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MANAGING STATISTICAL DEVELOPMENT AND INFORMATION TECHNOLOGY IN THE STATISTICAL SYSTEM OF MALAYSIA

1. Introduction

1.1 This paper presents features of the ICT Strategic Plan developed for the Department of Statistics, Malaysia, and highlights some management and operational issues in managing information technology in the national statistical system of Malaysia.

1.2 The Department of Statistics Malaysia (DOSM) is the main government and premier agency entrusted with the responsibility to collect, interpret and disseminate statistics in Malaysia. The Department of Statistics has remained as the central agency even though other entities and agencies have developed some statistical work to serve their specific needs and to fill gaps in data sets which are not available from the central statistical system. The statistical system in Malaysia is thus essentially a centralised system whereby the major statistical collection and compilation to serve the needs of the public and private sector is handled by DOSM. At the same time, the law governing the existence of DOSM allows other agencies to supplement production of statistics specific to their needs.

1.3 In highlighting developments and issues, reference will be made to managing IT experiences in use of new technology and planning for innovative use of ICT in recent statistical activities and future censuses.

2. Planning in management of information technology

2.1 Corporate Vision, Mission and strategic objectives of DOSM

In preparing the Corporate or Business Strategic Plan for DOSM for the period 2005-2009, a review of DOSM's vision and mission was undertaken, and stated as follows, framed towards achieving the formulated strategic objectives:

Vision: To become a leading statistical organization internationally

Mission: We are committed to provide customer-focused official statistical information and statistical services of international standard, for national planning and development through:

- Well-trained and competent personnel
- Use of superior technology and methodology
- Adoption of best practices in all statistical activities
- Enhanced research and statistical analysis

Strategic Objectives:

- To be highly responsive to customer needs in a dynamic and challenging environment
- To have strong research and analytical capabilities
- To ensure maximum use of superior technology and statistical methodology
- To inculcate a culture of innovation in producing and delivering statistical products and services
- To have competent workforce with high level of professionalism
- To ensure increased use of statistics among users and the public
- To be highly reputed as a leading statistical organization, locally and internationally

2.2 ICT Vision and Mission of DOSM

Based on the new strategic objectives of the Business Strategic Plan, DOSM ICT vision and mission statements were formulated as follows:

DOSM ICT Vision: As a strategic enabler in enhancing DOSM capabilities towards becoming a leading international statistical organization

DOSM ICT Mission: To provide reliable, timely and accessible statistical products and services through innovative and effective ICT solutions

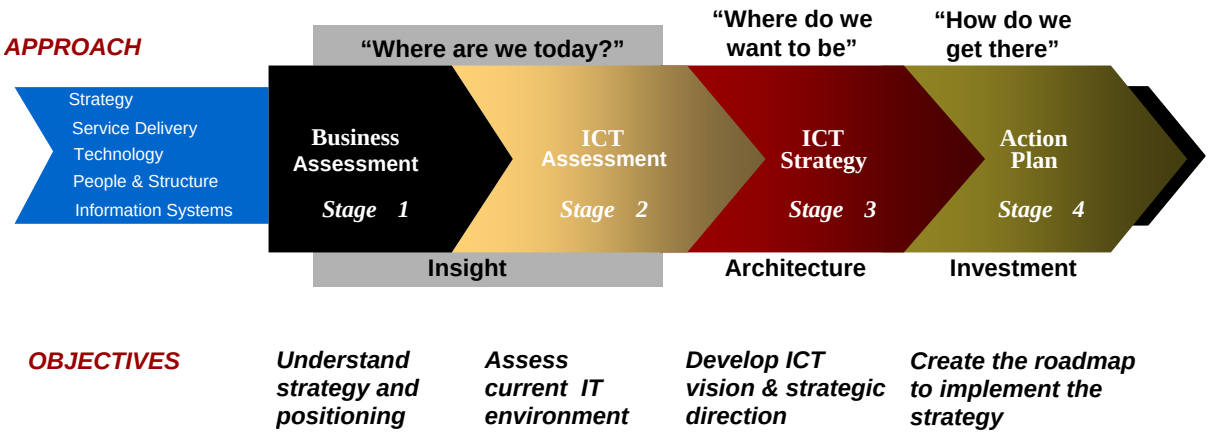
2.3 ICT Strategic Plan (2006 -2010)

The Department has formulated and documented its ICT Strategic Plan (2006 -2010) in 2005. The Plan (STATS ISP) outlines a comprehensive framework in creating an environment for use and development of ICT in an

organized and coordinated manner. This ICT Master Plan supports business strategy of the Department as well as the public service's ICT vision. The Plan incorporates results-based management in achieving the corporate objectives of DOSM via use of Balanced Scorecard. The following projects were identified to be undertaken in STATS ISP:

- Portal Enterprise;
- Upgrading of Computer Assisted Coding;
- To develop a pioneer system using Intergrated Statistical Systems Framework;
- To change existing system to using Intergrated Statistical Systems Framework;
- Migrate data from the main frame to the data base;
- To develop the Department data base;
- Performance Management;
- Enhancement of Geographical Information System (GIS);
- Office Automation Enhancement;
- Knowledge Management;
- Generic Office Environment;
- Server Farm Design and Implementation Project;
- DOSM Security Framework and Security Posture Assessment (SPA) Project;
- SPAM Mangement and Virus Mitigation Project;
- Upgrading Network Project;
- Upgrading Server Program;
- Storage System Project;
- Business Continuity Plan Project;
- Enterprise Management System Project; and
- MainFrame Mitigation and Consolidation Project.

2.4 **STATS ISP** was developed using a phased approach



2.5 DOSM ICT Strategic Objectives

ICT Strategic Objectives were formulated as follows:

1. ICT-support towards achieving compliance with international statistical standards
2. Enhanced service delivery through leading edge technology
3. Facilitate sharing of information, knowledge and experience
4. Enhance the ICT infrastructure and infostructure to support on-going and future ICT initiatives
5. Integration and harmonisation of statistical data and information system
6. Progressing from subject-matter oriented systems to process-oriented systems in line with statistical best practices
7. Enhancing ICT skills and subject matter expertise using ICT

3. Management and operational issues of managing IT

3.1 Increasing use of superior technology and statistical methodology

To ensure maximum use of superior technology and statistical methodology, the following strategies have to be put in place.

1 Encourage research and development for advance methodology in data collection, processing and analysis.

2 Use up-to-date technologies in data collection, processing, analysis and dissemination.

3 To inculcate the use of ICT in all activities of the Department.

4. To use computer assisted technology for survey interviews and coding.

5. To develop database systems for selected databases for internal and external users toward a more effective data dissemination system.

3.2 New technologies

In line with the strategy of using up-to-date technologies in data collection, processing, analysis and dissemination, DOSM has implemented:

a) A scanning system using Intelligence Character Recognition (ICR) technology in Census of Establishments and Enterprises 2005 and in the Economic Census 2006.

b) The Geographical Information System (GIS) used since 1989 is being enhanced to be linked to census databases and establishment data.

c) In order to minimise delays at the tabulation stage and dissemination stage, data mining software (e.g. SPEEDMINER) is currently used.

d) In Prices Survey, use of PDA is being explored.

3.3 Towards Standardisation of Codes and Classifications

DOSM had formed the Inter-Agency Technical Committee (IATC) to coordinate and monitor the implementation and use of standardized codes, classifications and definitions developed in the Department and Other Government Agencies (OGAs). The responsibility of the IATC is to harmonize codes, classifications and definitions for statistical purposes that used by the Government agencies.

Issues to be resolved in achieving harmonization and use of standardized codes and classifications is to establish a common interface to enable data sharing and updating.

3.4 Developing an Integrated Statistical System Framework

There is a need to facilitate data integration and sharing across Divisions within DOSM in a fast and efficient manner. To achieve data integration and online data sharing, the following will be implemented;

i. Move from the survey-specific (stove-pipe) production approach to a process-oriented one (Pre-Collection, Collection, Processing, Analysis, Dissemination)

ii. Database-oriented production system.

iii. Streamlined, standardized tools can be used to improve efficiency.

iv. Sharing of data across all subjects.

v. Tracking of the status of all surveys being processed.

3.5 Create a Resilient and Responsive Computing Environment

To ensure that computer systems are responsive and sustainable, efforts are made in these directions;

- Deploy applications on high performance servers with high availability capabilities
- Standardize on a single platform or adopt open standards operating environment to ensure system scalability, portability and integration capabilities
- Setup a disaster recovery centre or redundancy computing environment to ensure availability of applications deployed on the servers
- Deploy applications that are platform independent / accessible through a commonly available platform e.g. using web browser

3.6 Major obstacles in the use of ICT in DOSM

The following challenges are faced by the Department in use of technology;

- Keeping up with technological advances
- ICT Security – increasing sophisticated virus & attacks
- Need for more robust and flexible systems
- Need to Improve usage of analytical tools and practice
- Red tapes in acquisition processes sometimes delay implementations.

4. Managing ICT Resources

ICT projects are implemented based on priorities set in the ISP, through:

- *A staged and phased implementation*. In introducing new applications, start with a basic and simple system. Subsequently, the system should handle transactional processing and eventually, offer fully integrated services across agencies via a set of common systems
- *An entry point to services*. Position the applications as an entry point to services, and not a replacement of existing web sites

- *Quick Wins*. Focus on services/features that can be implemented quickly or have early wins such as common transactions on similar infrastructure to be implemented first

- *Adopt outsourcing approach and leverage off current initiatives/service providers* wherever appropriate to ensure a fast deployment. Customize versus develop where possible

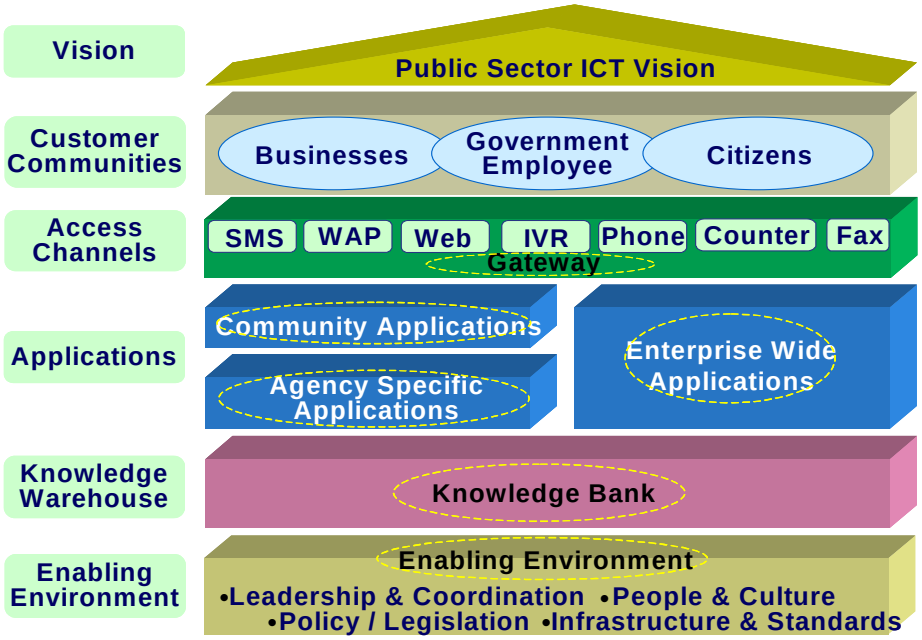
- *Clear role and ownership*. Identify small and effective teams of people with clear roles and ownership working together to deliver results based on services across agencies

- *Put in place effective governance and management arrangements* to ensure continued effort for on-going development, sustainability of these initiatives and develop user confidence.

5. Government support for technology use

5.1 Public Sector ICT Vision

The ISP for DOSM was developed using the guidelines as formulated under the public sector ICT Strategic Plan.



The features are as follows:

Enterprise Wide Application

- Office Automation Enhancement

- EG Applications

Gateway

- Enterprise Portal

Agency Specific Applications,

- Integrated Statistical Systems Framework
- Computer Assisted Coding
- DOSM Data Warehouse
- Performance Management
- GIS enhancement

Knowledge Bank (KB)

Metadata

Enabling Environment components:

- Facilities Management
- Central Systems (DBMS, Servers Upgrade, Server Farm Design and Implementation, Storage Systems, Mainframe Migration and Consolidation, Enterprise-Grade Enterprise Management System)
- Security (Security Posture Assessment, DOSM Security Framework vis-à-vis MYMIS, Virus Mitigation Strategy, SPAM Management, PKI Implementation)
- Network (DHCP implementation, Controlled Wireless Network Implementation, DOSM LAN upgrade, STATS*NET upgrade and coverage expansion to district office, SLA Enforcement, Enterprise Network Management System, common network infrastructure for data collection and dissemination)
- Business Continuity Plan

5.2 Benefits of using the framework

- **Streamlined and standardized** development of statistical applications, and using **tools** to improve efficiency.
- Users can **access** Centralized Clean Microdata and Macrodata databases and DOSM Warehouse.
- Storing data in **databases**
- DOSM Datawarehouse will contain **Clean Microdata** and **Macrodata** for all survey cycles and where possible, **consolidate survey data across common subjects** (I.e. establishment, household) as time series.
- **Metadata database** kept centrally and will help users understand and find the data they need.
- In its simplest form, the **Survey Tracking Registry** will keep **track of the status of all surveys being processed**. This information can be **displayed on the intranet, e-mailed or SMS**.

5.3 Support for training ICT personnel

- Public sector training institutions
- SIAP

- Open market / vendor
- Joint project with vendor
- In-house training (internal or external trainer)
- On-the-job training

6. Planning for the Next Census

6.1 The next Census for Malaysia is scheduled to be carried out in 2010. The Population and Housing Census of Malaysia is undertaken by the Department of Statistics in collaboration of various Government agencies. The Department of Statistics has started the planning work for the Census. Various technical working committees and groups were formed to study the Census topics, operations, approaches and methodologies. Enhancement of past census experiences will be studied by the groups as well as coverage of new census topics.

6.2 Other preparatory work involve enhancement of mapping work and improving the census frame by further development of GIS system.

6.3 The census will also introduce use of self-enumerated forms (drop off and pick up method) as well as internet based approach.

7. Conclusion

To ensure success in use of new technologies and implementation of ISP, change management has to be instituted. Issues and mechanism for implementation include:

- Success requires effective management. Initiatives (especially the Integrated Statistical Systems Framework) need to be championed.
- Clear and realistic performance measures should be set.
- Clear, effective and continuous communication to and from all involved parties.
- Sufficient skilled manpower and financial resources need to be available during and after implementation.
- Understand the impact and changes required.
- Short turnaround time to decision making process.

Deparment of Statistics, Malaysia
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