People Driven Technology Solution: A Uganda Example

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Abstract

A major problem besetting sub Sahara Africa is the non-availability of information of the exact problem being faced by the people in rural areas. There have been serious efforts both by the government (local/international) and international donor agencies to tackle these problems head on by providing infrastructure development, affordable health care delivery and education of the populace.

Despite all these efforts, little has been achieved in terms of impact of such initiatives on the populace. These failures can be attributed to the paucity of information about the actual needs of the people, the ineffective or misappropriation of resources due to corruption and inadequate monitoring of developmental projects.

This paper seeks to aggregate disparate data from different sources and present it in a way that makes it possible for projects to be monitored. It will also allow for decision making by government and non-governmental organizations to be easy. The data is presented in a map showing efforts of each body on a regional level and even to the district level. This means feedback can be gotten from the people directly affected. This way, efforts can be directed to the exact area(s) they have identified. The performance of each project can also be evaluated while forensic analysis can be carried out on any seemingly failing project.

Introduction

Project monitoring and evaluation has always been a major source of worry to governments and their development partners in Africa. Geraldine Fraser-Moleketi (2001) [6] identified the following as some of the challenges faced in project monitoring and evaluation in developing countries.

- Poor demand for M & E information and lack of ownership by decision makers and senior public managers of the idea and system.
- Shortage of related skills, including evaluation, accounting and auditing skills.
- Poor quality of financial and other performance information, and weak to non-existence accounting auditing standards and systems.
- A chasm between mechanisms for evaluation feedback and the actual decision-making process.
- Compromised sustainability, largely owing to insufficient resource commitment.

Most times decisions are taken without due consideration for needs and desire of the people that the project will actually impart.

The twenty first century has seen increase in the use of technology across the world. This has seen many of the third world countries citizens having access to cell phones. The advantage of getting data through the use of mobile phones is presented and these data are analyzed for the use of an application to have overview and detailed representation of such collated data.

According to Michael Ediau (March, 2012) [6], The monitoring and evaluation of system for HIV/AIDS projects in ChildFund Uganda was weak and needed strengthening. It is not an overstatement to say this is usually the case for developmental projects in Africa and by extension all developing countries.

Most often than not wrong diagnoses are implied from the problem being faced by people in rural areas. E.g. a village might have a working water borehole (a borehole is a narrow shaft bored in the ground, either vertically or horizontally. A borehole may be constructed for many different purposes, including the extraction of water or other liquid) and be in a need of a primary health care. Providing such a community with another borehole will not solve their immediate needs. The importance of providing the right or appropriate solutions cannot be over-emphasized.

Another case in point is when there is a school in a community but the school lacks quality-teaching staff. Building another school can never be the solution to poor students' results in such community. Therefore, appropriate feedback is needed from the pupils as to what are the reasons for their failure. The overall impact of such a targeted approach to providing such a targeted solution is enormous.

Discussion

The project considers a lot of input from important stakeholders. The major input from these stakeholders are what exact information they are interested in.

Various stakeholders were identified. Some of the stakeholders are District Administrative Officers (DAO), Sector Leads, Non Governmental Organizations (NGOs) and donor agencies. Efforts were made to get what information is important to these stakeholders.

The DAOs need to know the various organizations working in any given area, the money being spent by each organization and contacts address of key personnel. Their needs also include quick statistics about the district performance, quick and accurate community feedback regarding the implemented facilities and systems.

The sector leads would like to know the locations of facilities (Distribution through visual representation i.e. maps), Functionality of the facilities (Identification of gaps), identification of priority areas to aid Decision Support Systems, quick mobilization of organizations working in which sectors, quick analyses (Counts, Averages, Distribution, and Density etc.

Most of the NGOs agreed that locations of interventions, list of other NGOs working in the same sector and district profiles and quick sector statistics are of importance to them.

They also want to be able to mobilize and coordinate their activities with other NGOs and district partners.

Finally, donor agencies major concerns are distribution of interventions against identified gaps, impact of the projects in the district or region and value-for-money reports at a glance (photographic, community stories/testimonies, etc.).

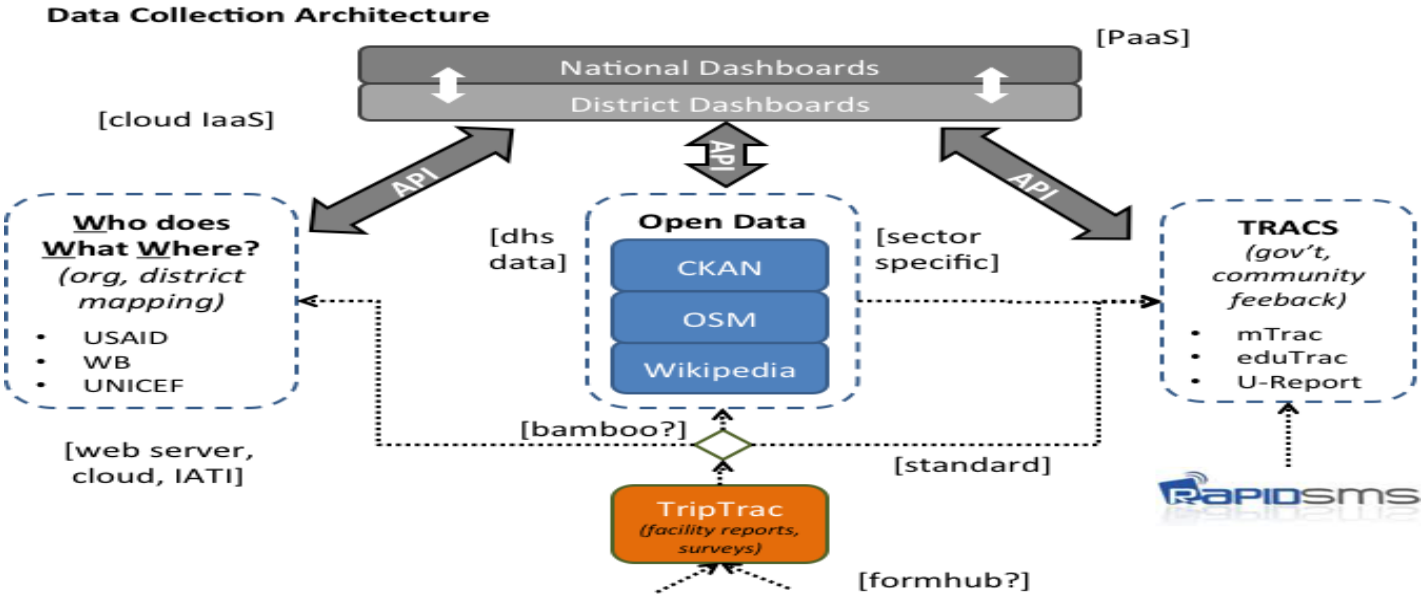
The implementation team consolidated all these needs in a way that will benefit everybody.

Key sources of data were identified. The sources are devinfo.org [1], data.ug [2], mTrac [3], and Ureport [4] All indicator data are available on devinfo.org and being organized for easy access by data.ug.

The Site reports, Organizations and Activities (projects) are made available from www.devtrac.ug whose development work is licensed under a Creative Commons Attribution-ShareAlike 3.0 Unported License.

We also make use of angularjs framework [10] for frontend design. The reasons for using angularjs framework are it makes the design of a single page application easy, loading of the web page loading is quite fast and also because it caches data, it makes data querying easy and fast.

Agile methodologies [11] were employed in developing the application, which means new features were added on a weekly basis. The application was being deployed to production server after completion of each feature. This method of adding new features per week or predefined period is called continuous delivery. Work was completed after three months of development work by software developers.



Results

There are indicators as shown in Fig 1.4, which identified the categories the captured projects belong. The three indicators are school indicators, health indicators and water points, which identified water, related projects. Selecting any of the indicators will display projects under such heading. The projects are colored on the map according to the color of the indicator. Any combination of the indicators can be selected.

Projects can also be filtered. Users can filter projects by funding agency, the sectors the project belongs or status of implementation of such projects. Year of project execution can also be used to filter projects.

Heat map selection is also important part. Once a question is selected, the various answers are displayed on the map. The variations of color show the relativity of the answers. For example, clicking on the question what are the "barriers to farming" [fig 1.6] will display answers ranging from climate, lack of capital, and lack of land to poor farming methods. The answers shown provide insights as to which area is affected most by each of the answers.

Project site visits made by various organization or their representatives are also visible. Clicking on the respective site visit link will reveal the details of the site visits.

The following figures show the different the project distribution by area. The colors represent each organization for those projects.

The project also allows for heat map to be shown according to the criterion for search. For example, the Fig 1.5 Heat map shows percentage of children starting school at six. A careful look at the map will reveal that the gradient of color blue differs for each area on the map. The area with deeper blue colour means that such areas have more positive result compared to the lighter blue areas.

This difference will enable decision makers to have good feedbacks on their efforts. In case there is need or desire to cite projects, this will allow for quality decision-making as it is clear visually on who needs what.

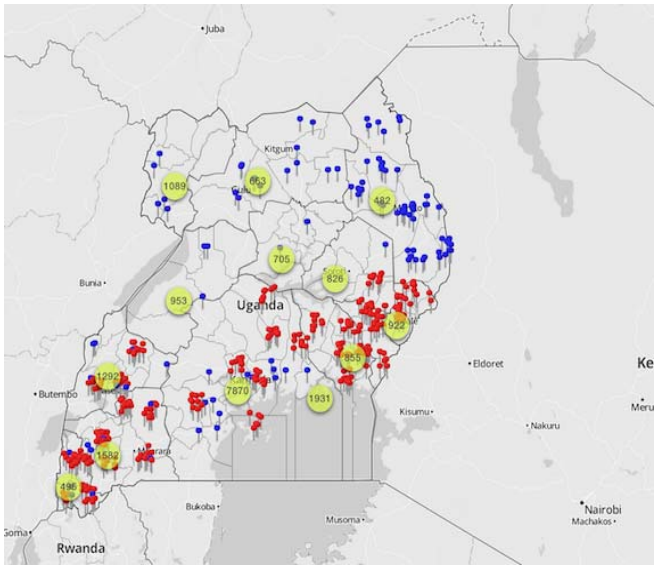


Fig 1.1 Map showing project distribution [10]

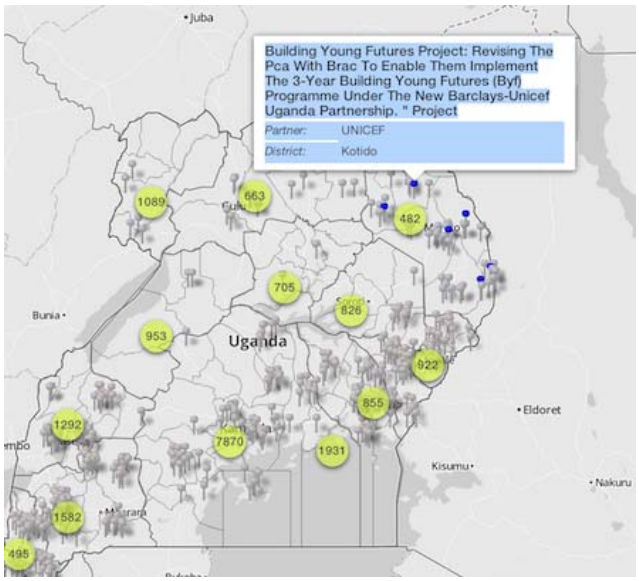


Fig 1.2 Mouse over project showing more details about the project [10]

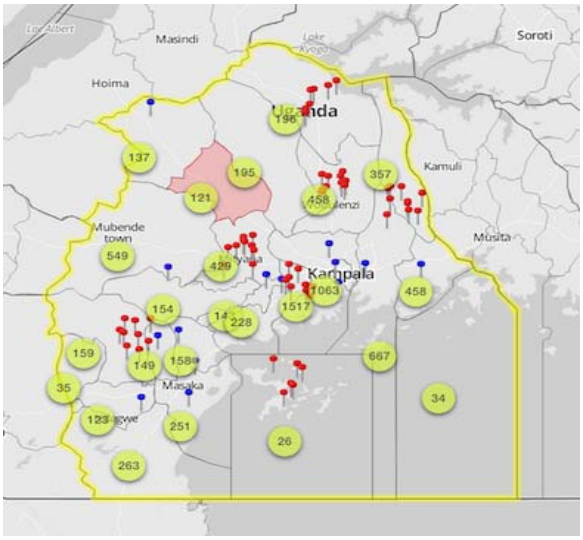


Fig 1.3 Highlighting specific area in the map showing projects [10]

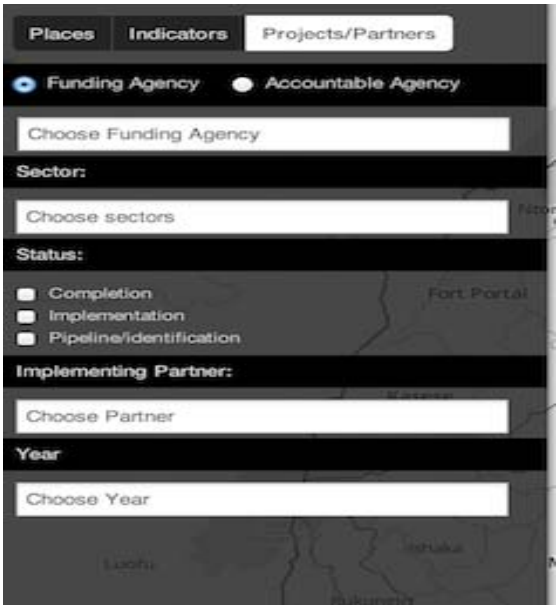


Fig 1.4 Filters for projects [10]

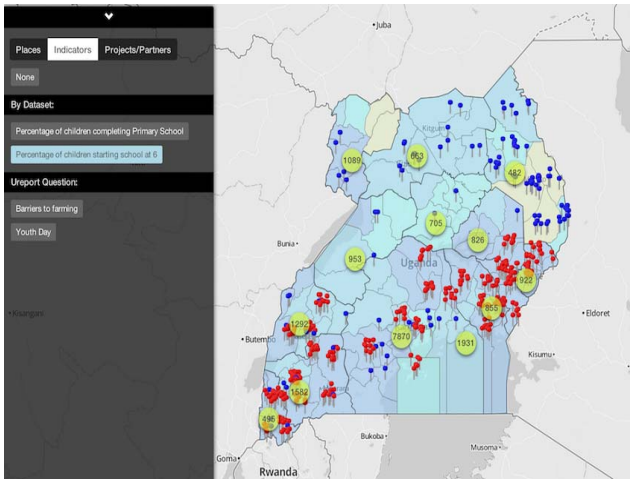


Fig 1.5 Heat map showing percentage of children starting school at six [10]

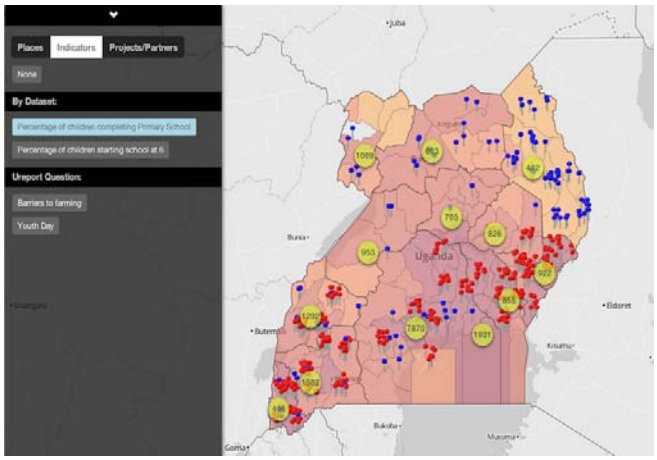


Fig 1.6 Heat map showing percentage of children completing primary education [10]

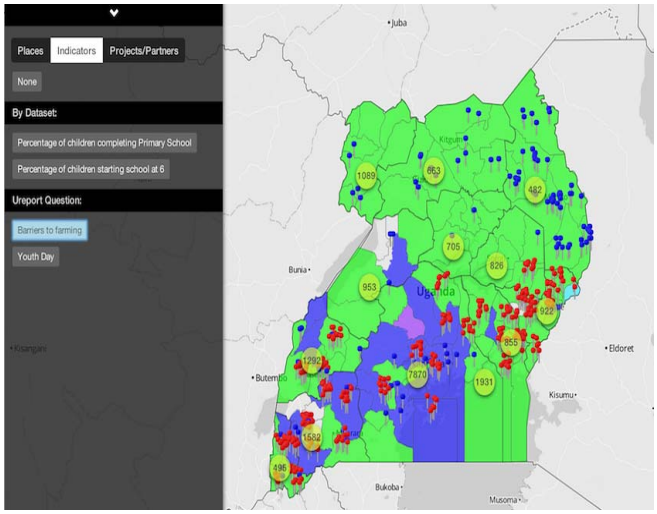


Fig 1.7 Heat map showing barriers to farming [10]

Conclusion

It is our belief that this application will make decision-making on citing of developmental projects in Uganda easy and well informed. Also, Tracking and measure of impact of investment can be done quite easily and readily.

This will not only reduce the misapplication of scarce resources but targeted populace will be given opportunity to determine what projects are sited in their area.

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