A monitoring and evaluation platform for nonprofits using DHIS

Evaluation Café Presentation

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The problem with M&E systems

We interviewed over 40 staff and consultants at nonprofits in Canada, the U.S., Europe, Asia and Africa and several software vendors.

We also reviewed the research literature on M&E software implementations for nonprofits using Google Scholar, and reviewed web forums and news groups devoted to monitoring and evaluation.

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Most M&E implementations go over budget, over schedule, +/or don't deliver what they promised

Several people said that M&E systems are complex to implement, since there is little agreement about M&E concepts (like outcomes). Every indicator must be defined, and every donor uses different definitions. The complexity and cost quickly balloons.

There was broad consensus that large scale organization-wide M&E implementations are very difficult to manage, **regardless of the software**.

Organization-wide data aggregation requires sophisticated meta-data management & data models

It is relatively simple to collect data for a single project and a single donor. As soon as an nonprofit needs to report to multiple donors or combine data across different programs, it is a completely different challenge. And users have little patience for the added complexity.

Neither vendors nor nonprofits are satisfied with the design and implementation of most monitoring platforms

Because most organizations have an unrealistic concept of the complexity of M&E implementations, many managers and vendors have a sense of unfair treatment by colleagues, clients or partners. Vendors report that nonprofits expect unreasonable deliverables for the budget, and nonprofits report that they sink vast amounts of money with unsatisfactory returns.

And no matter how hard they work, both vendors and agency staff report that their users complain.

Think about building the M&E system in 3 stages

Organizations get paralyzed by trying to do everything at once, or doing them in the wrong order.

You don't need to talk much about the software platform until the third stage… but you do need to design the first two stages in the context of the software platform.

1. Develop an evaluation framework with indicators tied out desired outcomes and outputs

- ❑ Develop a logic model tied to policy goals
- ❑ Identify validated indicators
- ❑ Test the indicators with users (e.g., using KoboToolbox or SurveyMonkey)
- ❑ Define the indicators in a format that can be implemented

2. Design reports that give decision-makers what they need

- ❑ Create mocked-up reports using PowerPoint charts and dummy data
- ❑ Narrow down the reports to a few that seem to work
- ❑ Collect or make up more realistic data (e.g., from existing datasets)
- ❑ When approved, refine the indicator definitions

3. Develop a functional monitoring and evaluation system

- ❑ Build the indicators and reports into the system
- ❑ Set up import and export functionality
- ❑ Define user roles and permissions
- ❑ Ensure the integrity of the data warehouse

1. Defining indicators and logic model

Defining outcomes by using indicators

International experience has shown that shared measurement systems should get to the level of indicators as quickly as possible. They should be brief, clear, achievable and measurable. For example:

The 8 Millennium Development Goals

1. Eradicate extreme poverty and hunger
2. Achieve universal primary education
3. Promote gender equality and empower women
4. Reduce child mortality
5. Improve maternal health
6. Combat HIV/AIDS, malaria and other diseases
7. Ensure environmental sustainability
8. Develop a global partnership for development

Targets for MDG1

1. Reduce by half the proportion of people living on less than a dollar a day
   - Proportion of population below $1 (PPP) per day
   - Poverty gap ratio
   - Share of poorest quintile in national consumption

   ▲ HIDE INDICATORS
2. Achieve full and productive employment and decent work for all, including women and young people

   ▸ SHOW INDICATORS
3. Reduce by half the proportion of people who suffer from hunger

   ▸ SHOW INDICATORS

Millennium Development Goals http://www.undp.org/
Canadian Index of Wellbeing https://uwaterloo.ca/canadian-index-wellbeing

Generic logic model

We are using a standard 8-step logic model to provide consistency for coding indicators into the evaluation system. At the top level of the data dictionary are *Indicator Group Sets* divided into four outcome groups and four output groups.

OUTCOMES

1. **Impact** – covering all timeframes from immediate to long term, and that refer to the impact on the intended beneficiary groups. Examples: employment, income, housing status, etc.

2. **Organizational practices** – The desired changes in organizational policies, procedures and practices that are necessary to lead to the desired impact.

3. **Behaviours** – individual behaviours among the participants, target group members and/or service providers

4. **KASA** – Knowledge, attitudes, skills, aspirations – again, for both participants and service providers

OUTPUTS

5. **Experience** – satisfaction or engagement (I take the name from the health literature on patient experience, which is extensive)

6. **Reach** – the extent to which the program reaches the targeted number and type of participants or audience

7. **Activities** – the program activities

8. **Management** – the extent to which the program is well managed, including financial and human resources.

Indicator definition – GAVI Alliance

DHIS uses international metadata standards to define indicators.

This allows for standardized measurement systems.

Under five mortality rate	
Indicator ID	1
Definition	The under five mortality rate measures the probability of a child born in a specific year or period dying before reaching the age of five, if subject to age-specific mortality rates for that period. Strictly speaking this is not a rate (i.e., the number of deaths divided by the number of individuals at risk during a certain time period), but a probability of death derived from a life table. This indicator is expressed as the number of deaths among children under five in a given year, per 1000 live births.
Level of disaggregation	N/A
Rationale for use	The under five mortality rate is a leading indicator of child health and overall human development. It is indicative of government commitment to health. The fourth Millennium Development Goal (MDG) indicator is: 'Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate'. The use of this indicator as part of GAVI's strategy reflects GAVI's commitment to contributing to global and country health goals.
How it is measured	This indicator is measured using population weighted estimates from the UN Child Mortality Estimates (CME) for the 73 GAVI countries. Generating accurate estimates of under-five mortality poses a considerable challenge because of limitations in data availability and quality. The UN Inter-agency Group for Child Mortality Estimation (IGME) was established in 2004 to enhance country capacity to produce timely and properly assessed estimates of child mortality. This is led by UNICEF and WHO, and includes the World Bank and United Nations Population Division. The CME take vital registration systems as the preferred source of data on child mortality because they collect information as events occur and cover the entire population. However, many developing countries lack vital registration systems that accurately record all births and deaths. Therefore, household surveys, such as the Multiple Indicator Cluster Surveys (MICs) and Demographic and Health Surveys (DHS), are the primary source of data on child mortality in developing countries. The IGME seeks to compile all available national-level data on child mortality, including data from vital registration systems, population censuses, household surveys and sample registration systems.
Data source	Child mortality estimates from the UN Inter-agency Group for Child Mortality Estimation, and estimates of live births from the United Nations Population Division estimates.
Strengths and weaknesses	A strength of including the under-five mortality rate as part of the GAVI strategy is that this is a key impact indicator used globally for multiple purposes, including the MDGs. This indicator measures the ultimate impact at the population level. A weakness of this indicator is that many other factors beyond the influence of GAVI affect a country's under five mortality rate—including poverty, conflict, nutrition and many other factors. In addition, there are many challenges related to measurement. This indicator may also be slow in responding to policy changes given that it is at the end of a long results chain and frequently measured through surveys which reflect child mortality from earlier time periods.
Useful references	For further information on methodology: http://www.childinfo.org/mortality_methodology.html For current country estimates: http://www.childmortality.org/ For population estimates: http://esa.un.org/wpp/

From Gavi at http://www.gavi.org/results/goal-level-ind

Example PEPFAR indicator.1

Prevention of Mother-to-Child Transmission (PMTCT)		
Indicator code: PMTCT_STAT	**1**	Percentage of pregnant women with known HIV status (includes women who were tested for HIV and received their results)
Purpose: This indicator reflects one goal of PMTCT, which is to increase the number of pregnant women who know their HIV status. Identification of a pregnant woman's HIV status is the key entry point into PMTCT services and other HIV care and treatment services. These data will be important to PEPFAR Headquarters, TWGs and USG country-level managers in order to: • Identify progress toward the overarching global elimination of MTCT goal of reducing the number of AIDS-related maternal deaths by 50% and reducing the number of new HIV infections among children by 90% • Determine PEPFAR and PEPFAR-funded partners' performance in providing HIV testing to pregnant women • Identify countries/ partners needing assistance with program implementation		
NGI Mapping:		P1.1.D continuing - same indicator; no impact on trend analysis
PEPFAR Support Target/Result Type:		Both Direct Service Delivery (DSD) and Technical Assistance-Service Delivery Improvement (TA-SDI) targets and results should be reported to HQ
Numerator:	**1**	Number of pregnant women who were tested for HIV and know their results plus number of pregnant women with known HIV status at entry to services.
Denominator:	**1**	Number of new ANC and L&D clients
Disaggregation(s):	**1**	**Positivity status:** new positives, known positives at entry
Data Source:		Facility registers and other program monitoring tools.
Data Collection Frequency:		Data should be collected continuously at the facility level as part of service delivery and aggregated in time for PEPFAR reporting cycles. Data should be reviewed regularly for the purposes of program management, to monitor progress towards achieving targets, and to identify and correct any data quality issues.
Method of Measurement: The numerator is a composite of the following two data components: 1) The number of women with known (positive) HIV infection attending ANC for a new pregnancy over the last reporting period 2) The number of women attending ANC, L&D who were tested for HIV and received results (***These should also be counted in the general HTC indicator "HTC_TST"***) The numerator can be summed from categories a-d below: a) Number of pregnant women with unknown HIV status attending ANC who received an HIV test and result during the current pregnancy b) Pregnant women with known HIV infection attending ANC for a new pregnancy c) Number of pregnant women with unknown HIV status attending L&D who received an HIV test and result during their current pregnancy d) Women with unknown HIV status attending postpartum services within 72 hours of delivery who were tested for the first time in the current pregnancy and received results		

From http://www.pepfar.gov/documents/organization/240108.pdf

Example PEPFAR indicator.2

A "known HIV status" is defined as a confirmed positive test result from a test during this pregnancy, an already known positive test result, or a confirmed negative test result during the current pregnancy. An indeterminate test result should not be counted or reported as a part of this indicator.

Explanation of Numerator:

The numerator is calculated using national and/or PEPFAR program records aggregated from facility registers in the ANC and L&D. In countries with high L&D attendance rates (>90%), data can be collected from L&D registers only.

Health facility registers should reflect known HIV infection among HIV-positive pregnant women coming to the ANC for a new pregnancy, such as through a code, circle, or other method, in order for them to receive subsequent PMTCT interventions. Only pregnant women with definitive results (a known status) should be counted and reported.

Pregnant women with unknown status attending either L&D or postpartum services: women who were not tested during ANC during this pregnancy; were not already known to be HIV-infected, or did not have a definitive status recorded in the register (as in, had an indeterminate result) should be counted and reported in this indicator if they receive an HIV test during L&D or postpartum services.

Pregnant women with known HIV-infection: women who are attending ANC for a new pregnancy who were tested and confirmed HIV-positive at any point prior to the current pregnancy. Pregnant women with known HIV infection attending ANC for a new pregnancy do not need retesting if that is in line with the national guidelines and/or, as long as they bring documented proof of their positive status with them. However, these women do need subsequent PMTCT services and should be counted in the numerator.

In this case, documented proof may include (but is not limited to), a health card providing HIV status test results from another testing center, or any other document that denotes that the bearer of the document is HIV positive.

Pregnant women with known status should be counted only once in this indicator. This may be difficult if national guidelines recommend testing a pregnant woman more than once during a pregnancy or if a woman seroconverts during her pregnancy and has multiple tests. For sites that are doing cohort monitoring of pregnant women in ANC, reporting a woman's final status at the end of pregnancy is fine.

Explanation of Denominator:

The total number of new clients attending ANC and L&D services at USG-supported sites should be used as the denominator. This total will include the number of new clients who attend PMTCT services at USG-supported ANC sites and the number of women who present at L&D sites supported by USG with unknown status (as a proxy for those who have not attended ANC with PMTCT services). The USG country team is to identify the best source of data for unduplicated individuals. If the country has high facility delivery rates (>90%), the L&D data may be used as the denominator, otherwise ANC data should be used.

Note: This indicator is meant to measure the number of pregnant women who know their HIV status and is not meant to provide programmatic guidance around the types of services that should accompany HIV testing (e.g., counseling). All HIV testing programs should be adhere to national or international standards.

Interpretation:

From http://www.pepfar.gov/documents/organization/240108.pdf

Example PEPFAR indicator.3

This indicator enables the USG PEPFAR team to monitor trends in HIV testing among pregnant women and uptake of testing at USG-funded sites.

The points at which drop-outs occur during the testing and counseling process and the reasons why they occur are not captured by this indicator.

This indicator does not measure the quality of the testing or counseling. It also does not capture the number of women who received pre- or post- test counseling.

There is a risk of double counting with this indicator, as a pregnant woman could be tested multiple times during ANC or, L&D, and postpartum. This is particularly true when pregnant women get re-tested according to some national guidelines or when they seek testing in different facilities, or when they come to the L&D without documentation of their test. While not feasible to avoid double counting entirely, countries should ensure a data collection and reporting system is in place to minimize it, such as using patient held and facility held ANC records to document that testing took place and only counting and reporting the last test with a definitive result, or the previously known HIV-infected status.

Additional References:

- Partially harmonized with Prevention indicator (HIV-P10), The Global Fund to Fight AIDS, Tuberculosis and Malaria Monitoring and Evaluation Toolkit: HIV, Tuberculosis and Malaria and Health Systems Strengthening, Part 2: Tools for monitoring programs for HIV, tuberculosis, malaria and health systems strengthening, Fourth Edition, November 2011 (http://www.theglobalfund.org/documents/monitoring_evaluation/ME_Part2HIV_Toolkit_en/)
- Global Monitoring Framework and Strategy for the Global Plan towards the elimination of new HIV infections among children by 2015 and keeping their mothers alive (EMTCT). (http://apps.who.int/iris/bitstream/10665/75341/1/9789241504270_eng.pdf)
- #7. Core Indicators for National AIDS Programmes. Guidance and Specifications for Additional Recommended Indicators. April 2008 (http://www.unaids.org/en/media/unaids/contentassets/documents/document/2010/JC1768-Additional_indicators_v2_en.pdf)
- Refer to the PMTCT/Peds Treatment TWG with further inquiries.

From http://www.pepfar.gov/documents/organization/240108.pdf

We are defining indicators in spreadsheet…

Name:	Short Name:	Code:	Purpose:	Definition:	Rationale:	Quality:	Target/Result type:	Numerator:	Denominator:
I did not have enough money to buy the things I wanted	Not enough money - wants	To be developed	Measure the change in the level of financial stress or satisfaction with current financial situation before and after intervention	The indicator measures the level of financial stress or level of satisfaction with current financial situation. Higher score means more stress or less satisfaction and lower score means less stress and more satisfaction with financial situation.		Strongly recommended	Increase in level of satisfaction with financial situation	The sum of all scores	Number of responses
I did not have enough money to buy the things I needed	Not enough money - needs	To be developed							
I could not pay my bills on time (e.g., water, hydro, phone, credit card)	Not pay bills on time	To be developed							

Spreadsheet generates indicator reference sheet

Over the last 3 months, have you followed a personal budget, spending plan, or financial plan?

BEHAVIOUR		
3c. BEHAVIOUR: Financial planning and goal-setting		
Indicator Code:		
****To be developed**		
Purpose: Measure the influence of a financial capability program on behaviour		
Definition: The indicator measures the change in financial self-control or intention to exercise control. The change in score (score before program minus score after program) measures the effect of a financial capability program on financial behaviour.		
Rationale: [To be added]		
Quality	1	[To be added]
Target/Result type		[To be added]
Numerator:	1	The sum of the scores of all answers options
Denominator:	1	Total number of responses
Disaggregation(s):	1	[To be added]

Recommendation grade	
1	Strongly recommended
2	Recommended
3	Optional

Sharing indicators through open access tools

The challenge

Common measurement systems require shared definitions of indicators, measures and data collection tools. Organizations tend to be reluctant to share this kind of intellectual property, and most funders explicitly forbid open access in their contracts with agencies and consultants. (If you're in doubt about this, check out the legalese in your contracts regarding property rights and ownership.)

As a nonprofit human service sector, we need a way to share freely while recognizing the contribution of authors and sponsors.

How DHIS can help

We will assign a DOI (Digital Object Identifier) to each complete and validated Indicator Reference Sheet. That means that each Reference Sheet can be linked to any number of contributors and peer reviewers (through ORCID) and sponsors (through FundRef).

The indicator itself will have its own license and authorship (e.g., Statistics Canada uses the Open Government Licence – Canada).

The DOI registrar (e.g., Zenodo) will keep track of the appropriate Creative Commons license, and will maintain accessibility of the indicator(s) even if the original dataset is taken down.

Other metadata standards supported by DHIS:

IATI (http://iatistandard.org/)

HXL (Humanitarian Exchange Language, http://hxlstandard.org/)

SDMX (https://registry.sdmx.org/)

DOI - http://blog.apastyle.org/apastyle/2014/07/how-to-use-the-new-doi-format-in-apa-style.html
ORCID - https://orcid.org/organizations/funders and http://orcid.org/content/initiative
FUNDREF - http://www.crossref.org/fundref/index.html
ZENODO - https://zenodo.org/features
Open Government License – Canada - http://open.canada.ca/en/open-government-licence-canada?_ga=1.156660539.1898951134.1438269552

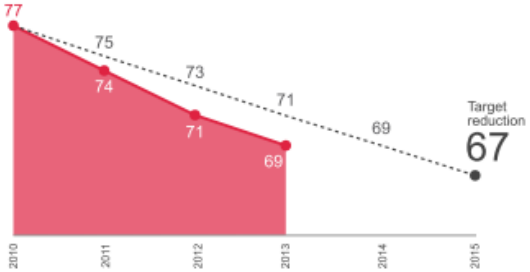
2. Designing reports

GAVI Vaccine Alliance

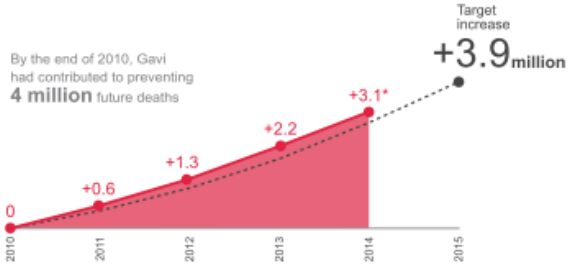
Mission

Saving children's lives and protecting people's health by increasing access to immunisation in poor countries.

Under-five mortality rate in Gavi-eligible countries (per 1,000 live births)

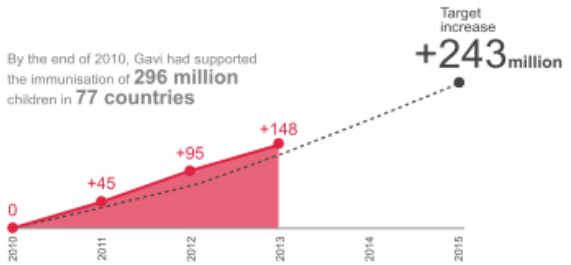


Number of future deaths averted (millions)



*Projection

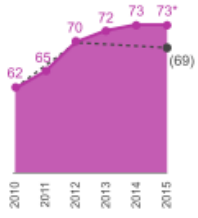
Number of children immunised (millions)



GOAL 1: Accelerate vaccines

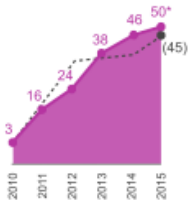
Accelerate the uptake and use of underused and new vaccines by strengthening country decision-making and introduction.

Pentavalent vaccine
Number of countries



*As of 10 April 2015

Pneumococcal vaccine
Number of countries



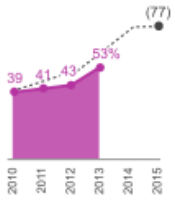
*As of 10 April 2015

Rotavirus vaccine
Number of countries

*As of 10 April 2015

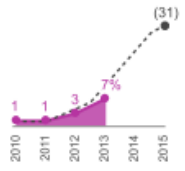
Country introductions of new and underused vaccines

Pentavalent vaccine, 3rd dose Coverage (%)



Pneumococcal vaccine, 3rd dose Coverage (%)

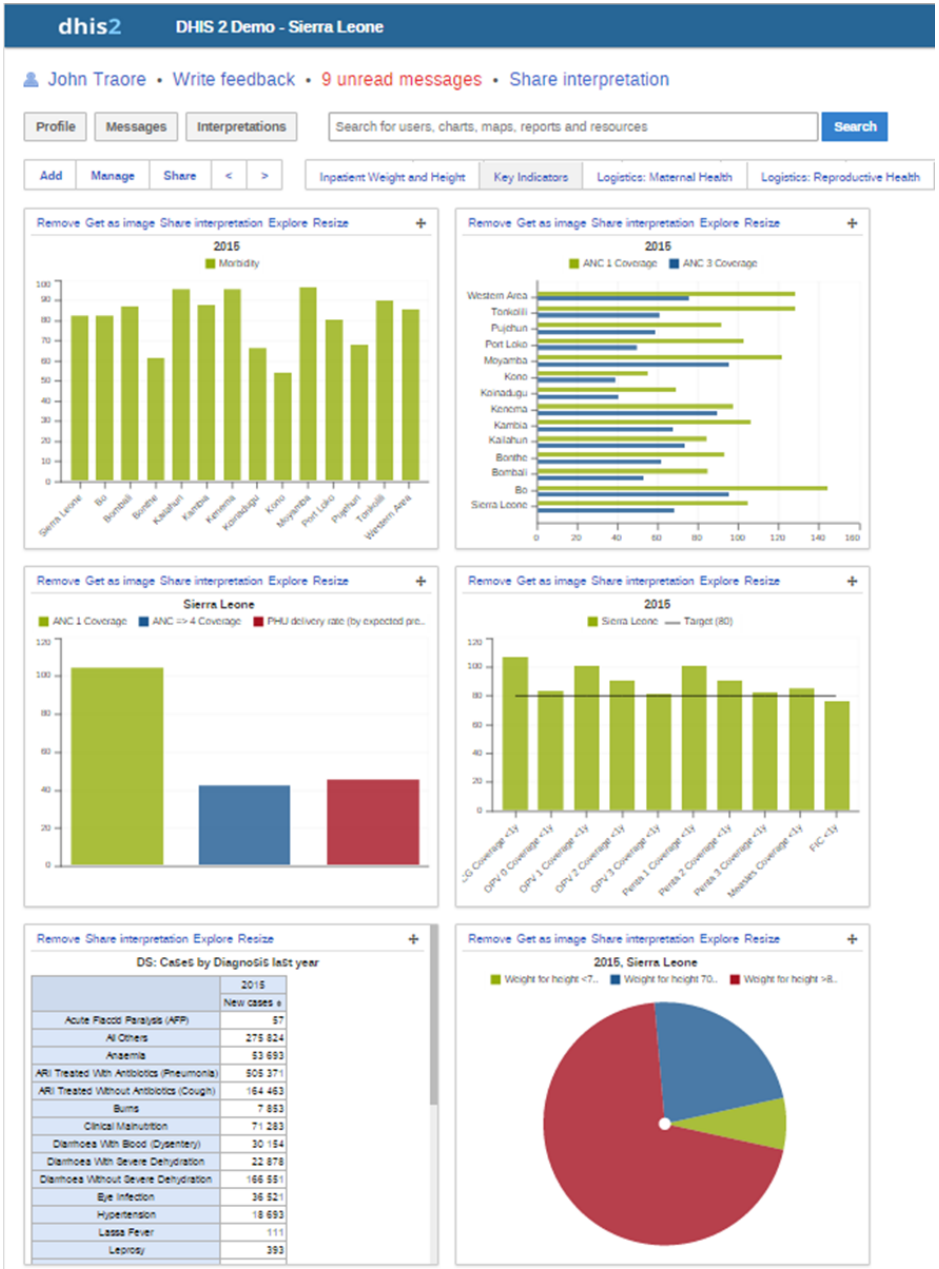
Rotavirus vaccine, 3rd dose Coverage (%)



Coverage of new and underused vaccines

From Gavi Vaccine Alliance at http://www.gavi.org/results/goal-level-indicators/. Gavi uses DHIS to track and report on indicators.

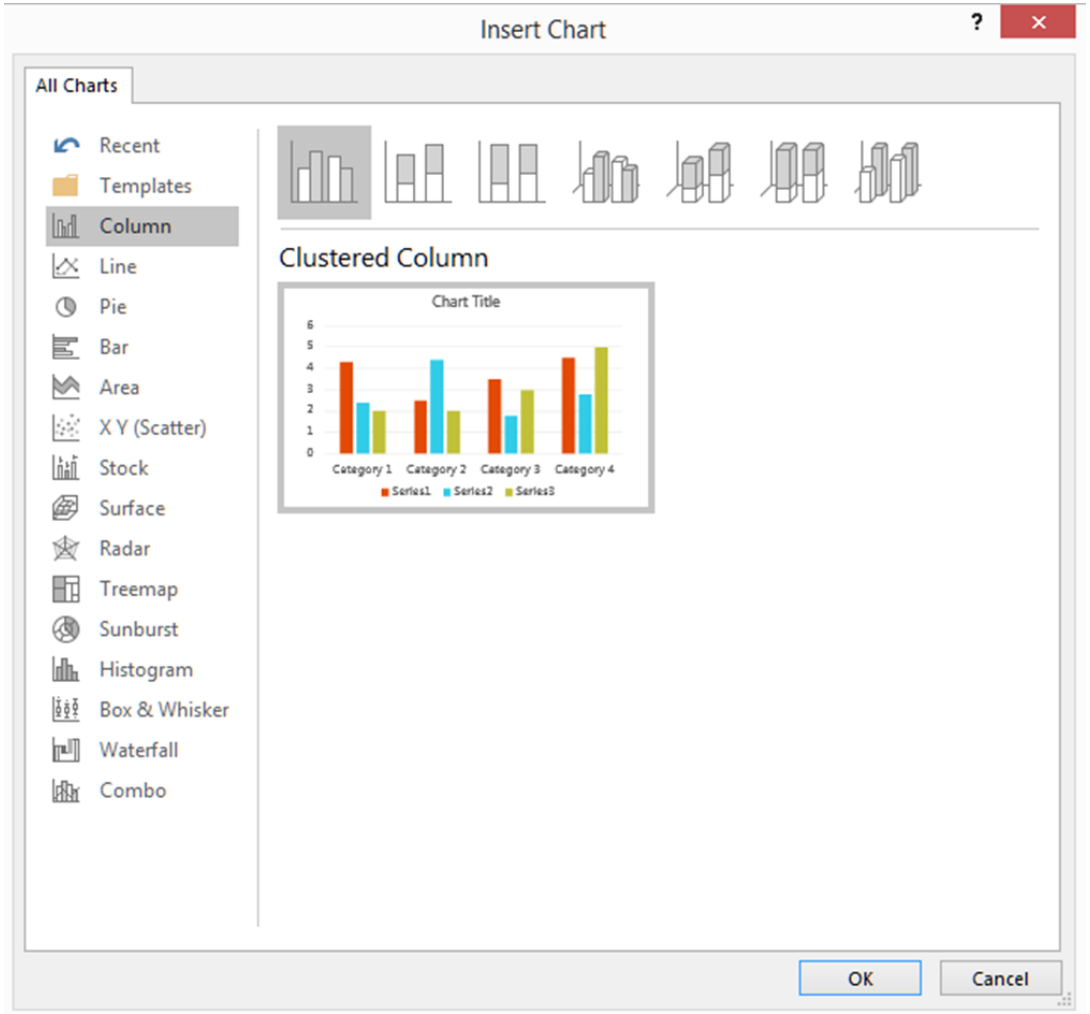
Example dashboard



From www.dhis2.org

Create mockups of desired reports

Use PowerPoint or Excel to create prototypes of desired reports using dummy data. Then consult with key stakeholders and decision-makers. Is this what they want?



3. Developing a functional M&E system

About District Health Information Software (DHIS)

DHIS provides all the elements of a fully functional M&E information system

It combines a data warehouse, individual client tracking, data entry forms, sophisticated reporting and geographic mapping, and individualized dashboards.

It is used in 49 countries, including MSF, PEPFAR and PSI, and has been adopted as the national health information system of over 12 nations.

Based on community empowerment principles

DHIS is an open source program that has been in development for over 20 years. It emerged in post-apartheid South Africa in 1994 as a collaboration between local public health activists and Scandinavian action researchers. Its mission: To build the capacity of local communities while contributing to an effective national health system.

Stable and well-supported

DHIS releases new versions every three months. It is supported by the University of Oslo, plus an international network of experts and consultants. It is funded by NORAD, PEPFAR, the University of Oslo, the Global Fund and is accompanied by detailed documentation, video tutorials and training materials.

Resilient

DHIS is designed to handle intermittent internet connections and low cost data collection. Agencies can collect data offline with free phone apps or light-weight feature-phone browsers and upload it when the internet is up. They can download their own data and work with it, syncing when they wish.

Flexible

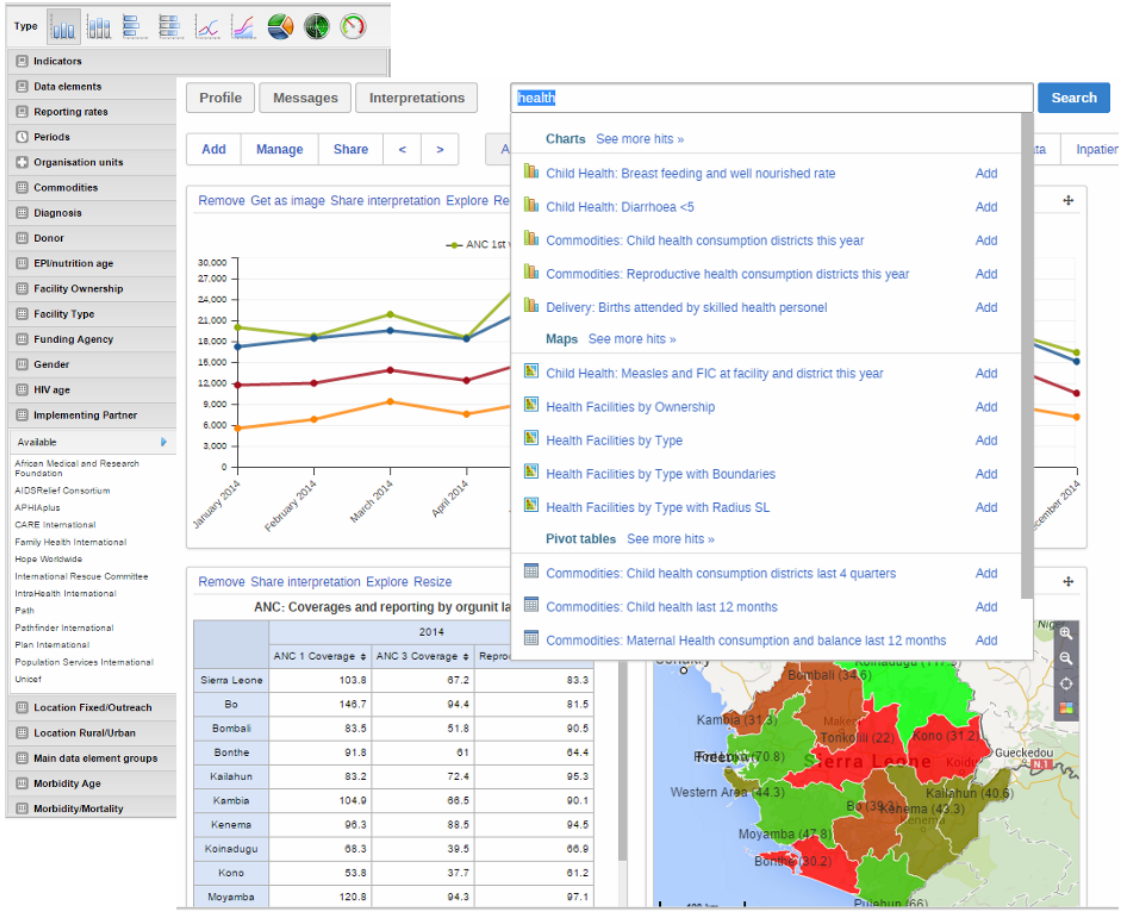
DHIS is designed to aggregate data that is gathered in multiple formats and locations. It can import and export data through csv files or a web API. It also provides built-in data collection apps for individual client tracking.

Decentralized

DHIS is designed to be independent of any one organization. Expert nodes have been set up in India, Vietnam, Malawi, Namibia, South Africa and several other countries to ensure that local expertise can develop. The University of Oslo has supported dozens of graduate students from developing nations to carry out research on health systems using DHIS.

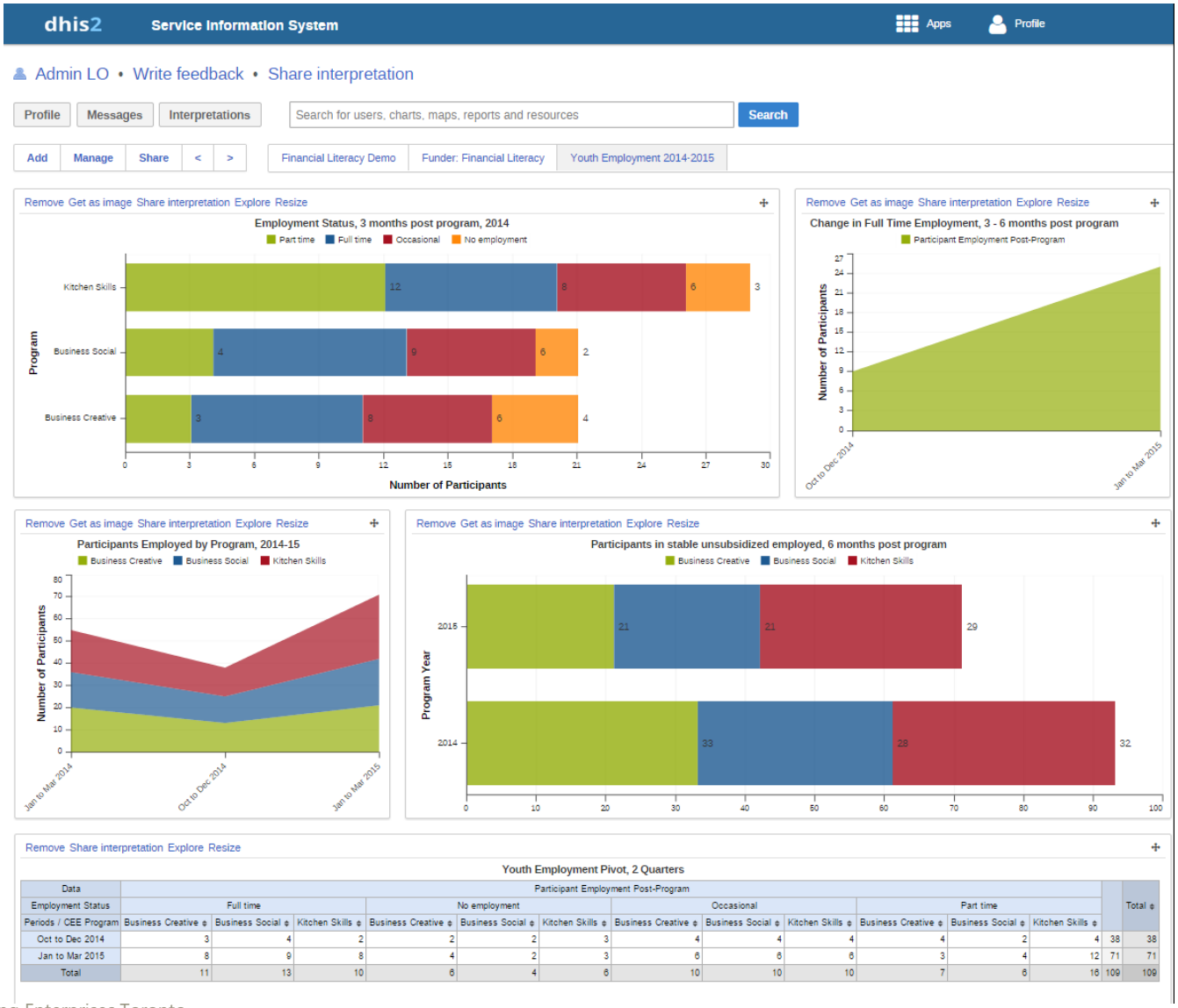
DHIS collects and reports information in various formats

Dashboards can be created for individual users and funders. They can be posted on the integrated web portal or shared privately.



Paper based forms are expensive and unwieldy. Even the poorest African health regions are moving to online data collection – it's cheaper to provide staff with phones or tablets than it is to struggle with paper.

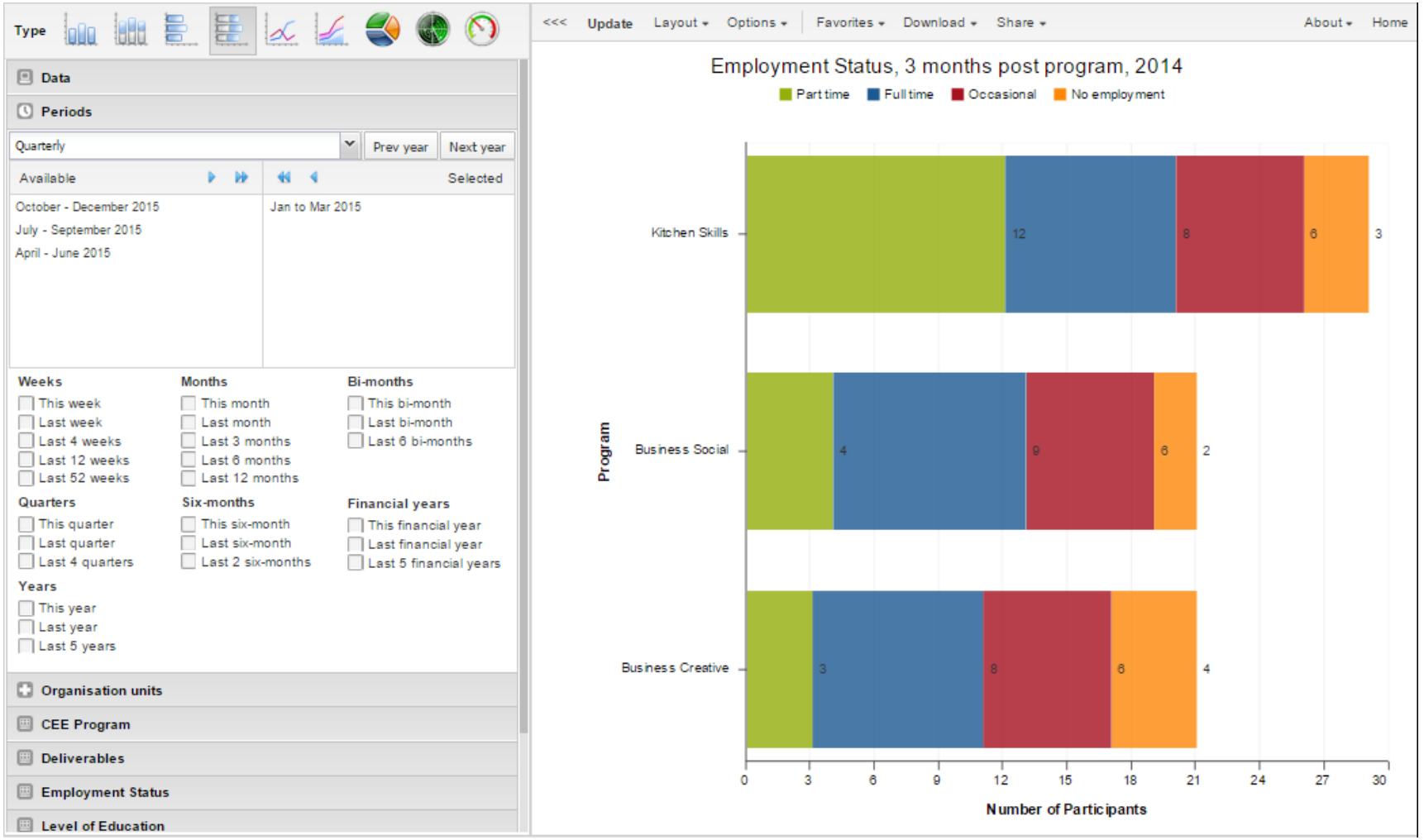
A simple dashboard



Data	Participant Employment Post-Program													
Employment Status	Full time			No employment			Occasional			Part time				Total
Periods / CEE Program	Business Creative	Business Social	Kitchen Skills	Business Creative	Business Social	Kitchen Skills	Business Creative	Business Social	Kitchen Skills	Business Creative	Business Social	Kitchen Skills		
Oct to Dec 2014	3	4	2	2	2	3	4	4	4	4	2	4	38	38
Jan to Mar 2015	8	9	8	4	2	3	6	6	6	3	4	12	71	71
Total	11	13	10	6	4	6	10	10	10	7	6	16	109	109

By permission from Community Empowering Enterprises Toronto

Reporting engine



By permission from Community Empowering Enterprises Toronto

Defining logic model through group sets

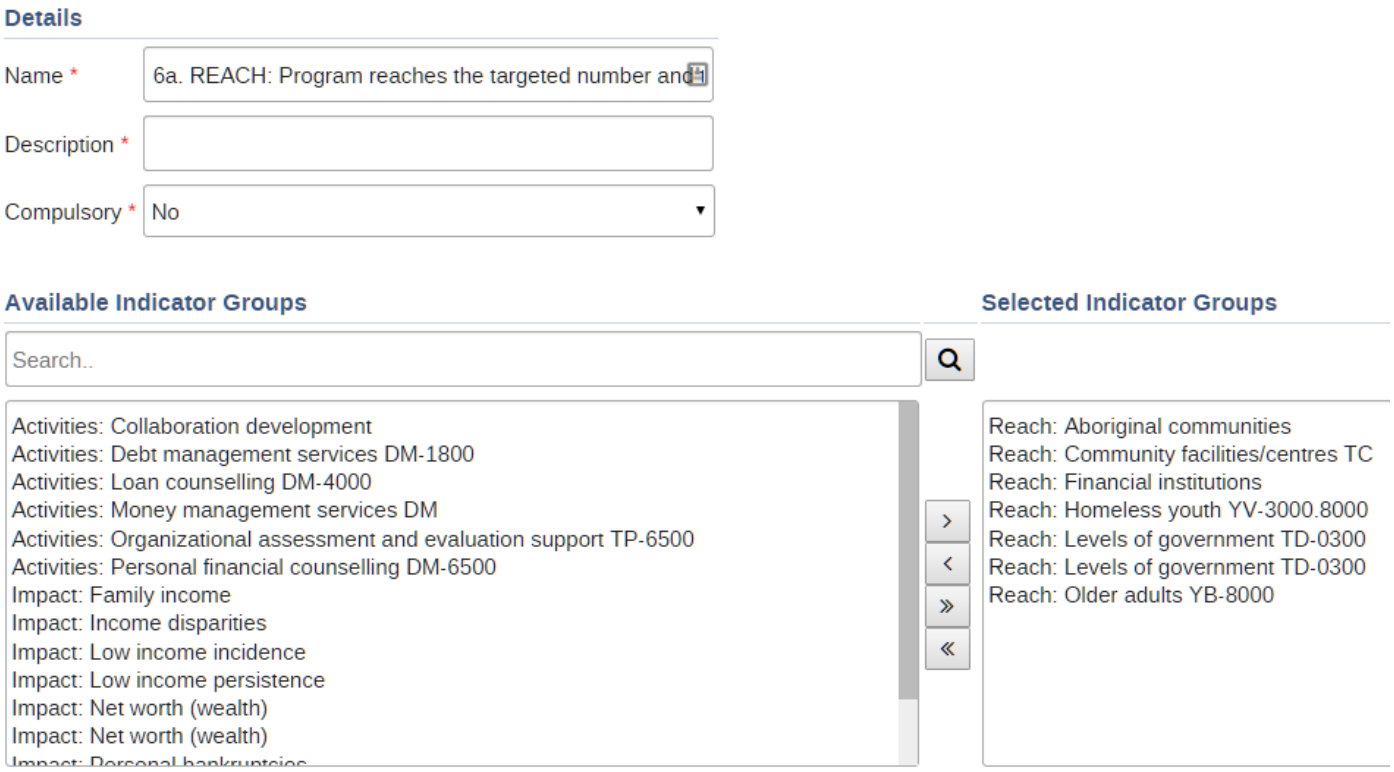
Each group set (see below) is linked to multiple indicator groups.

5a. EXPERIENCE: Participants are engaged with the program
5b. EXPERIENCE: Stakeholders are satisfied with the program
6a. REACH: Program reaches the targeted number and type of beneficiaries
6b. REACH: Program reaches the targeted number and type of organizations and service providers
7a. ACTIVITIES: Collaborating and sharing
7b. ACTIVITIES: Tailoring programs and applying plain language principles
7c: ACTIVITIES: Reaching and engaging Canadians
8a: MANAGEMENT: The targeted number and type of products and services are delivered
8b. MANAGEMENT: The programs are delivered correctly at an adequate level of quality
8c. MANAGEMENT: Resources are used efficiently to manage the program
8d. MANAGEMENT: Program design is informed by evidence of efficacy and cost effectiveness
8e. MANAGEMENT: Staff and volunteers are managed well

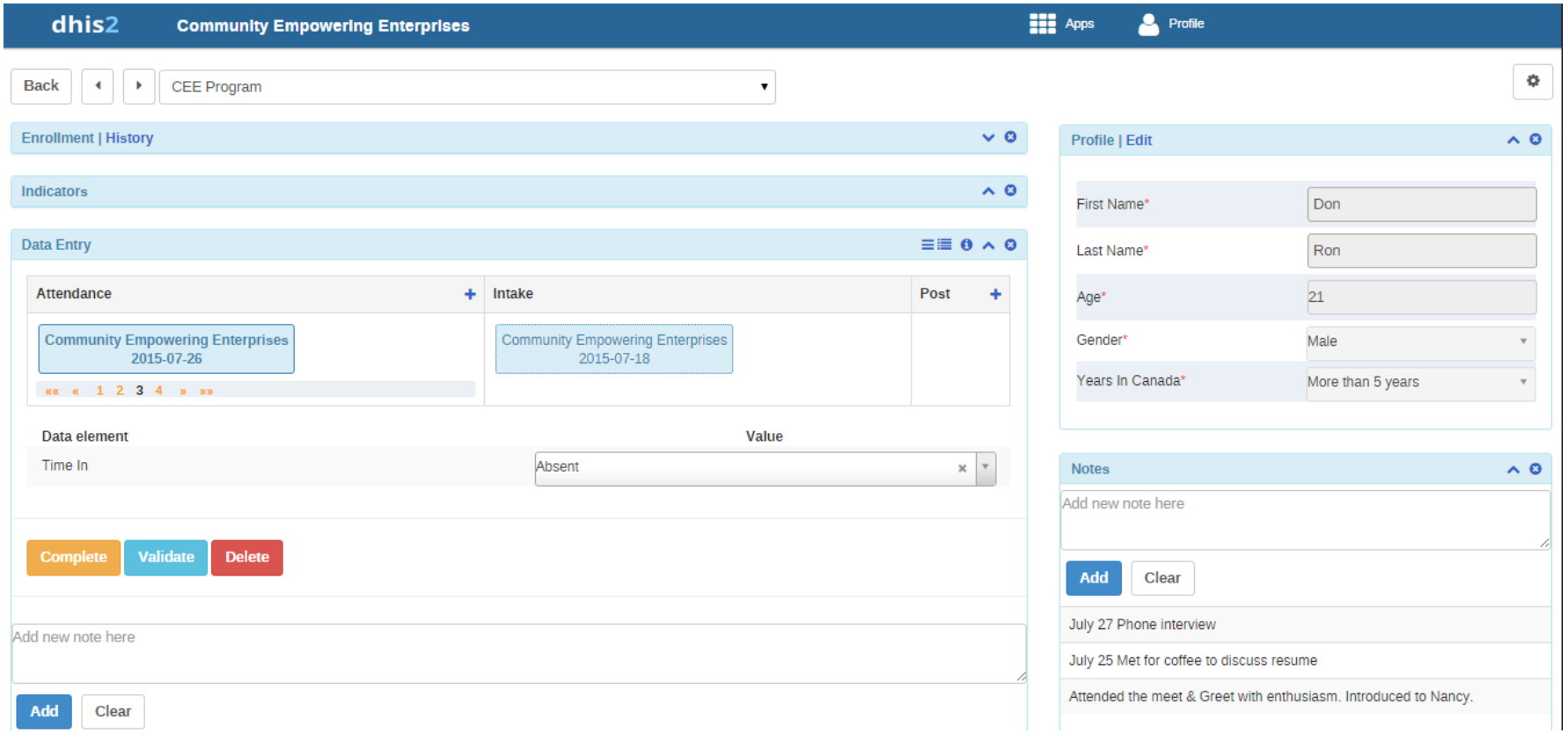
Assigning indicators to groups

Group Sets (e.g., REACH) are linked to Indicator Groups.

Each Indicator Group can have unlimited numbers of Indicators.



DHIS can provide a simple Client Management System

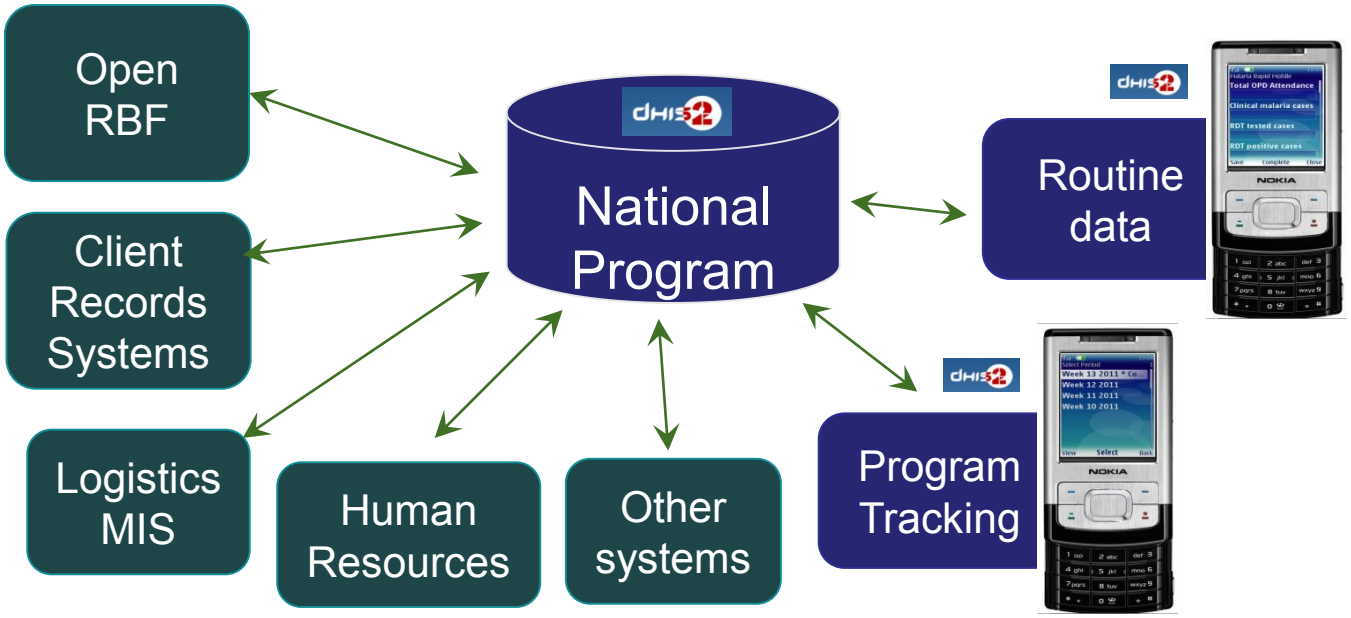


By permission from Community Empowering Enterprises Toronto

Linking data through DHIS

DHIS can be linked to Performance Based Financing (PBF) systems through Open RBF (Results Based Financing) data standards.

The University of Oslo is enhancing the PBF module in DHIS. Experience has shown that financing should be tied to Performance, which includes external quality reviews and client satisfaction, rather than just Results, which may not be under an agency's control.



Adapted from Blue Square interoperability slide deck at https://performancebasedfinancing.files.wordpress.com/2014/05/interoperability-bluesquare-dhis.pdf

Evidence on the effectiveness and cost of evaluation

There is little evidence that evaluation works

Monitoring and evaluation systems often fail: They tend to go wildly over budget, or over schedule, or don't deliver what they promised, or all three. Even when they are implemented correctly, there is little evidence that they improve program effectiveness.* Yet funders expect nonprofits - even small ones - to evaluate their programs as though it's a simple task. Why are M&E systems so difficult to implement? And how can we make them less expensive and more useful?

There are so many problems with the usual approaches …

In our experience, drawn from 25 years of working with funders and agencies:

- Agencies create logic models that are uninformed by research because they don't have the resources to review the research literature.
- Services are based on untested assumptions, imitations of other unevaluated programs, or 'the way things have always been done'.
- Funders require agencies to design evaluation plans but don't have the expertise to assess them for feasibility or usefulness.
- Evaluators tend to select indicators that are technically weak, and in any case, agencies don't have the capacity to collect the data.
- Even when agencies collect service data, they do not have the capacity to test its quality, aggregate it and report it to users in a way that supports decision-making.
- Narrow funder-defined goals can lead to unethical behaviour.**

*Powers, L.C. (2009). A framework for evaluating the effectiveness of performance measurement systems. RealWorld Systems Research Series 2009:1. Available at SSRN: http://ssrn.com/abstract=1371158
**E.g., Ethical breakdowns (2011) Bazerman and Tenbrunsel, Harvard Business Review, https://hbr.org/2011/04/ethical-breakdowns

M&E systems are surprisingly expensive

Based on a review of the literature on performance measurement systems (Powers, 2009 and a more recent scan by Kerr) and interviews with more than 40 staff in international nonprofits regarding the implementation of evaluation systems, there appears to be a 'delusional optimism' (Lovallo & Kahneman, 2003) regarding the cost and effort required.

A typical organization-wide monitoring and evaluation system costs at least $100,000 including internal staff and vendor time, and may be as much as $300,000. Conservative estimates of the time required from design to launch was 18 months, with a more common timeframe of 3 years. While more modest evaluation systems were helpful for reporting to funders, because of their poor data quality their results could not be used to assess comparative impact or demonstrate effectiveness. Yet many funders and organizations believe that evaluation systems capable of delivering cross-organizational data can be implemented within a few months for under $10,000.

Lovallo, D. & Kahneman, D. (July 2003). Delusions of success: How optimism undermines executives' decisions. Harvard Business Review.

Powers, L.C. (2009). A framework for evaluating the effectiveness of performance measurement systems. RealWorld Systems Research Series 2009:1. Available at SSRN: http://ssrn.com/abstract=1371158

An effective approach to monitoring and evaluation

International experience has led to a consensus on the elements of effective measurement systems:

- ❑ Defining clear outcomes that can be communicated through indicators.
- ❑ Defining effective programs that are informed by evidence and meet local needs and priorities.
- ❑ Defining valid and useful indicators that can be shared and aggregated across jurisdictions, using standard formats.
- ❑ Collecting data securely using tools that do not incur an unreasonable cost burden on front line workers and agencies.
- ❑ Validating key information with objective external audits.
- ❑ Combining, cleaning and aggregating data from many sources to meet the needs of multiple users.
- ❑ Reporting information in various formats to multiple users – funders, donors, managers, communities and partners.

All of these elements are supported by DHIS.

Stages of a performance measurement system

Kueng, Meier & Wettstein (2001) as well as Bourne, Mills, Wilcox, Neely & Platts (2000) defined the following life cycle stages of a functional performance measurement system:

1. **Design** (the system is planned and described)
2. **Build and Implement** (the system is constructed and tested, procedures are put into place and the system is deployed)
3. **Run or Use** (the system is operational)
   a. Data collection (e.g., Hatry, Wholey & Newcomer, 2004)
   b. Data quality control (e.g., Perrin, 2003; USGAO, 2000)
   c. Performance data analysis and reporting (e.g., Auditor General of Canada, 2002; USGAO, 2000)
   d. Feedback (for maintaining and improving the system) (e.g., Ernst, K. 2002; Franco-Santos & Bourne, 2005; Henri, 2004; Smith & Goddard, 2002; Liner et al., 2001)

Systems that do not include these stages of development will not be effective.

Software comparison for M&E

Selecting software for monitoring and evaluation

Dozens of software programs claim to provide monitoring and evaluation. LogicalOutcomes carried out a comparison of over 35 of them, including platforms like SalesForce, SharePoint and Microsoft CRM as well as specialized programs like DevResults, ActivityInfo and DHIS.

We based the analysis on a list of needs that we identified by interviewing 40 staff in international and Canadian nonprofits.

The needs covered:

- ❑ Design of an evaluation framework
- ❑ Data collection
- ❑ Reporting
- ❑ Implementation and roll-out
- ❑ Flexibility and resilience
- ❑ Building local capacity
- ❑ Cost

See the summary of the requirements in the next three pages. Only one software program satisfied all of them: District Health Information Software (DHIS).

Software requirements.1

Monitoring software is complex, so we assume three levels of expertise at the agency:

Power-users are agency staff who are familiar with the software. They don't need to be software programmers.

Project managers are agency staff who are given 3 to 4 hours of training, mostly to create reports.

Basic users just enter data or view dashboards.

Capture theories of change and indicators for each program

- ❑ Can power-users create logic models and evaluation frameworks during proposal development and then revise them at project setup?
- ❑ Can power-users create or select indicators for programs, allowing aggregation in different combinations (e.g., age groups and gender) to meet the differing needs of funders?

Collect data

- ❑ Are basic users provided help to collect data with an adequate level of quality, including data collection tools and automatic validation rules?
- ❑ Can basic users easily enter and process data on a mobile device (smartphone) or web form?
- ❑ Can basic users collect information about individual service users and/or events, or qualitative information, or rating scales?
- ❑ Can power-users design data entry forms with indicators disaggregated by different categories (e.g., age, location, program, etc.) based on funder requirements?

Report information

- ❑ Can power-users build automated monthly reports that meet agency needs?
- ❑ Can project managers quickly design customized reports for individual funders to meet their changing reporting requirements?
- ❑ Can project managers generate and tailor attractive reports, defining various combinations of indicators and time frames, aggregating on many variables, and exporting in PDF or spreadsheet formats?
- ❑ Can project managers easily get information out of the system in flexible formats once it is put into the system, aggregating by program, client type and/or sector?

Software requirements.2

Implement and roll-out

- ❑ Does the software system provide good updated documentation and training materials (e.g. video tutorials)?
- ❑ Can the software run on popular web browsers on all major operating systems?
- ❑ Can power-users make most changes without a software developer's support, including designing the framework, creating reports, revising the data collection instruments, etc.?
- ❑ Can basic users view, enter or download data even when internet connection is not available?

Manage and protect data

- ❑ Does the software protect data integrity from corruption, e.g., when internet connectivity is disrupted?
- ❑ Does the software employ security protocols when transferring data and when data is at rest? Does it follow good practices for protecting confidential information?
- ❑ Is the software updated frequently (a few times a year) using good development practices including a clear and transparent roadmap?

Software requirements.3

Build community capacity and knowledge

- ❑ Can the software measure key elements (e.g., core values, success factors) that are important to the agency and its communities?
- ❑ Can agencies use and adapt the software freely without limitation? Does the software use open standards for importing, exporting and communicating data to support the work of partners?
- ❑ Does the software empower local communities and service providers by giving them more control over their own information and the ability to get insights from it?
- ❑ Does the software provide additional value to agency's contribution by sharing tools and strengthening the capacity of partners? (e.g., promoting local ownership of data)

Cost

- ❑ What is the cost of design, configuration and implementation per project?
- ❑ What is the annual cost per basic user and per project manager, including the expected level of technical support and hosting?
- ❑ How long will it take to train for each role (basic user, project manager, power-user)?
- ❑ How long does it take to create new templates, indicators and elaborate data entry forms?

Software requirements analysis

We identified over 35 software programs through searches on the web, discussion forums and recommendations from nonprofits, and winnowed them down to about 25.

*We selected 12 key requirements to screen out software that would **not** meet nonprofits' needs.*

In summary, nonprofits seem to want software that is infinitely flexible, inexpensive to configure and implement, and extremely easy to use.

This is not an unusual set of requests for enterprise software, but it is difficult to achieve. It requires a complex, flexible software platform that supports a variety of user roles and the capacity to develop and share templates.

When we combined the findings from nonprofits and vendors, we identified the following requirements for monitoring and evaluation software programs:

- ❑ Ability to create and update complex indicators for different donors
- ❑ Ability to collect data on mobile devices
- ❑ Ability to aggregate data in different combinations
- ❑ Ability to store, import and export data to and from various sources
- ❑ Ability to create on-demand, attractive and flexible reports
- ❑ Specifically designed for monitoring and evaluation; does not require extensive customization
- ❑ Open source, with ability to create and share indicators, tools and templates without paying license fees or giving ownership to vendors
- ❑ Used successfully by at least 3 similar nonprofits at a similar scale
- ❑ Ability to be configured and adapted without software developers
- ❑ Large community of developers to prevent dependence on a single vendor
- ❑ Frequent revisions of the software to prevent obsolescence and to keep up with the changing requirements of nonprofits
- ❑ Posted development roadmap to allow for planning and negotiation with the software developers

Software comparison

We identified about 35 software programs through searches on the web, discussion forums and recommendations from nonprofits and narrowed them down to 24 after an initial review. Where possible we requested information from their respective vendors; not all of our questions were answered so there are many gaps in the table.

Ability to create complex indicators

Ability to collect data on mobile devices

Ability to aggregate data in different combinations

Ability to store, import, export data

Ability to create on-demand attractive and flexible reports

Specifically designed for M&E; does not require extensive customization

	Minimum features						
Software	Create complex indicators that can be grouped in various ways	Collect information using mobile and browser	Aggregate data	Store data	Export and import data	Generate reports and dashboards very flexibly	Designed for M&E (not a general ERP/CRM)
ActivityInfo	✓	✓	✓	✓	✓	✓	✓
Aidsbits	✓	✓	✓	✓	✓ ✗	✓	✓
Akvo	✓	✓	✗	✗	✓ ✗	✓ ✗	✓
Apricot	✓	✓	✓	✓	✓	✓	✓
Assyst							✗
Kwantu BetterData	✓	✓	✓	✓	✗	✓	✓
Development Gateway	✓	✗	✓	✓	✓	✓	✓
DevResults	✓	✓	✓	✓	✓	✓	✓
DHIS	✓	✓	✓	✓	✓	✓	✓
Kimetrica (ki-projects)	✓	✓	✓	✓	✓	✓	✓
mFieldWork	✓	✓	✓	✓	✓	✓	✓
Microsoft Dynamics CRM							✗
Newdea	✓	✗	✓	✓	✓	✓	✓
Premise							✗
Prome	✓	✗	✓	✗	✗	✓	✓
Salesforce							✗
Sharepoint				✓		✗	✗
Sigmah		✗		✓	✓	✓	✓
Synergy Indicata	✓	✓	✓	✓	✓	✓	✓
TaroWorks	✗			✗	✗	✓	
Vera Solutions							
WebMo		✗		✓		✓	✓
Workfront, previously AtTask	✓	✓	✓	✓	✓	✓	✓

Software comparison

The requirement for re-usable templates led to a preference for open source software that would not be locked down by a vendor. We also looked for software that followed good practices as demonstrated by a transparent roadmap and frequent updates.

Open source was not an absolute requirement in the case of platforms that SNV already had committed to (such as SharePoint).

Open source and ability to share templates

Used successfully by large international nonprofits

Ability to be configured without software developers

Large community of developers (to prevent vendor lock-in)

Frequent revisions of the software (to prevent obsolescence)

Posted development roadmap

	Additional features					
Software	Open source	Frequently updated (at least twice a year)	Large community of developers	Posted roadmap	Used successfully by at least three large iNGOs over multiple countries and projects	Can be configured and revised mostly without a software developer
ActivityInfo	✓	✓	✓	✓	✓	✓
Aidsbits	✗	✓	✗	✗	✓	
Akvo	✓	✓	✓	✓	✓	✓
Apricot	✗	✓	✗	✓ ✗	✗	✓
Assyst					✗	
Kwantu BetterData	✓ ✗	✓	✓	✓	✓	✓
Development Gateway	✗	✗	✗	✓	✓	✗
DevResults	✗				✓	
DHIS	✓	✓	✓	✓	✓	✓
Kimetrica (ki-projects)	✗	✓	✗	✓	✓	✓
mFieldWork	✗	✓	✗	✗	✓	✓
Microsoft Dynamics CRM						
Newdea	✗	✓	✗	✓	✓	✗
Premise	✗					
Prome	✓		✗	✓	✗	✗
Salesforce	✗	✓	✓		✓	
Sharepoint	✗	✓				
Sigmah	✓	✗	✓	✗	✓	✓
Synergy Indicata	✗	✓	✗		✓	✓
TaroWorks						
Vera Solutions	✗				✓	
WebMo	✗	✓			✗	✗
Workfront, previously AtTask	✓	✓	✗	✓	✓	✓

The experience of nonprofits: Implementing M&E systems

Summary of comments from nonprofits on M&E implementations

Organization-wide M&E implementations are extremely difficult and the time and costs are underestimated

It takes a minimum of 18 months for organization-wide implementation

No software is ideal, all of them are buggy, and all of them require compromises

There is a direct trade-off between flexibility (ability to customize) and ease of use

Mobile data collection is essential for adequate data quality

Implementations require M&E skills as well as skills in rolling out technical processes

Difficulty of M&E implementation

Organization-wide M&E systems are comparable to Enterprise Resource Planning (ERP) implementations. In some ways they are more difficult because of the lack of common vocabulary in M&E. Major points:

- ❑ For a full organizational M&E implementation, count on a minimum of 18 months and many frustrations.
- ❑ Full implementations should be championed by a member of executive/leadership team.
- ❑ Much of the development time would be essentially the same for any software tool. Defining well-designed indicators, aggregation categories, data validation rules, data entry forms and reports are essential and time-consuming tasks.
- ❑ Nonprofits are struggling with trade-offs between flexibility, the ability to aggregate data across projects, and ease of use.
- ❑ There is a growing interest in sharing templates and indicators among nonprofits to decrease the costs of M&E implementations.
- ❑ M&E implementations require staff or consultants with technical skills in designing good indicators.

Selecting software

- ❑ M&E requirements are so complex that no single software program can meet all of them.
- ❑ Every software program will require workarounds and compromises unless you are willing to invest large amounts of money on custom development.
- ❑ If you want customization, ensure your software has a well-defined roadmap and the ability to negotiate with the developer or hire your own developers.
- ❑ You cannot have both flexibility and ease of use in an enterprise data management tool. Small differences in wording create massive headaches at an enterprise level if you are trying to aggregate data.
- ❑ Mobile data collection tools are essential for improving data quality but you can combine two software programs for that.
- ❑ Look for the ability to aggregate data in different ways to meet needs of funders & global office.
- ❑ To reduce complexity, consider adjusting your processes around the software's capabilities rather than customizing the software. See if you can accept off-the-shelf functionality.

It's not entirely about the software

All software programs have serious trade-offs. No nonprofit and no vendor claimed that M&E software implementation was simple.

We incorporated the learnings from nonprofit interviews into the software analysis in the next section.

M&E software can be divided into four categories:

Multifunctional enterprise software platforms like Salesforce, Microsoft CRM, SAP ByDesign, and other CRMS and ERPs. These solutions require extensive customization for M&E implementations and are typically very costly to develop.

Applications built on enterprise software, such as TaroWorks for SalesForce. The applications take advantage of the power of the underlying platform and simplify implementation, but add costs over the base licensing fees and require a significant amount of customization.

Full-featured M&E software programs like DevResults, NewDea and District Health Information Software, which try to cover all the major M&E functions. They vary in their usability and flexibility.

Limited-function M&E software programs that can integrate with others to build a full system, such as mobile data collection tools like Akvo FLOW, KoboToolbox and CommCare HQ. They tend to be more user-friendly for the data collection phases at the expense of formal data management.

All of them have been used successfully in some organizations, and have failed in others (as defined by being over budget, over schedule, or not providing the expected functionality).

Typically there is a trade-off between flexibility and ease of use. Software that is quick and easy to configure has less capability in terms of monitoring and evaluation functions.

Even the most expensive software requires a large staff investment from organizations to define outcomes, indicators and data models. As one informant stated, "90% of our work would have been exactly the same if we had chosen another software program".

M&E implementation tips from experts

Some of these tips are from the research literature (see selected references below) and other are from experienced consultants and project managers of M&E implementations.

Invite (don't force) teams to participate in pilots of monitoring and evaluation tools, and select projects that can tolerate ambiguity and the frustrations that are part of early adoption. Pilots should be championed by critical and knowledgeable project managers.

Focus on user needs. For example, who is actually using the information? When do they need it, and how do they want to report it? Include corporate users (like business development) as well as the project managers.

What are the minimum reports necessary to achieve user objectives? You don't need to solve everything at once. Aim for quick wins and build excitement across the organization by delivering products that work.

Decide how important it is to aggregate high quality information across the organization. If it's important, be aware that the complexity and cost of the implementation is far greater than if you tolerate variations at the local level.

Look for indicators of successful roll-out – are the M&E tools spreading by word of mouth? Are projects clamouring to join the pilots? If not, consider redesigning your approach to make M&E more user-driven.

[This may be controversial] Software experts warned that fixed price contracts are dangerous – nonprofit clients tend to expect unrealistic achievements for a fixed budget, and it is important to be transparent about scope and costs as the project progresses.

Be willing to work with less-than-perfect datasets. The research literature on DHIS implementations* suggest that it is unwise to clean up all of the existing information sources in a system before launching DHIS. Live with uneven data quality for a while, and clean it gradually. After a few years the old, inaccurate data will be archived.

*https://scholar.google.ca/scholar?hl=en&as_sdt=0,5&q=DHIS2 and http://www.mn.uio.no/ifi/english/research/networks/hisp/Research%20Library/Recent%20Publications and http://www.mn.uio.no/ifi/english/research/networks/hisp/Research%20Library/phd-thesis-list.html

Major monitoring and evaluation functions

We identified 8 functions that evaluation systems must provide in order to be effective.

Monitoring and Evaluation activities should support 8 functions at a reasonable cost:

1. Develop theories of change and indicators for each project: Create Theories of Change and evaluation frameworks for proposals, and then revise them once funding is confirmed.

2. Collect data: Collect data required by each funder with an adequate level of quality (which varies by funder) and with minimum duplication.

3. Manage data: Import, store, combine, aggregate and export data as needed by project managers and other power users.

4. Report information: Create attractive reports that can be customized for each funder and project.

5. Keep projects on track: Track activities, milestones and finances compared to targets and flag issues in time for them to be addressed.

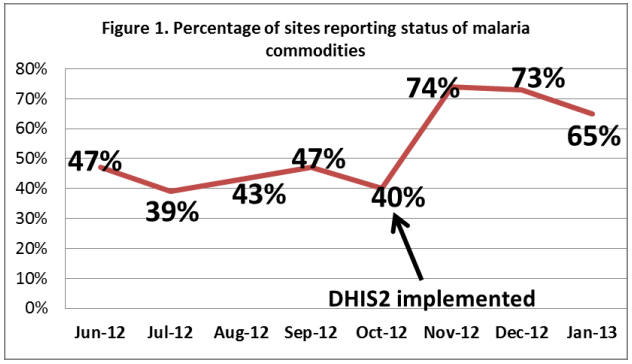
6. Contribute to better programs: Provide information that the agency can use to improve its impact and promote learning and knowledge development.

7. Contribute to fundraising: Communicate about the impact that the agency has, and how it is responding to needs.

8. Build local capacity: Use evaluation processes to strengthen the capacity of local service providers to collect and use information that helps them improve. Or at least, do no harm – don't ask them to participate in poor data practices that might damage their reputation with other partners and funders.

DHIS case studies

Managing malaria in Kenya



Reporting rate for malaria commodities across all health facilities in Kenya, June 2012-January 2013.

To improve malaria reporting in Kenya, the Ministry of Health in 2010 approved the use of DHIS2 to report on malaria commodities at the sub-national level.*

With support from USAID, Kenya's Malaria Control Unit transitioned its reporting system to DHIS2 in October 2012. **Use of DHIS2 improved reporting rates from about 45 percent to 70 percent in the months after its implementation** (see figure to the left).

Kenya is now working with 13 county governments to promote reporting through DHIS2 for family planning, HIV, nutrition, and laboratory commodities.

The Health Information Systems unit of the Ministry of Health and staff from the HIV, TB, malaria, reproductive health and family programs participated in a conference on the impact of DHIS2, facilitated by USAID and Ministry staff.

Participants heard how an effective health information solution contributed to Kenya's standing with The Global Fund to Fight AIDS, Tuberculosis and Malaria going from a C to an A2 rating: Using DHIS2 made it possible and easy for the country to track the reporting and non-reporting health facilities. Through better tracking of commodities with DHIS2, donor confidence in the malaria program was restored and additional funding was secured.

Effective health information systems leads to better health systems

Effective health information solutions like DHIS2 can help improve accountability across the health system. Scale up of DHIS2 can further strengthen the management and use of health commodities and improve the use of data for decision making at all levels of the health system.

* This page is excerpted and paraphrased from https://www.msh.org/news-events/stories/managing-data-with-dhis2-improving-health-commodities-reporting-and-decision

Logical Outcomes

Use of technology in Ebola response in West Africa

DHIS is one of the key technology platforms used to manage Ebola and HIV/AIDS.

It has been nationally implemented in at least 13 African countries, and in the process of adoption in 50 countries worldwide.

KEY MESSAGES

1. The severity of the Ebola epidemic and limited information on new cases and geographic spread calls for the rapid deployment of information and communication technology (ICT) tools, including eHealth and mHealth, to **optimize the response**.

2. A number of technology tools have **already been used** in the response and others are in development. Open-source platforms such as DHIS2, Open Data Kit, Enketo, RapidPro, iHRIS, and the DCP form the technology suite known as mHero. In Liberia, this suite is emerging as a set of tools endorsed by many actors in the response and **builds on existing government ehealth systems**. Numerous other platforms are in use by nongovernmental organizations (NGOs) and other mhealth practitioners.

3. **Integration, harmonization, and accessibility of ICT infrastructure** by public, private, and civil society actors is critical to the response to the Ebola humanitarian crisis, as well as the long-term economic development and security of the region.

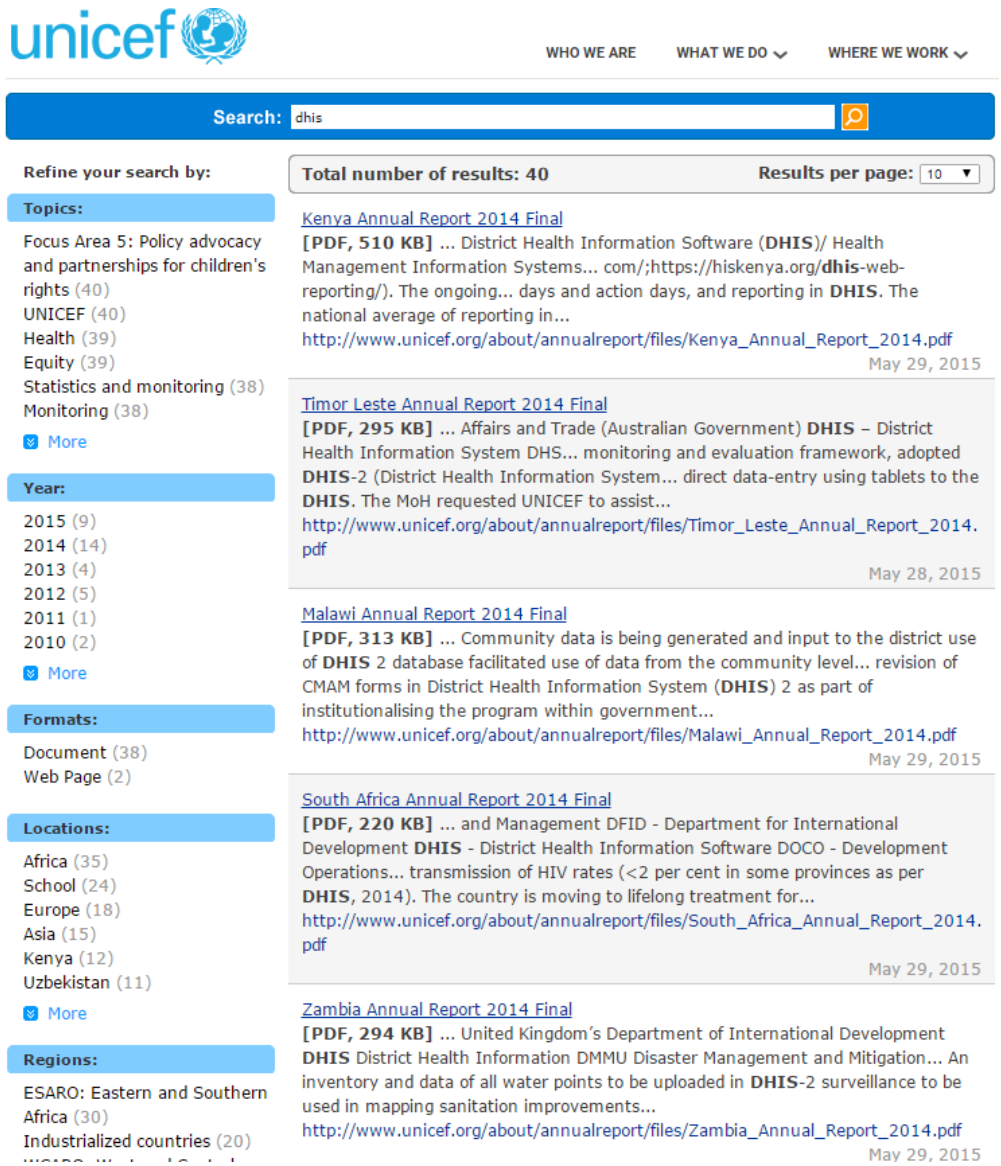
4. **Better coordination** is needed in the deployment of technologies to avoid duplication of efforts and data fragmentation. Coordinating the tech component of the response should be integrated in the overall National Ebola Outbreak Response Plan of the affected countries and in the preparedness plans of non-affected countries.

5. Whenever possible, governments and partners should seek to **use and endorse proven platforms** and tools before developing new ones to ensure interoperability. New tools are unproven and will lead to further lack of coordination and data fragmentation.

Excerpted from https://www.msh.org/resources/use-of-technology-in-the-ebola-response-in-west-africa

Unicef

Many of Unicef's projects rely on DHIS.

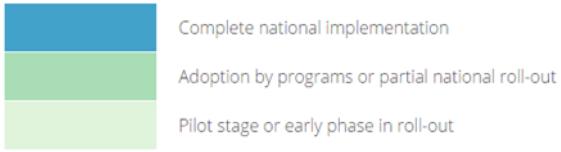


From http://www.unicef.org/search/search.php?q_en=dhis&go.x=0&go.y=0

National implementations of DHIS

DHIS is being used or in the process of adoption by over 50 countries so far. Here is a somewhat out-of-date list.

Key:



The University of Oslo's DHIS program trains doctoral students in health management. A search of Google Scholar of DHIS2 shows over 400 research articles on implementation and health system management.

From https://www.dhis2.org/deployments
Also see https://scholar.google.ca/scholar?q=dhis2&btnG=&hl=en&as_sdt=0%2C5

The Global Fund

The Global Fund (www.theglobalfund.org) is an international partnership that provides funds to accelerate the end of AIDS, tuberculosis and malaria. It raises and invests nearly $4 billion US/year to support local programs.

It is a heavy user of data standards, and promotes the use of DHIS to track health status. In fact, it funds DHIS implementations as part of its 'Health Systems Strengthening' initiative, and most of its national partners use DHIS to collect and report on health data. In November 2014, Global Fund reported that:

"Strengthened country data systems are crucial to making robust plans and measuring and evaluating impact. Data needed for results reporting and impact assessments require country-based data systems and structures ⋯ Of the high impact countries, 17 out of 23 are using DHIS 2 as a reporting platform, with funding from grants going to support rollout and training."*

The entire web site provides a model for good funding practices and resources. They use indicators that have been defined within DHIS, including PEPFAR's, and show examples of how to build in workplan deliverables and milestones.

From http://www.theglobalfund.org/documents/fundingmodel/progressupdate/FundingModel_2014-12-Progress_Update_en/

Data linked to national data systems.

Dynamic and verified results instead of static results.

Click and zoom on public interfaces of national data systems

The Global Fund
To Fight AIDS, Tuberculosis and Malaria

Home | About | Partners | Grant Portfolio | Media Center | Library | Blog

Map | Search | Downloads | Data Site

Benin

Grant Portfolio | Choose location | Benin | List of Grants (11) | Choose grant

All | HIV/AIDS | Tuberculosis | Malaria

Key Results

PEOPLE CURRENTLY ON ART
26,000

NEW SMEAR-POSITIVE TB CASES DETECTED AND [illegible]ATED
14,600

NETS DISTRIBUTED (ITNS & LLINS)
3,300,000

Grants Overview

NUMBER OF ACTIVE GRANTS
7

Active Grants by Component

HIV/AIDS	TUBERCULOSIS	MALARIA
3	1	3

Financial Information

Income Level

Low income

Fund Portfolio Manager

Ronald, Tran Ba Huy

Contacts for Benin

Country Coordinating Mechanism

Principal Recipient

Local Fund Agent

Related Content and Documents

[1] Round 1

Proposal Form (R01 - HIV/AIDS) (PDF 558 KB)

Proposal Form (R01 - Malaria) (PDF 1 MB)

Proposal Form (R01 - Malaria) fr (PDF 775 KB)

About LogicalOutcomes

Logical Outcomes

LogicalOutcomes is a federally incorporated nonprofit, based in Toronto, Canada.

We provide evaluation and consulting to support collective impact.

We work in virtual teams, with consultants from around the world.

We provide shared measurement and evaluation tools to help nonprofits and funders get better at evaluating and funding programs.

- By creating, implementing and sharing tools and approaches that lead to social change
- By promoting open access principles among funders and nonprofits
- By constantly evaluating and improving what we do

We offer a menu of evaluation and measurement tools:

- Logic modelling and research on effective program models
- Definition of valid indicators for shared measurement
- A widely used open source Information System (DHIS) that can collect, analyze and report on service data

Collective impact' goes beyond the individual client or project.

Our processes are aimed at improving how policies and organizations work, at broader system levels affecting wide scale social change.

Every project is a way to build, improve or test tools that we can re-use and share with other nonprofits (within the limits of client confidentiality).

The DHIS Team

LogicalOutcomes has an international network of analysts and contractors.

We work with Canadian and international analysts, software developers, writers and evaluators.

For DHIS implementations, we work with HISP India, one of the international hubs for DHIS development, and are developing a relationship with Blue Square, an African- and Belgium-based nonprofit specializing in the use of DHIS in Performance-Based Funding.

Our DHIS hosting uses Amazon servers managed by Knowarth, an Amazon AWS partner that manages cloud infrastructure for large enterprises. Our hosting service includes SSL encryption, monthly patching and testing, backups and 24 hour emergency support.

In addition, we have a long-term relationship with SolutionAnalysts, a technology firm that develops web applications, mobile apps and complex enterprise systems. They have designed, developed, built and maintained more than 350 solutions.

The DHIS Network

The University of Oslo, the NonProfit Organizations Knowledge Initiative (NPOKI), Metrics for Management, Population Services International (PSI) and many other nonprofits are building a community of practice to support one another create shared measurement systems for nonprofits across the world.

LogicalOutcomes will help agencies tap into the network for advice and support as well as engaging in the community ourselves.

Data security

Our single biggest concern is protecting the privacy and confidentiality of information on vulnerable community members. We offer three levels of security to clients, and can add additional protections on request.

Level One -- Our standard security process follows the consulting industry's norm. We use Office 365 project sites, Skype, email and other collaboration tools to manage our projects. All contractors sign confidentiality agreements and are required to observe our privacy policy.

Level Two -- For higher security projects we offer data encryption in the cloud as well as on contractors' computers. We provide Office365 accounts for project team members, and extra training on security. We will randomly audit projects for compliance with security procedures.

Level Three – For confidential data on vulnerable individuals (including service users) we comply with PIPEDA standards and go through an annual audit by a security firm.

Our DHIS data is fully encrypted and is hosted following good security practices. It is protected from warrants and subpoenas by foreign governments.

Project management and costing

Our project tools

We use free software tools to run our projects, customized to make us more efficient. They include:

OneNote Notebooks, designed as self-contained 'projects in a box'. OneNote is extraordinarily effective if it is set up properly.

Office365 groups to encourage collaboration and reduce reliance on emails.

Zotero for literature reviews.

DHIS to track deliverables, to produce monthly status reports, and to prototype evaluation systems.

nCrypted Cloud to protect confidential personal information on laptops and to share it securely with team members.

Project Management Processes

Project budgets are based on an estimate of effort for each phase. We bill only $10/hour over what we actually pay our consultants, with a $45/hour minimum. For fixed price contracts we price our projects to cover our costs with little left over for unexpected expenses.

With overheads so low, we need to control project scope carefully so that we don't go over budget. We use formal project management processes, working closely with our clients to keep on track. We use agile methodologies to deliver products in short modules (generally at 6 to 8 week intervals) to ensure that we are creating useful tools that meet the project's goals.

Projects have clearly defined roles and responsibilities for quality, cost, schedule and stakeholder relationships.

Fixed Price or Cost Plus Budgets

Clients can choose whether they prefer a fixed price contract or a 'cost plus' contract:

Fixed price: we make our best estimate for the hours that will be required for the project, and will not charge for additional time if we go over budget.

Cost plus: we will charge for the hours we work. Some clients like the flexibility to assign us to new or changing tasks as the project progresses, or train internal staff to replace our team members (things that cannot be budgeted ahead of time.)

In either case we work closely with the client to ensure that objectives are met within the resources that are available. In both cases the clients may terminate the contract with two weeks' notice for any reason.