMIS staff also needs to ensure quick installation of developed software and several-year warranty for all procured equipment by the supplier.

H-4 Needs assessment of equipment in district offices

By sending to districts questionnaires on available computers, other equipment, their specifications, stability of electricity, the status of communication and internet access, the needs of the district office will be looked into. Procurement plans for district offices should be made based on the result of needs assessments. To run EMIS system at district level, two computers with standard software, printer, modem, two Ethernet card, UPS, and Voltage stabilizers are needed as a minimum package.

The specifications for the equipment are shown in Annex 7.

H-5 Procurement and installation of necessary equipment for district offices

Procurement and installation for district offices are to be carried out in three phases as shown below.

2004	30 districts (local government authority)
2005	60 districts (local government authority)
2006	29 districts (local government authority)

For the procurement in 2004, 30 districts will be selected with the criteria shown below.

‣ Comparatively easy access
‣ Comparatively higher human capacity
‣ Constant electricity supply is ensured

This is for easy monitoring and technical supports from EMIS staff. EMIS staff also needs to ensure quick installation of developed software and several-year warranty for all procured equipment by the supplier.

3-2-4 Program management and monitoring

M-1 Preparing a quartly progress report on the plan implementation

Without careful monitoring at short intervals, it can be difficult to meet the set objectives of the program. It is highly recommended for each EMIS staff to briefly monitor quartly progresses and determine the gap between actual progress and expected progress. When difficulties in implementation are encountered, corrective measures should be sought and instituted.

M-2 Conducting quarterly meetings to present the progress

Every three months, EMIS staff should set brief meetings with stakeholders and report its progress in each components of the plan, capacity building, development of software system, hardware procurement and program management. It is also a good opportunity for the staff to hear about user voices.

M-3 Monitoring of data process and data quality

Through the program life time, regular monitoring should be conducted at regional or district levels to check how the system is utilized locally and ensure the accuracy and validity of processed data. Members of EMIS staff will visit regions and districts to check those points and technically support if needed. The central and local government and development partners in education will provide funds for sustainability and further

development of the system.

M-4 Recruiting an international expert

This is one of crucial points for the implementation of EMIS development plan. Important points to develop TOR for this expert are shown in Annex 4. Remuneration and benefits level should be kept according to the international standards. MOEC will develop comprehensive terms of reference for expert during the 4 years of implementation.

M-5 Recruiting a local technical expert/companies

There will be several cases that technical expertise is needed locally. The possible cases are setting up the central system in MOEC and developing data entry form for schools and teacher colleges. EMIS staff needs to establish the scheme to flexibly and promptly hire a short time expert or contract with local companies.

M-6 Assigning tasks to EMIS staff

In collaboration with an international expert/consultant EMIS staff will be assigned with specific tasks to facilitate the implementation of the plan.

M-7 To meet administrative/management costs of EMIS office

The costs of, telephone, Internet service, photo copy machine, scanner, maintenance service for a vehicle etc. need to be considered for running the EMIS office.

4. Schedule of implementation

Schedule of EMIS development activities **Capacity building and Institutionalization**		2004/05				2005/06				2006/07				2007/08			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
C-1	EMIS Staff to Develop a Detailed Annual Plan	■															
C-2	Study trip to the country where EMIS is already well-established	■															
C-3	Institutionalizing/sensitizing officers in MOEC on EMIS and its development		■														
C-4	Institutionalizing/sensitizing other governmental organization, NGOs, and development partners on EMIS and its development		■														
C-5	Institutionalizing/sensitizing regional and district officers on EMIS and how to fill in data forms				■												
C-6	Training heads of schools /colleges on how to fill in data forms and how to analyze the data report				■				■			■				■	
C-7	Training regional education staff on how to operate the computerized system					■											
C-8	Training regional education staff on how to analyze and disseminate data					■											
C-9	Training district education staff to operate the computerized system					■				■				■			
C-10	Training district education staff on how to analyze and disseminate data					■				■				■			
C-11	Training central officials/ key policy makers on how to retrieve the data and analyze them in the system							■				■					

Q1: 1st Quarterly period stating July and ending September

Schedule of EMIS development activities **Development of Software System**		2004/05				2005/06				2006/07				2007/08			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
S-1	Needs assessment	█															
S-2	Development of data collection standard form (data form)	█															
S-3	Development of software for data input and process		█	█													
S-4	Development of software for data reporting		█	█													
S-5	Piloting the software in some districts				█												
S-6	Data collection and input						█			█							
S-7	Design and development of web pages for data dissemination					█	█										
S-8	Upload and maintain the development web pages on internet									█	█	█	█	█	█	█	
S-9	Development of linkage with other governmental database systems						█					█				█	

Schedule of EMIS development activities	2004/05				2005/06				2006/07				2007/08			
Hardware Procurement and Installation	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
H-1 Procurement and installation of necessary equipment and software for the EMIS office in MOEC		█														
H-2 Needs assessment of equipment in regional education offices			█													
H-3 Procurement and installation of necessary equipment for regional education office			█	█												
H-4 Needs assessment of equipment in district education offices			█			█				█						
H-5 Procurement and installation of necessary equipment for district education office			█	█			█	█			█	█				
Program management and Monitoring																
M-1 Making a quartly progress report on the plan implementation	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
M-2 Conducting quarterly meetings to present the progress	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
M-3 Monitoring of data process and data validity						█				█				█		
M-4 Employing an international expert	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
M-5 Employing/contracting a local technical expert/company		█														
M-6 Assigning tasks to EMIS Staff	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
M-7 To meet administrative cost to run EMIS office	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█

5. Budget (In US $)

		2004/05	2005/06	2006/07	2007/08
	Capacity building and Institutionalization				
C-1	EMIS Staff to Develop a Detailed Annual Plan				
C-2	Study trip to the country where EMIS is already well-established	43,600			
C-3	Institutionalizing/sensitizing officers in MOEC on EMIS and its development	2,300			
C-4	Institutionalizing/sensitizing other governmental organization, NGOs, and development partners on EMIS and its development	4,300			
C-5	Institutionalizing/sensitizing region and district officers on EMIS and how to fill in data form	51,660			
C-6	Training heads of schools/ colleges on how to fill in data forms and how to analyze the data report	1,078,000	1,078,000		
C-7	Training regional education staff on how to operate the computerized system		17,226,		
C-8	Training regional education staff on how to analyze and disseminate data		14,916		
C-9	Training district education staff to operate the computerized system		25,080	50,160	24,574
C-10	Training district education staff on how to analyze and disseminate data		21,780	43,560,	33,660
C-11	Training central officials/ key policy makers on how to retrieve the data and analyze them in the system				
	sub-total	1,179,860	1,157,002	93,720	58,234

Development of software system	2004/05	2005/06	2006/07	2007/08
S-1 Needs assessment	1,640			
S-2 Development of data collection standard form (data form)	6,050			
S-3 Development of software for data input and process	54,000			
S-4 Development of software for data reporting	36,000			
S-5 Piloting the software in two districts	460			
S-6 Data collection and input		7,500	4,500	
S-7 Design and development of web pages for data dissemination		6,000		
S-8 Upload and maintain the development web pages on internet				
S-9 Development of linkage with other governmental database systems				
sub-total	98,150	13,500	4,500	-

Hardware procurement and installation		2004/05	2005/06	2006/07	2007/08
H-1	Procurement and installation of necessary equipment and software for the center in MOEC	154,236			
H-2	Needs assessment of equipment in regional offices	39,900			
H-3	Procurement and installation of necessary equipment for regional office		106,502		
H-4	Needs assessment of equipment in district offices				
H-5	Procurement and installation of necessary equipment for district office		152,145	304,290	147,074
	sub-total	194,136	258,647	304,290	147,074

Program management and monitoring	2004/05	2005/06	2006/07	2007/08
M-1 Making a quartly progress report on the plan implementation				
M-2 Conducting quarterly meetings to present the progress				
M-3 Monitoring of data process and data validity		14,600	14,600	14,600
M-4 Recruiting an international expert	96,480	144,720	144,720	144,720
M-5 Recruiting a local technical expert/company	74,880			
M-6 Assigning tasks EMIS staff	1,440	1,440	1,440	1,440
M-7 To meet administrative cost to run EMIS office	29,280	29,280	29,280	29,280
sub-total	202,080	190,040	190,040	190,040
Programme support and contingency (10 %)	161,807	161,919	59,255	39,535
Yearly total	1,841,649	1,781,107	651,805	434,882
Grand Total(US$)				**4,709,443**

6. Important implication for implementation

Forming the core EMIS staff is essential. As EMIS office is placed under Policy and Planning Directorate, EMIS management team should be technical in EMIS and experienced in managing the program. EMIS development plan has three main components and its complexity for its implementation. Without high technique, skills, and commitment of each member in the team, achievement of objectives can be very difficult.

EMIS is often misunderstood by many stakeholders. Institutionalizing EMIS is essential. EMIS staff needs to make a lot of effort in sensitizing officers in MOEC and other stakeholders about EMIS and its development. To have common understanding and consensus is the key for easy and smooth implementation. EMIS staff needs to raise high concerns from senior officers and decision makers in particular.

Once the national database and MOEC web pages are established, encourage all stakeholder to utilize the system. Demonstration sessions need to be conducted repeatedly. Pay attention to any input and comment from stakeholders.

Continuous capacity building is very important. It is quite often that some officials transfer from districts to districts without fully utilizing his/her capacity built with the training provided. EMIS staff needs to be flexible to open the training for new recruited officers in charge of operating EMIS and the refreshment training course as well. Pay great attention to the feedback from the regions and districts about their difficulties and challenges in order to improve the system.

New EMIS needs to be based on the previous achievements of MOEC. MOEC has been successful in collecting education data and publishing statistics booklets for a long time. MOEC has also the computerized system in EMIS unit. Without building the system on the previous achievements, substantial improvements of EMIS could not be expected.

It is important to develop a professional working relationship with the suppliers and utilize their supports as much as possible.

EMIS staff needs to pay particular attention to the problem of data collection and verification.

EMIS staff needs to always consider the sustainability of EMIS. It is essential to involve staff in the Statistics units, EMIS units and others for the regular meetings and other activities as much as possible.

Annexes

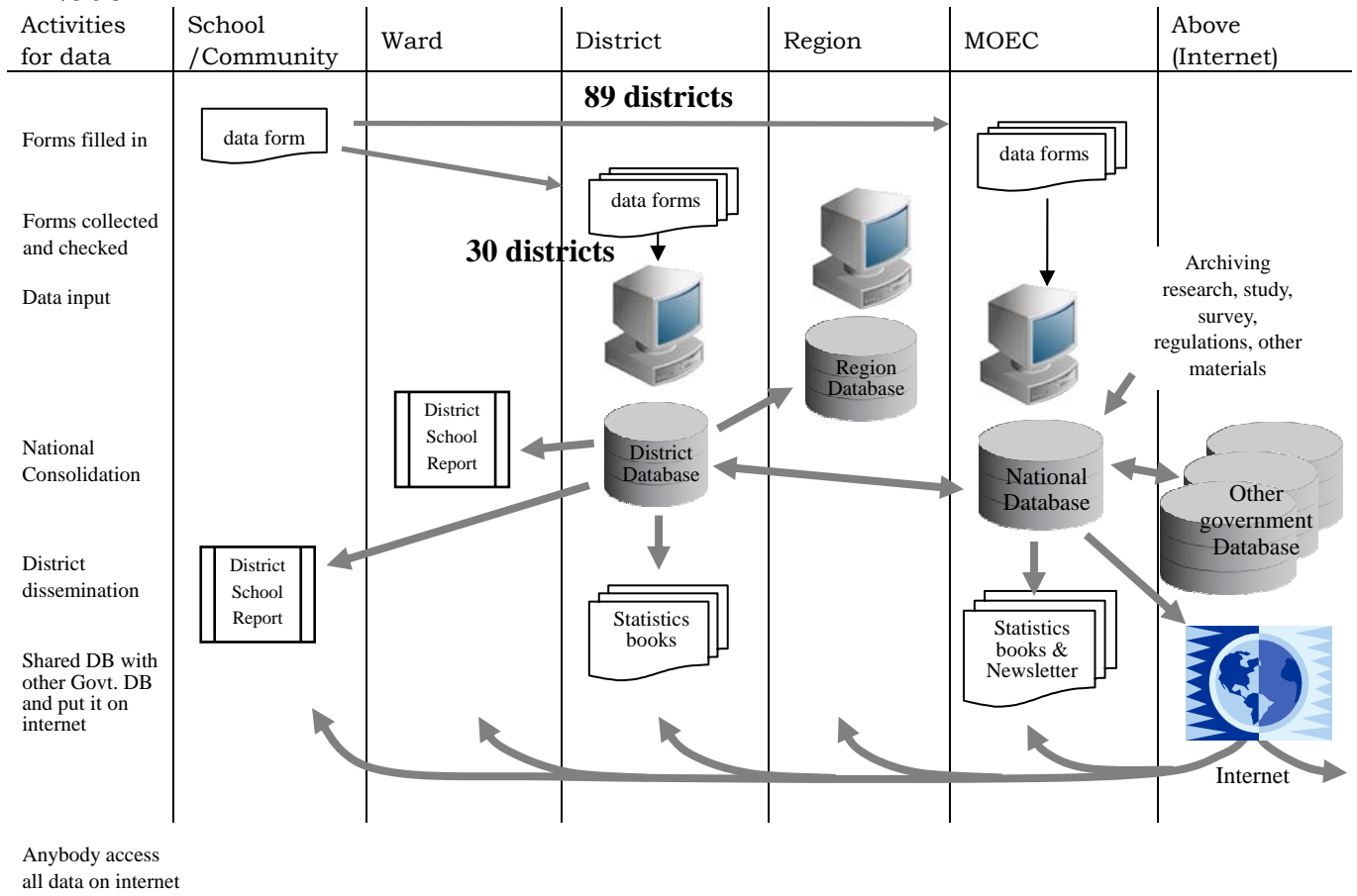## Annex 1 Expected database linkages among governmental organization
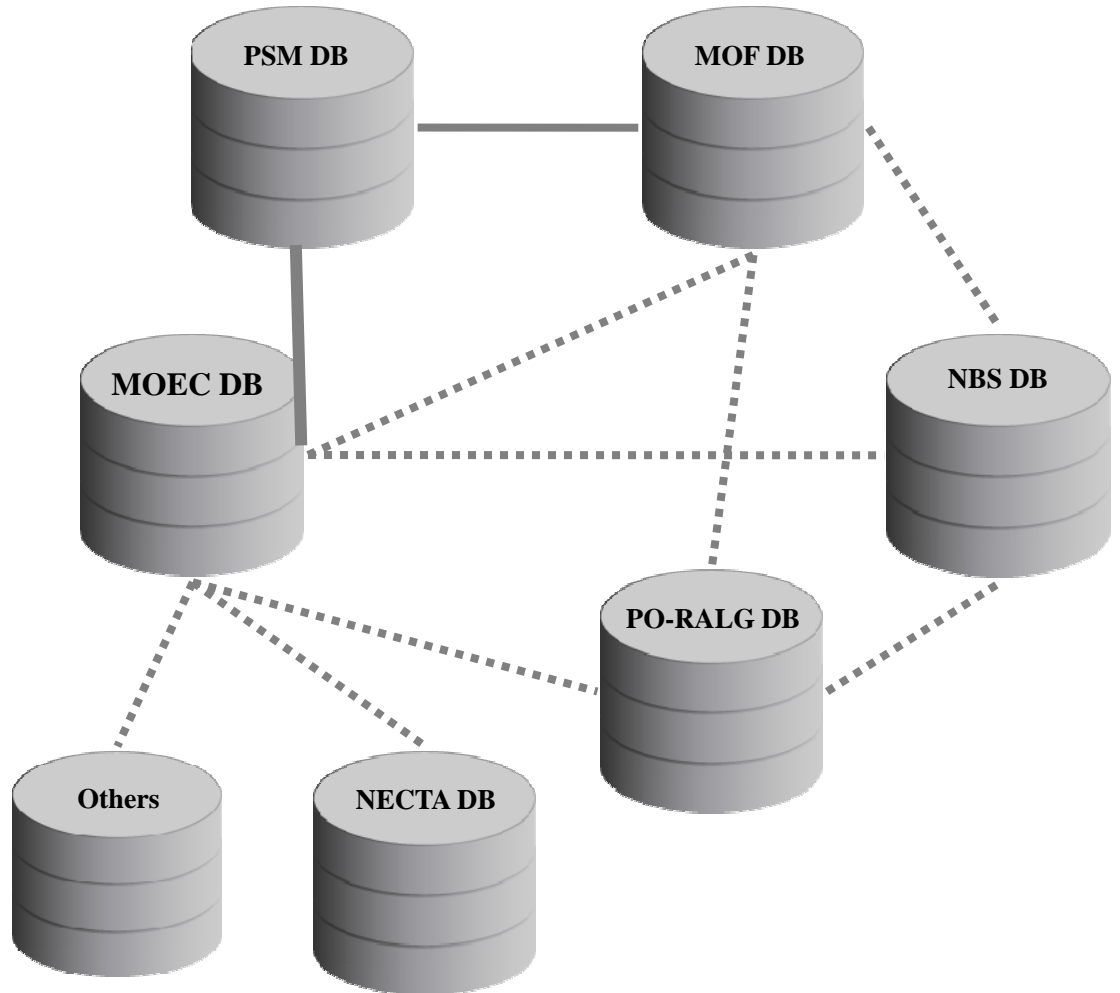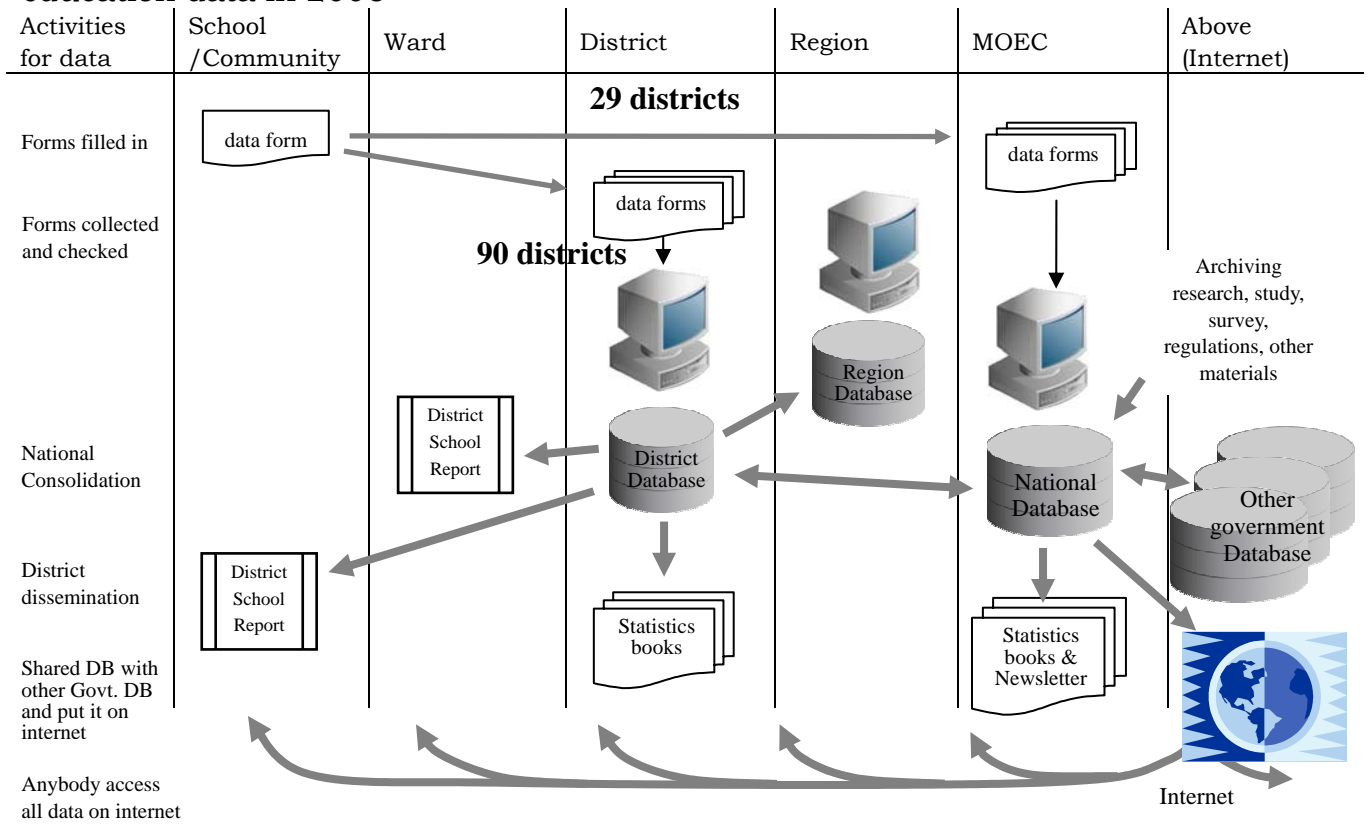

Linkage in the future ....

Existing linkage ─────────

Annex 2 Data input and process from 2005 to 2007

Input and process of pre-primary, primary school and non formal education data in 2005

Activities for data	School /Community	Ward	District	Region	MOEC	Above (Internet)
Forms filled in	data form		**89 districts**		data forms	
Forms collected and checked			data forms			
Data input			**30 districts**			Archiving research, study, survey, regulations, other materials
National Consolidation		District School Report	District Database	Region Database	National Database	Other government Database
District dissemination	District School Report					
Shared DB with other Govt. DB and put it on internet			Statistics books		Statistics books & Newsletter	
						Internet

Anybody access
all data on internet

Input and process of pre-primary, primary school and adult and non formal education data in 2006

Activities for data	School /Community	Ward	District	Region	MOEC	Above (Internet)
Forms filled in	data form		**29 districts**		data forms	
Forms collected and checked			data forms			Archiving research, study, survey, regulations, other materials
			90 districts	Region Database		
National Consolidation		District School Report	District Database		National Database	Other government Database
District dissemination		District School Report				
Shared DB with other Govt. DB and put it on internet			Statistics books		Statistics books & Newsletter	
Anybody access all data on internet						Internet

Input and process of pre-primary, primary school and adult non formal education data in 2007

Activities for data	School /Community	Ward	District	Region	MOEC	Above (Internet)
Forms filled in	data form					
Forms collected and checked			data forms			
Data input			**All 119 districts**	Region Database		Archiving research, study, survey, regulations, other materials
National Consolidation		District School Report	District Database		National Database	Other government Database
District dissemination		District School Report	Statistics books		Statistics books & Newsletter	
Shared DB with other Govt. DB and put it on internet						
Anybody access all data on internet					Internet	

Annex 3 Points to ensure data quality

‣ Head of schools should be required to ensure that all questions are answered and to certify that the information completed is a true reflection of the situation at the school.

‣ At the District level, DEO should check and ensure that the data is authentic and arithmetically correct. Any anomalies which might arise are corrected through the inspection of the records at the source centre (school), before the DEO endorses the form.

‣ At the regional level, the regional officers should scan through the data provided and check it against the authorized staffing level, data from preceding years to ensure that all schools are included and verify that new schools have been included in the process.

‣ At the central level, the same procedure should be undertaken and anomalies brought to the attention of the respective regional office for investigation. The global figures will also be compared with figures from previous years, to examine trends and to see whether the changes are justifiable. Otherwise, the concerned source will be contacted for further explanations.

‣ Manual Data verification should be done before data entry process begin.

‣ Computerized checking system should be part of EMIS development. This will check the consistency of the collected data and correct errors after having examined the questionnaire.

‣ A standardized system will be used in each district to avoid problems of incompatibility and allow for easier exchange of data between the regions and the centre.

‣ Simple design of the questionnaire, the availability of appropriate school records and hands-on training of staff are all important factors in determining the quality of data.

Annex 4 Important points for Terms of Reference
Team leader (EMIS expert, International)

Terms of Reference for International EMIS expert

The Government of Tanzania is developing an Education Sector Development Programme (ESDP) encompassing pre primary, primary, secondary and non formal education and Teacher education . Basic Education Development Committee (BEDC) is entrusted with a task of taking forward the policy based Education Sector Development Programme (ESDP).

It should be noted however that the present management structure could change or be adapted during the implementation phase of ESDP. The duties to be performed as described in the announced vacancy therefore could be subject to redefinition of emphasis to meet the needs revealed by a changed structure.

For an adequate monitoring and evaluation of the SDP an Educational Management Information System (EMIS) has to be in place. EMIS development plan (2004-2007) was developed by the EMIS unit in the Department of Policy and Planning, MOEC with supports of other governmental organizations, non governmental organizations, and development partners. In order to implement the plan, it is necessary to form EMIS implementation team in MOEC which mainly consists of technical members. The international EMIS expert described on here is to works as the advisor to the EMIS implementation team within the MOEC administrative structure. It is therefore proposed to appoint a periodical term international expert to facilitate the development of EMIS at both the policy and technical levels. It will be contracted for a period and area of specialization as it will be defined.

The Task
Main tasks are the followings.
- Making the detailed action plans for each year with other technical members
- Setting up the EMIS central systems with other members and local suppliers
- Supervising the software development
- Supervising the capacity building activities
- Promoting and supporting the procurement and tendering processes
- Supervising the installation of EMIS systems in regions and districts
- Monitoring of the progress of the implementation and report it at the regular intervals
- Monitoring the financial status of the implementation and report

Timeframe
August 2004 – December 2007

Attributes
- holding a Master's degree in education policy and planning
- having experience in the Tanzanian Education system
- having experience in establishing information systems in other countries
- being competent with education indicators
- being competent with SQL database programs, and other allocation software
- Broad understanding of information systems and technology
- having skills in program management
- having excellent communication skills,

Annex 6 The outline of EMIS central system

MOEC

EMIS Implementation office (EMIS Center)

File /Print server

Database server (Apps)

Internet
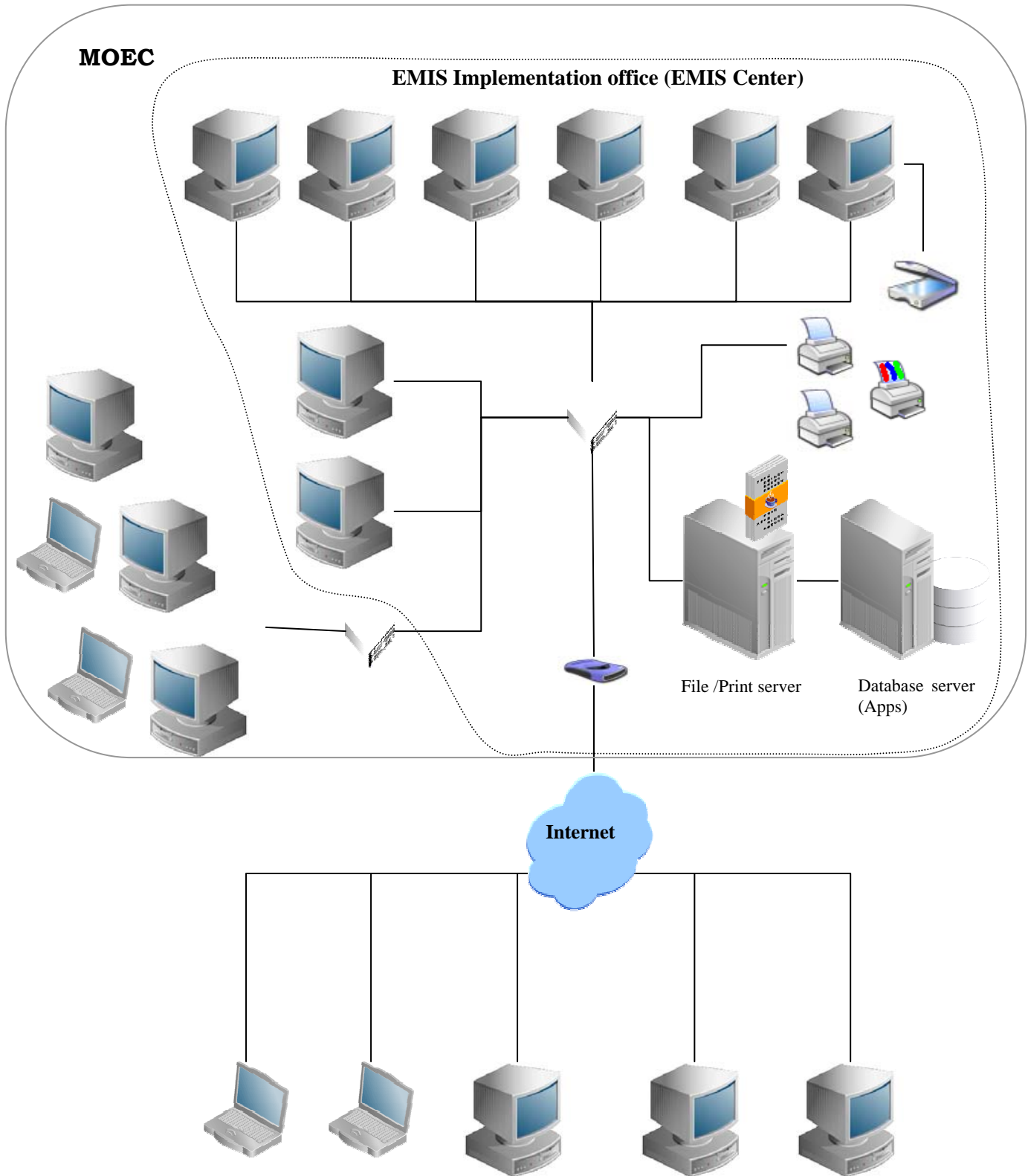
Specifications for main devices

These specifications need to be revised again before tendering.

File/Print server	
Processor	Intel Pentium IV or more
Memory	1 GB or more (expandable 2 GB or more)
Disk controller	Ultra SCSI
Hard Disk	5 x 36 GB or more (RAID5)
Communication	Ethernet 10/100MBs , Full Duplex, Auto configurable
DVD R+ WR	Read and write (52X or more)
USB flash disk	1GB
Operation System	Windows NT/Windows Server
PLT Tape	40 x 80 GB
Power supply	230-240 V

Database server	
Processor	Intel Pentium IV or more
Memory	1 GB or more (expandable 2 GB or more)
Disk controller	Ultra SCSI
Hard Disk	5 x 36 GB or more (RAID5)
Communication	Ethernet 10/100MBs , Full Duplex, Auto configurable
DVD R+ WR	Read and write (52X or more)
USB flash disk	1GB
Operation System	Windows NT/Windows Server
Power supply	230-240 V

Workstation in EMIS center	
Processor	Intel Pentium IV or more
Memory	512 MB or more (expandable 1 GB or more)
Disk controller	Ultra SCSI
Hard Disk	80 GB or more
Communication	Ethernet 10/100MBs , Full Duplex, Auto configurable Parallel, Serial
DVD R+ WR	Read and write (52X or more)
Floppy Disk	Internal 1.44 MB
USB flash disk	1GB
Monitor	SVGA 17 inch
Operation System	Windows XP
Application software	Windows Office professional (Word, Excel, Access, Power point, Outlook) Norton antivirus
Others	Keyboard, mouse, speakers included. Parallel, Serial, USB2 terminals
Power supply	230-240 V

| **Laser Printer**	
Type	Laser (white and black)
Printing speed	25 pages per minute(ppm) or more
Resolution	1200 x 1200 dpi or more
Memory	8MB or more
Interface	Ethernet 10/100 MB and USB
Communication	Ethernet card 10/100MB, Full duplex, Auto configurable
Paper size	A4
Power supply	230-240 V

Babble Jet Printer	
Type	Bubble Jet (color)
Printing speed	15 pages per minute(ppm) or more
Resolution	800 dpi or more
Memory	8MB or more
Interface	USB and Parallel
Paper size	A4
Power supply	230-240 V

Scanner	
Type	Flatbed, Auto feeder
Scan resolution	12 – 999,999 dpi
Enhanced scan resolution	2400 x 2400 or more
Scan speed	Faster than 30 seconds to scan 4x6 photo or A4 document
Max size to scan	8.5 x 11 or bigger
Interface	USB
Power supply	230-240 V

Data projector	
Type	Portable
Brightness	1800 lumens or more
Display resolution	XGA or SXGA (1024x768)
Lens	F/2.4-2.6
Light source	150-250 watt P-VIP lamp or UHP lamp
Projection distance	1m – 10 m
Zoom capability	Optical and digital
Power supply	230-240 V

Annex 7 EMIS regional and district system and specifications

Main components are, two computers, a laser printer, a cross cable, USB memory stick, and UPS.
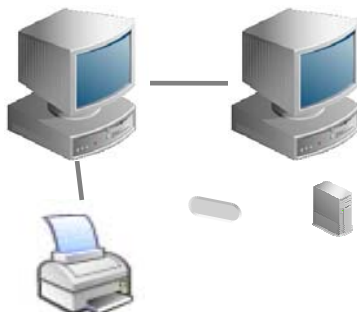
Specifications for main devices

Workstation (Computer) in district and region	
Processor	Intel Pentium IV or more
Memory	512 MB or more (expandable 1 GB or more)
Disk controller	Ultra SCSI
Hard Disk	80 GB or more
Communication	Ethernet 10/100MBs , Full Duplex, Auto configurable Parallel, Serial
DVD R+ WR	Read and write (52X or more)
Floppy Disk	Internal 1.44 MB
USB flash disk	1GB
CDRW	Read (32X or more) Write (16X or more)
Floppy Disk	Internal 1.44 MB
Monitor	SVGA 17 inch
Operation System	Windows XP
Application software	Windows Office professional (Word, Excel, Access, Power point, Outlook, Publisher), Norton antivirus
Others	Keyboard, mouse, speakers included. Parallel, Serial, USB2 terminals
Power supply	230-240 V

Laser Printer	
Type	Laser (white and black)
Printing speed	20 pages per minute(ppm) or more
Resolution	1200 x 1200 dpi or more
Memory	8MB or more
Interface	USB and Parallel
Paper size	A4
Power supply	230-240 V