FFP Annual Monitoring Workshop

Developing a Database (MIS System)

Cost Efficient and Practical Solutions

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Session Plan

- MIS System Overview
- Examples of current MIS Systems
  - CRS – Madagascar
  - PCI - Malawi
- Good Practices, Cost Considerations, Pit Falls
- Alternative MIS System Options
  - Cost/Benefit (Life of Project)
  - Potential Limitations
- Q&A
MIS System Overview

Tool Development

Data Collection
- Electronic
- Paper
- Bi vs. Single Directional

Data Entry
- Web-based
- Offline

Data Storage
- Relational
- Spreadsheet

Data Use
- Report(s)
- Dashboards
Why a relational database?

- What is the difference between spreadsheet and database?
  - Reducing data redundancy
    - Multiple location access
    - Central Database
    - Customized reports
  - Simplifying Access
    - Unique Identifier
    - Simple Interface
  - Saving time
    - Easily make changes
    - Central Access
  - Allowing comparisons of information
    - Searching data
    - Filtering data
    - Sorting data
  - Safeguarding pricy and security
Example

- Project Participant Joe registered for the project as a maize farmer.
- He began growing Chili’s and joined a project supported chili group.
- His wife joined an MCHN group.
Examples from the Field

- CRS - Fararano MEAL System
  - Njara Rakotoarimanga
Costs

Materials
• 259 iPads (400 USD/Unit)
• 259 Solar Chargers (199 USD/Unit)

License & Software
• iFormBuilder: 5 USD/Year/User (259 Users)
• Bartender: 1445 USD
• ZOHO Report: 10 USD/month/Administrator (5 Admin)

Website
• Design: 1870 USD
• Repair & Hosting: 348 USD/Year

Staff
• 1 Database Officer & 1 Assistant (FTE)
• 1 ICT4D Specialist (FTE)
• 1 Knowledge Management & Learning Specialist (FTE)
Main Challenges

Data Quality:
- Technical staff roles in data control and validation
- Data entry at community and field agent level

Materials lost/broken

Actions
- Annual DQA (Assessment and follow up action plan)
- Data Quality Checklist for technical staff
- Refresher for Field Agents and technical Staff
Examples from the Field

- PCI – Malawi NJIRA
  - Jason Rubin
The document contains a flowchart titled "GPath: Modules & Functionalities". It is divided into three main sections: Registration, Service, and Distribution. Each section lists various options and categories:

**Registration**:
- Demographics
- Head Category
- HH Relations
- Graduation Type
- HH Registration
- Member Registration
- Graduation Update
- Graduation Update

**Service**:
- Service Name
- Community Group
- Service Center
- Mapping of Group/Service center
- Mapping of Group/Beneficiary
- Service Assignment
- Service Record/Attendance

**Distribution**:
- Service Eligibility
- Item/Ration Size
- Name of FDP
- Distribution Type (Cash/Food/Non-Food/Voucher)
- Mapping of FDP/Service center
- Mapping of FDP/WH
- Recipient Listing
- Distribution Plan

**Inventory**:
- Name of Warehouses
- Name of Ports
- Inventory Ports
- LOA Quantities
- CF Quantities
- Shipments
- Survey Reports
- Stack Label
- Stack Cards
- Transactions P-W
- Transactions W-W
- Transactions FDP-W
- Transactions W-O
Gpath: Information Management System

System Development and Roll Out

- Award October 2014
- System Development Started March 2015
- Data collection tools integrated September 2016 – March 2017 (20+ tools)
- 110 IPTT Indicators mapped and integrated May 2017
- Offline module implemented July 2017
- Backlog data entry completed July 2017
- Dashboard and analytics built and rolled out July 2017

Total time to develop and have fully functional = 2.5 years
Gpath: Information Management System

Challenges

- Poor documentation of data at the community level
- Insufficiently clear responsibilities among Program, ICT and M&E coordinators and data entry clerks
- Beneficiary duplication in first round of beneficiary registration
- Delay in rolling out the M&E tools
- Lack of cut-off dates for data collection, review, data entry and analysis
- Insufficient data entry staff/internet

Actions taken

- Improved training for all data management and program staffs
- Improving roles and responsibilities among the program and the data management staffs
- Verification exercise conducted to rectify erroneous registration
- Group registration to avoid duplication in the future is under development
- Examined Data volume and streamlining a realistic Data management plan that meets reporting deadlines
- Increase use of tablets for data entry into GPath
- Strengthen power backup plan
- Improved training for all data management and program staffs
Regional Commodity & IS Manager oversees requirements, analysis, design, development and implementation of the system

TechnoDhaka is a consulting company based in Bangladesh provides supports to RM for software coding, VM, API management at cloud portal.

M&E Manager oversees donor reporting requirements at country programs, develops data collection formats, IPTT reporting etc.

M&E Specialist provides supports for managing reporting schedule, data analysis, data management, data quality at country level using GPath.

ICT Coordinator provides supports for user management, training, data validation at country level.
Good Practices

- Tool Development
  - In advance
  - Clarity
  - Clear link to data collection modality.

- Data Collection
  - Simple & Easy
  - Routine
  - Unique IDs

- Data Entry
  - Simple & Easy
  - Routine

- Data Storage
  - Relational database
  - Dedicated Human Resources
  - High bus factor

- Data Use
  - Automate analysis
  - Transparent analysis
  - Accessible results
Pitfalls

- Complexity
  - Year 2 – year 5 indicators
  - Multiple systems (warehouse, beneficiary, financial)
    - Multiple “connectors” (opportunities for breaks)
- Insufficient use (input)
- Insufficient use (output)
- Insufficiently resourced
- Low bus factors
Cost Consideration

- Human Resources
  - Full time staff
  - % of field staff time
  - Consultant time
  - Data entry staff

- Software Licensing

- Hosting (‘the cloud’)

- Hardware (devices, tangible servers)
MIS Workflow.
The Weak Link

- Human resources around database administration (DBA)
Alternative Option(s)

*not a gold standard*....

- Should you consider alternative options?
- Repair/Update vs. Alternative options?
Data Collection

- ODK 1.0
  - Kobo
  - Ona
  - CommCare/Dimagi
  - SurveyCTO

- ODK 2.0

- iFormBuilder

- Paper
Data Entry

- Computer based
  - Offline
    - Excel
    - CSPro
  - Online
    - Google Forms
    - Google Sheets
    - HTML5
- Device Based
  - ODK (and derivatives)
  - ODK Scan
Data Storage

- Relational Database
  - Access
  - SQL (MySQL, SQL, PostgreSQL, SQLite)

- Spreadsheet
  - Excel
  - Google Sheets
Data Use

- Spreadsheets
  - Excel
  - Sheets

- Data Viz/Reporting
  - Tableau
  - Power BI
  - Google Data Studio
  - PHP Frameworks (i.e. www.laravel.com)
  - Javascript (i.e ChartJS (www.chartjs.org))

- Statistical Software
  - R
  - SPSS
  - Stata
Open Source Workflow

Open Data Kit

Google Forms

Google Sheets

Google Data Studio
Q&A
Example from the field

- World Vison Bangladesh
NJP MIS
Real Time Data Management & Reporting System for Nobo Jatra Project

http://202.53.166.51/wvb
User Id: njpmis@njpmis.com
Password: Guest123

Md. Rafiqul Islam
Monitoring and Evaluation Manager
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Backup and Distributed Processing...

- The system has the capability to process data in distributed locations in the event of communications or central system failure.
- The systems will automatically synchronized data after resolution of the communications or system failure.
- Automated Backup System (ABS) as per schedule [in Tab drive) and store in different geo location.
- Frequency of Backup: Five days in a week.

- The Systems has included an audit trail to track all entries, changes and deletions made by users.
- User login and authentication allows the system to track the changes that are made by users.
- GEO location and network also tracking through NJP MIS;

Functionality of Audit Trail:
- All user actions are recorded in a system log file.
- The system recorded the time and date of all actions performed within the system by users.
- The history of documents that are edited or replaced has been maintained in the system for all users.
MIS Implementation Challenges

- Complex to build, many details to consider
- Keeping software projects aligned with changing project priorities;
- Required technologies operate on a very detailed, frontline level;
- Many technologies and incompatibilities in browser:
- Lack of rural electrification, internet connectivity and/or slow connectivity;
- Lack of data transfer from remote/project location;
- Dropout trained staff;
- Huge volume of data and its users in different level and skills;
- Delivering better results within the constraints of current investments and skill sets