Managing Statistical development information technology for national statistics offices

Country paper from
National Institute of Statistics, Cambodia

Introduction

National Institute of Statistcs (NIS) is modernizing and extending its Information and Communications Technology (ICT) to secure timely and accurate statistics serving governmental bodies and the public. This is done with support from Sida through Statistics Sweden with a resident ICT consultant. Other important donors are UNDP, World Bank and JICA.
The ICT-project's main goals are:

- instigation of a new ICT Department responsible of all ICT activities within NIS
- improved IT-infrastructure with centralized servers
- centralized and standardized data storage for all surveys and censuses
- standardized application development tools
- implementation of output databases accessible from both inside and outside NIS
- building human resource competence by introducing and carrying out training schemes, and by establishing a central ICT training centre for NIS staff and staff from line ministries

ICT development within NIS

NIS is under way to implement an ICT department with total responsibility of all ICT-activities within NIS. Six responsibility areas of this new department are proposed. For each area main responsibilities are identified also leading to a number of specific duties. The proposal does not include how the staff should be assigned to the areas. It will depend on individual skills and preferences. Also, staff will likely share responsibilities between areas.

NETWORK ADMINISTRATION, HARDWARE AND SOFTWARE MANAGEMENT	
Responsibilities	
a.	NIS Local Area Network
b.	NIS connection to the Internet
c.	NIS Email system
d.	Workstations
e.	Software
f.	Assessing new technologies in the field of network administration
Duties	
	✓ Maintenance of the physical and logical network ✓ Setting up group policies throughout the network ✓ Resource administration (shared folders, printers and other network services) ✓ Supervise backup operations ✓ Maintain network security ✓ Installation and maintenance of NIS Email system ✓ Replacing malfunctioning hardware ✓ Check new equipment prior to installation ✓ Installation of software on workstations and servers ✓ Competence in locating and fixing problems related to hardware equipment ✓ Knowledge of installing and running operating systems for workstations ✓ Give training on network, hardware and operating systems

DATABASE ADMINISTRATION

Responsibilities	
a b. c. d.	NIS Database Management system Design of relational databases NIS classification databases Design and maintenance of output databases in SuperStar Assessing new technologies in the field of database management systems
Duties	
	✓ Administration of Database Servers ✓ Database design ✓ Database maintenance ✓ Expertise on data transformations with ETL tools ✓ Participate in software development ✓ Develop and maintain NIS classification databases ✓ Design SuperStar databases ✓ Give training in SQL language ✓ Assessing new technological developments in the field

SOFTWARE DESIGN FOR SURVEYS AND CENSUSES	
Responsibilities	
a. b. c. d. e.	In-house application development Understanding of the Microsoft programming model (VB, VBA,VB.NET, ADO.NET and ASP.NET) Scanning application development Understanding of how to incorporate SQL databases in applications Assessing new technologies in the field of application development
Duties	
	✓ Design software applications ✓ Implementation of software applications ✓ Design and implementation of scanning applications ✓ Correct erroneous applications ✓ Give training in application usage ✓ Give training in programming ✓ Understand database management systems ✓ Ability to use SQL language ✓ Research on new technological developments in the field

COORDINATION OF DATA COLLECTION AND SYSTEM OPERATION AND TRAINING ACTIVITIES	
Responsibilities	
a. b. c. d. e. f.	Supervising data entry / Scanning Checking and editing data Data cleaning activities Storing questionnaires Data entry manuals Training within NIS
Duties	
	✓ Setting up routines for supervising data entry / Scanning ✓ Setting up data editing routines ✓ Writing field usage manuals ✓ Writing data entry manuals ✓ Conduct data cleaning ✓ System for storing questionnaires ✓ Perform maintenance of scanners ✓ Writing data entry manuals ✓ Coordinate training activities

WEB PUBLISHING AND DISSEMINATION OF STATISTICS
Responsibilities

a.	NIS Web site
b.	Dissemination of reports and statistics on the web
Duties	
	✓ Website design for intranet / Internet ✓ Publishing data on the website ✓ Translate documents into English language ✓ Implementation of a content management system (CMS) ✓ Follow government initiatives

GEOGRAPHICAL INFORMATION SYSTEMS (GIS)	
Main responsibilities	
a.	Up-to date digital maps of Cambodia
b.	GIS databases
Duties	
	✓ Create GIS applications that use data from surveys and censuses ✓ Create maps for use when planning new surveys and censuses ✓ Design and implementation of a NIS Geographical database system for coordinates of enumeration areas ✓ Responsible for SuperStar's mapping capabilities ✓ Implementation of an administrative unit database ✓ Knowledge of handling GPS equipment ✓ Give training on GIS systems ✓ Follow government initiatives

With the new ICT-department in place a more process oriented work scheme will be adopted with standardized tools for collecting, storing, analyzing and disseminating data.

For data collection, except for the upcoming Population and Housing Census, a scanning system will be introduced capable of both OCR and ICR types of recognition. This system when in place will speed up the process of getting data in to the databases as well as increasing overall quality. Surveys not suitable for scanning will continue to use in-house developed Visual Basic applications for data entry.

Data from surveys and censuses will be stored in centrally located SQL databases. These will ´boost the way data can be accessed directly without the need for lengthy transformations to other software's format. Data security will also be improved with SQL databases since data backups will be executed on a regular basis and access credentials will be imposed to protect data from unsolicited use. Meta data for descriptions of data will be compiled and stored together with the survey.

There will be several options for analyzing data: SPSS, Stata and SuperCross. SPSS is currently the most used statistical package at NIS but Stata is starting to find its way into the office. Much to its unlocked state with all features enabled from start in contrast to SPSS where every new module needs to be licensed before usage. Super Cross is thought to be used mainly for tabulation and ad-hoc queries.

GIS enabled Web-dissemination will be possible trough SuperWeb which is a component within the SuperStar family. Although the present Internet bandwidth at NIS will hold back such a solution, NIS is waiting for the E-Government initiative to connect all Government sub-bodies together. When eventually connected to the Internet or Government intranet, this system will serve as the main dissemination hub of official statistics in Cambodia.

Training in computer technology on network and database administration and maintenance is of paramount importance, as well as training in database design and application development using modern tools. A brand new training centre is already established at NIS through funds from JICA.
Training will be organized along several lines. Most staff will have basic knowledge in the office information system for their day-to-day work. World Bank funded training for this have already commenced. Training in other areas e.g. statistical tabulation and analysis or in the fields of relational database and application development are to be given selectively.

In the longer perspective it must be stressed that securing sustainability, training should always be an on-going activity and the most effective measure is on-the-job training. It is important that staff that received training also is given full opportunities to use their skills on a day-to-day basis.

The whole system when implemented to its full extent will be orchestrated and managed by the ICT-department in close cooperation with NIS general management.

All this taken together will definitely give NIS a leading edge in producing statistics in Cambodia.

Obstacles that can be anticipated

Human resource development: As noted above training in ICT is of outmost importance for a successful implementation of ICT at NIS. Most effective is daily on-the-job training. Another key area is how to keep well trained ICT staff in the organization.

A process oriented approach must be top-down oriented with involvement from top-level management.

General sustainability of ICT-environment: Long term government commitment is paramount.