DOSM CURRENT ICT INITIATIVE

INTEGRATED STATISTICAL SYSTEM FRAMEWORK via NATIONAL ENTERPRISE-WIDE STATISTICAL SYSTEM (NEWSS) PHASE I

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Phase 1

Project Profile:
Start Date: August 2008
End Date: Mac 2011
Objective of NEWSS

- Efficiently monitor and manage Surveys and Census
- Improve the timeliness and reliability of the Statistical Information
- Extend the dissemination of Statistical Information
- Integrated Statistical System Framework
DOSM Legacy Systems (Isolated system)
DOSM Current System
(Various platform, hardware, database and programming language)
National Enterprise Wide Statistical System (NEWSS)
Integrated Statistical Systems Framework (ISSF)

Program Infrastructure

Pre-Collection
- Sample Selection from frame
- Contact Info extraction and loading
- Creation of Survey Form

Collection
- Data Collection, Elec Data Rep (EDR), Online Survey
- Secondary data, CATI, CAPI, etc.
- Receipt & Preliminary Edit
- Data Capture, Estimation, Administrative Data

Processing
- Statistical Edit and Imputation
- Calendarization
- Weighting and Estimation
- Production-Oriented Analysis

Analysis
- Tabulation
- Review and Quality Assurance
- Data Extraction
- Report Generation

Dissemination
- Import and Archive Micro and Macro Data
- Produce, Catalog, Market and Disseminate Statistical Products and Services
- Process into dosm Warehouse

Survey Respondent Database
Response Database
Clean Microdata
Aggregated (Macrodata)
DOSM Data Warehouse

Integrated Statistical Workflow

Metadata Database
- Business (Statistical) metadata
- Technical (IT) metadata

Reference Registries (Frame)
- Business (Establishment) Register (SIDAP)
- Address (Household) Register (SPDRB)

Centralised CODE System
- SITC codes
- Survey Tracking

Information Support Infrastructure

NEWSS FRAMEWORK
NEWSS FEATURES

❖ Metadata
  ▪ Develop the metadata repository as part of the Integrated Statistical System Framework

❖ ISSF- Integrated Statistical System Framework
  ▪ Process based approach
  ▪ Interoperable
  ▪ User Centric
  ▪ Sustainable
  ▪ Flexible
  ▪ Collaborative
  ▪ Reusability
NEWSS FEATURES

- **Central Repository**
  - Develop a central repository to consolidate all standalone databases

- **Online Data Publication**
  - Develop online portal to include services to customer e.g. billing and payment

- **Linking of Other Government Agencies Databases (data sharing)**
  - Encourage administrative data sharing
Implementation Activities

- Mobilize Team
- Requirements Study
- Design And Development
- Testing
- Data Migration
- Training
- Benefits Realization
- Transition Management
- System Deployment
- Post Implementation Review
- Mobilization
- Business Process Re-engineering
- Define & Implement New Business Process

- Review effectiveness of implementation
- Production cutover & handover
- Stakeholder communication activities
- Measurement of business benefits to be achieved by NEWSS
- Train DOSM IT, Users and Management
- Migrate existing Data into NEWSS
- Vendor testing, PAT & FAT
1. Mobilize Project Team

2. Develop Project Management Plan & Project Schedule

3. Project Kickoff Meeting

Project Management Plan

Project Schedule Baseline
Business Process Re-engineering

1. Review Existing Business Process
   - Economics surveys questionnaires
   - Monthly Manufacturing survey
   - Labour Force survey
   - Establishment and Household Frame

2. Develop “To-Be” (new) Process
   - Process definition
   - Triggers
   - Inputs
   - Outputs
   - Activities
   - Roles and Responsibilities

3. Implement New Process

Business Process Document
Requirements Study

1. Current Systems, Processes & Issues
2. Identify NEWSS Business & Technical Requirements
3. Review Schedule & Scope

User Requirements Specification
Design and Develop

1. Design
   Functional & Technical Architecture

Technical Design
- Shared Services/Components
- State Transition
- Logical Data Model
- Application, System S/W & Hardware Architecture
- Integration Flow

Functional Design
- System Flow
- Menu Structure
- User Interface
- Report Format
- External System Interface Format

Business Process Document
User Requirement Specification

Technical Design Specification
Database Design Specification
Functional Design Specification
**Design and Develop**

1. Design Functional & Technical Architecture
2. Walkthrough Design & Prototype
3. Install Development Environment
4. Program Coding
5. Unit Testing

NEWSS Application System

Technical Design Specification
Database Design Specification
Functional Design Specification
Testing

Vendor Testing
- Testing by SNC
- Test Environment

Provisional Acceptance Testing
- Testing by DOSM
- Test Environment

Final Acceptance Testing
- Testing by DOSM
- Production Environment
- Simulate 2 sites

- Function Testing
- Module Testing
- Integration Testing
- Security Testing
- Exception Testing
- Business Scenario Testing
- Usability Testing
- Performance Testing
- Backup & Restore Testing
- Failover Testing
- Clustering & Load Balancing Testing
- Installation Testing
Testing

1. Develop Test Plan
   Test Scenario & Script

2. Install Test Environment

3. Brief and Train Testers

4. Execute Test

5. Evaluate and Document Test Results

- Development Completed
- Reported Errors Fixed

- FAT Test Report
- PAT Test Report
- Vendor Test Report
Data Migration

1. Develop Data Migration Plan
   - Data required in NEWSS
   - Source of the data
   - Approach to converting the data
   - Schedule and Resources

2. Develop migration tools and procedures

3. Collect Data

4. Migration Test Run

5. Convert and Migrate Data

Data in NEWSS System
Benefits Realization

Set realistic expectations and goals for NEWSS

1. Develop Benefits Realization Plan

- Identify KPI used to measure benefits achieved by NEWSS
- Tasks, Schedule and Resource

KPI :-
- Time taken to conduct the survey
- Faster generation of statistical report from the survey data
- Staff productivity / Staff overtime
- Dissemination of information to stakeholders

2. Measure KPI current value

3. Define KPI new value

KPI to measure benefits achieved by NEWSS

Benefits Realization Plan
Transition Management

Project information is communicated to NEWSS stakeholders

- Prepare Communication Materials
- Organize briefing sessions
- Disseminate newsletter, progress report, etc
- Collect and Analyze Feedback

Communication Management

- Design Completed

Readiness Assessment

- Complete pre-implementation activities required for cut-over

- Verify completeness of deployment tasks
- Analyze readiness to cutover to NEWSS
- Prepare Report

Deployment Checklist

Communication Plan
System Deployment

1. Plan Deployment
2. Configure Production Environment
3. Installation Acceptance Test
4. System Handover

NEWSS installed on Production Environment

Rollback Plan
Deployment Plan
Contingency Plan
Post Implementation Review

Gauge effectiveness of the Project Implementation

- Analyze Incidents
- Visit 3 implementation sites
- Questionnaires
- Prepare Report

Post Implementation Review Report
Critical Success Factor

Subject Matter Experts

- Active participation during discussions
- Identify Issues and Requirements
- Timeliness of Respond
- Decision Making

Business and Technical Architect
System Integration Expertise
Implementation Expertise
PROJECT BENEFITS
More Effective Monitoring of the Census / Survey

- Complete information on the Census / Survey
  - Activities
  - Officer in Charge
  - State and End Date (Planned and Actual)
  - Progress of the Activities

- Pro-active Monitoring mechanism
  - Reminders on the activity start and completion date
  - Automatic update of the progress of the Census / Survey
    Collection and Processing activity

- Number of Sample Case assigned to each officer
Efficiency of Census / Survey Process

- Reduce the number of processes
  - Reconciliation of Label and Sample (SSE and MM)
  - JPN/PO - Merging of Census / Survey Data for submission to BPTMS (PTB)
  - JPN/PO - Attach design weight to clean data before submission to BPTMS (PTB)
  - JPN/PO - Generation of Summary Report & Preliminary Table for submission to BPTMS (PTB)
  - SMD - Merging of Survey Data received from all the JPN/PO (SSE, MM and PTB)

- Edit Spec Validation
  - Validation carried out on NEWSS Server not on JPN/PO Officer’s local PC. Allows officer to continue on with other activities while system is validating the Census / Survey Data
  - For PTB Survey, full Edit Spec Validation carried out when JPN/PO Officer sends the Batch to NEWSS for validation. Faster identification of erroneous data.

- Census / Survey Data available for SMD to review after each JPN/PO officer submits the batch for validation.
Efficiency of Census / Survey Process

- Automate Manual Processes
  - Establishment / Enterprise Frame
    - Monitoring and tracking of the Screening sent out to the Establishment / Enterprise
    - Reconciliation of the Establishment / Enterprise Information received from other agencies with the information in the Establishment / Enterprise Frame
    - Reconciliation of the information from the Household CQ Listing with the information in the Establishment / Enterprise Frame

- Economic Census / Survey (SSE)
  - Update of the information from the Census / Survey into the Establishment / Enterprise Frame
  - Generation of Big Business Unit (BBU) and Small Business Unit (SBU) list
  - Reduce the number of steps for calculation of Adjusted Weight and Weighted Data

- Monthly Manufacturing Survey (MM)
  - Update of the information from the Census / Survey into the Establishment / Enterprise Frame
  - Generation of Big Business Unit (BBU) and Small Business Unit (SBU) list
  - Conversion of the unit of measure from unit provided by the Respondent to standard required by SMD
  - Estimation of Census / Survey Data (3 methods)
Centralized Integrated Statistical System

- Eliminate effort to transfer data between disparate Systems

- Data Consistent and Up To Date
  - Information captured at State Offices correctly reflected at the DOSM Divisions and vice versa
  - Information from the census / surveys updated to the Establishment / Enterprise Frame
  - Consistent set of codes and classifications used across all the Census / Survey

- Data at “finger tips”
  - Current data, historical data, time series data
  - Mechanism for DOSM to perform Ad Hoc Analysis for customized data request
Efficiency of Census / Survey Process

- Automate Manual Processes (cont’)
  - Labour Force Survey
    - Selection of EBs, LQs and Questionnaire from the sample for quality check
    - Calculation of reference weight, adjusted weight and population factor
    - RSE generation

- Report Preparation
  - Approx 1,200 tables, charts, publications, listings
Extend Dissemination of Statistical Information

- Mechanism for SMD to publish Census / Survey Reports on the DOSM website
  - Increase number of publications available for download / purchase on the DOSM website
  - DOSM Stakeholders and General Public able to view and download the Census / Survey Reports from the DOSM website
  - Order the Census / Survey Reports Online

- Dissemination of Data Request
  - Stakeholder and General Public to order online
  - DOSM to process and disseminate the Data Request

- Dissemination of Customized Census / Survey Reports

- Feedback from the “Customer”

- Customer Service
  - Notifications of new publications
  - Manage subscription
  - Order tracking
Data Visualization

- Analyzing information using Maps (Geospatial Database)
Data Visualization

- Performance Management System
Data Visualization

- Business Intelligence
Knowledge Sharing

- Turning personal knowledge into corporate knowledge that can be shared throughout the organization

- Platform for DOSM to collaborate, share and disseminate knowledge throughout the organization
  - Community of Practice (forum) to promote a culture of free discussions and exchange of ideas
  - Question and Answer

- Knowledge Repository
  - Centralized Document Repository where information can be stored and shared across the organization
  - Discussion thread in Community of Practice

*Knowledge is Pooled, Retained, Shared and Developed*
ISSUES/CHALLENGES

- Data migration issues – archive data still in old mainframe format and delays in data preparation
- Delays in time preparation of time series data – various format, data cleansing and weighted data
- Accuracy of SDS translate from URS – requires change requests during testing stage
- Knowledge gap related to complicated statistical business process within Business Analyst and System Developer – business requirements captured was not very accurate
- Project timeline is very short compared to comprehensive module been developed – time constraint for extensive testing phase before system acceptance
- New system architecture and system development tools - time consuming eg. For learning curve and transfer of technology
Thank You