SUPPORT INFORMATION SYSTEMS, A TOOL WHICH ENHANCE LEARNING AND MONITORING

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Introduction

A Support Information System (SIS) has been created in order to monitor water and sanitation (WatSan) programs and improve their efficiency. SIS is based on a database system where relevant data of the program can be easily stored and processed through user-friendly interfaces. Definition of the information to be introduced in the database shall be done according to the needs of the profesionals working directly on the project and to the data needed to observe the evolution of the program indicators, as those defining the Logical Framework. As long as the information is georeferenced, information can be automatically displayed on a Geographical Information System (GIS), and therefore its spatial evolution can be easily analyzed. Graphical representation facilitates the analysis and allows for a better response on real time while the programme is being implemented. The use of SIS enables for hindsight research, helping to improve efficiency and, therefore program extension/replication.
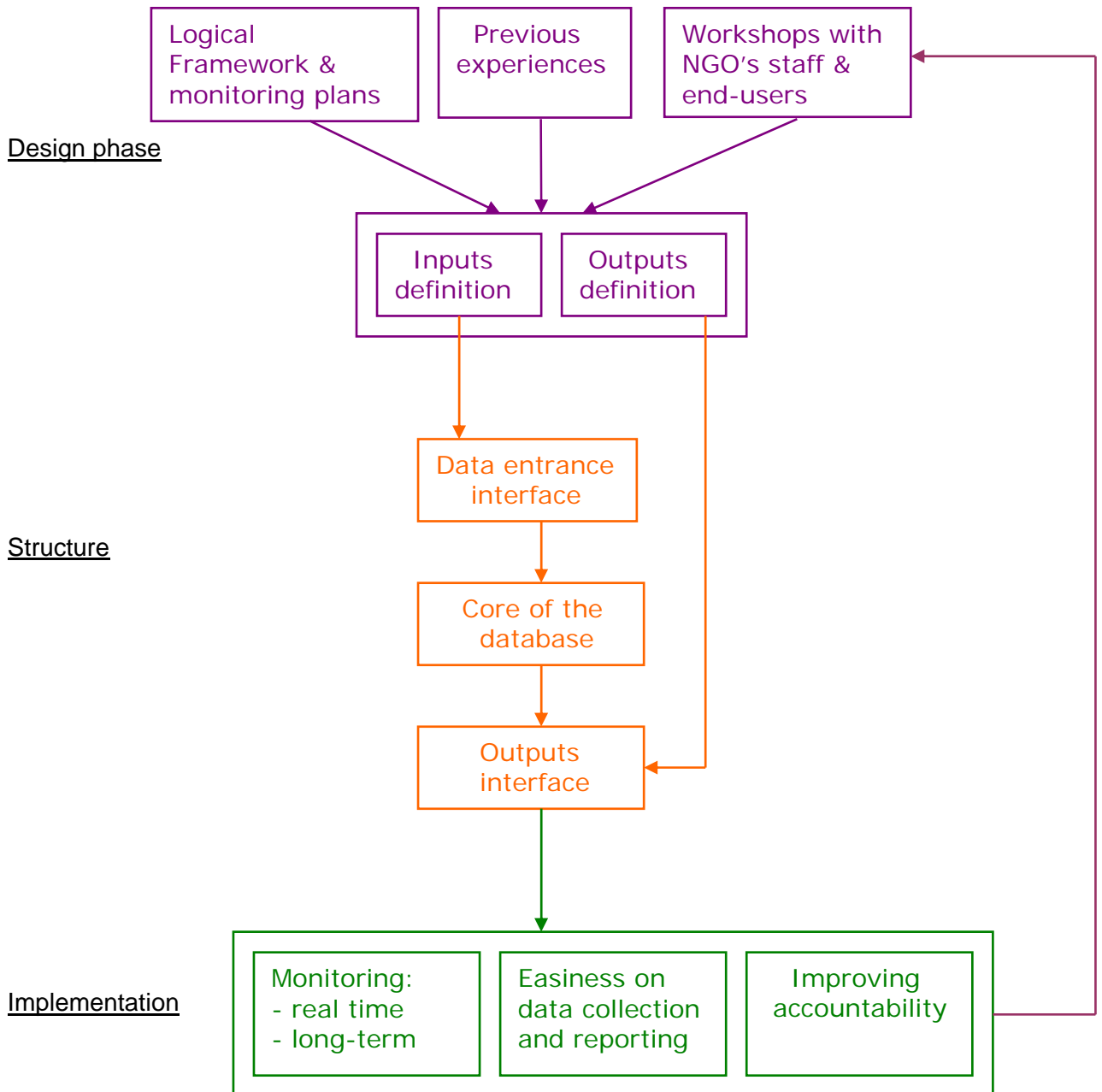
Targets

The present paper exposes a case study about the definition an implementation of a Support Information System to monitor NGO's water and sanitation programs. This was possible through the collaboration between the Universitat Politècnica de Catalunya (UPC) and the NGO Ingeniería Sin Fronteras-Asociación para el Desarrollo.

The software has been designed, developed and implemented on the framework of two European '*Water Facility*' projects (both under the 9th EDF), in the districts of Kigoma and Same, Tanzania.

Causal diagram

Design phase of SIS is the first step to be fulfilled. Inputs and outputs of SIS are defined from the set of indicators related with program, specific workshops with

stakeholders' staff and other end-users, and lessons learnt from previous experiences. Structure of the database follows from design phase. Implementation of SIS allows for retro-feeding design phase.

Design phase

| Logical Framework & monitoring plans | Previous experiences | Workshops with NGO's staff & end-users |

| Inputs definition | Outputs definition |

Structure

Data entrance interface

Core of the database

Outputs interface

Implementation

| Monitoring: - real time - long-term | Easiness on data collection and reporting | Improving accountability |

Statement

Need of monitoring

Accountability and efficiency are relevant aspects in any development programme, and although their concept is clear, how to achieve them still remains an elusive goal. Moreover, the presence of information gaps on such programmes is a common situation which hinders the options on strategy evaluation whenever proceedings are needed to be revised. Hence the development of a tool which solves those aspects is

considered as an improvement on the monitoring, which may enhance management decision-making. As Bond (1999) states, participation, learning and flexibility are the three key elements required to define the relationship between beneficiaries and management. .

As it has been defined elsewhere (UE, Project Management cycle Guidelines 2004), "monitoring involves the collection, analysis, communication and use of information about the project's progress. Monitoring systems and procedures should provide the mechanism by which relevant information is provided to the right people at the right time to help them make informed decisions. Monitoring should highlight strengths and weaknesses in project implementation and enable responsible personnel to deal with problems, improve performance, build on successes and adapt to changing circumstances. Monitoring should focus on collecting and analysing information on:

- Physical progress (input provision, activities undertaken and results delivered) and the quality of process (i.e. stakeholder participation and local capacity building);

- Financial progress (budget and expenditure)

- The preliminary response by target groups to project activities (i.e use of services or facilities and changes in knowledge, attitudes or practices

- Reasons for any unexpected or adverse response by target groups, and what remedial action can be taken".

Water and sanitation programmes often take several years to be properly implemented if their sustainability is pretended to be guaranteed, and this often entails a high rotation of the staff within the NGO committed to the programm's implementation. Furthermore, these programmes rely on community participation and therefore a large number of stakeholders is required. All these aspects amplify the need of a SIS for monitoring.

On the other hand, aiming to study the developpment of programmes and its success, researchers do have a need of data on the implementation performance, so that the effects of the different strategies can be compared later on and so a learning-by-doing process can be easily improved. It is in such contexts where co-operation between development stakeholders and researchers can be benefitial on both parts.

The Spanish NGO Ingeniería sin Fronteras - Asociación para el Desarrollo has been implementing WatSan programmes in different rural districts of Tanzania since late nineties, fostering sustained access to water, proper sanitation and campaigns of hygiene promotion. Since 2006 this NGO has been working with the European Commission (the latter as the main donor) under the *ACP-EU Water Facility 9th EDF*

program. This kind of programmes require a significant amount of money and long program implementation phases, and both aspects have entailed the NGO to implement an appropriate monitoring information system as an efficient tool to improve the management of its programmes. The goal is to easily access to relevant information while enhancing the capacity to control all different stages within the programm.

Design phase

The design of a SIS requires first the definition of the relevant data needed to monitor the programm. This can be done on different ways, but the process must be obviously mainly lead by end-users.

To give a good start, studying the Logical Framework Approach (LFA) which portrays the program may be useful. Such an oportuinty on program monitoring may not forget the indicators there defined. Through an extensive revision of the information needed to follow up of the indicators exposed on the LFA, procedures of introduction of the data needed as also mechanisms which may allow its easy representation have been designed. This process has undertaken three fied visits of a total duration of two months and a half per SIS. Also four more months of work per SIS, what it makes a total amount of six and a haf months.

As the NGO had already been working on similar programmes in Tanzania, its prior knowledge was of great worth. Therefore a comprehensive analysis of these previous programmes was done, examining not only the type of data which had been monitored but also the way it had been collected: which stakeholders were responsible of its collection and how often this took place, which were the recognized main gaps on needed information, etc.

But probably the most powerful way on defining it is with the professionals who are going to use it, in order to also integrate on the tool information which is regularly used by them, or data which they recognized as crucial. This can be done through workshops or interviews with them, which may be done not only before the tool is implemented but also after they have started its use, though then much more ideas on aspects which could be monitored will come up.

Table 1: Main inputs and outputs of SIS for the monitoring, specifying what type of monitoring do they undertake (either an objective, a result or an activity).

	INPUT	OUTPUT	Monitoring on

Health	Data from dispensaries	Reduction of morbidity on water related illnesses	Objective
Sanitation	Latrines demand	Latrines in good working condition and sanitation improvements	Objective
	Latrines construction		
	Baseline/closeline on latrines		
Water system construction	Water quality analysis	Water system working properly within Tanzanian standards	Objective
	Incidents on the operation of the system		
	Census		
	Technical aspects of the water supply system	Water system quality	Result
	Attendance to the works	Participation of the villages in the system	Activity
Operation and Maintenance	Check list on the system maintenance	Maintenance done on a proper way	Result
	Accountancy of the Water Users Entities	Existance and management of the Water Users Entities	Objective
	Legalization of the Water Users Entities		
Hygiene Promotion	Baseline/closeline on hygienic habits	Improvements on hygienic habits	Objective
	Attendance to the PHAST sessions	Rate of population trained	Activity
	Number of sessions done		
Chid to Child	Number of children in Child to Child curricula	Rate of coverage of the Child to Child trainings	Result
	Child to Child activities on schools	Training of the children and improvement at school level	Activity
	School reports on Child to Child		
Capacity building	Type of trainings	Trainings curricula accomplishement	Activity
	Trainings attendance		
Decision making	Women and vulnerable attendance in meetings	Equity on decision making	Objective
	Assessement on women and vulnerable's participation		

Structure

The final version of the SIS has three different parts: a core, a data entrance interface and an analysis interface.

The first one is the database itself together with the macros needed to operate de SIS. This has been developed with Microsof Access. The database consists in a partially connected and unconnected structure of data. This is due to the non-networked environments that the NGO is using.

The second component has also been developed with Microsof Access, since it is friendly to use and has a comprehensive user's help, both features aimed in order to facilitate capacity building of staff and end-users.

Lastly, the analysis interface includes some applications specifically designed to analyze and exploit information kept on the database through a systematic way. At the same time, not only the information needed but also the indicators required to monitor the performance of the programm have both been defined considering the

requirements and inputs established by the staff working in the field, taking benefit of their experience.

This interface has been developed with three different parts: Extracting information on a geographic basis (using gvSIG, a GIS open software, see Gilabert and Polo, 2008); Drawing graphics about the evolution of different processes (using Microsoft Excel, which allows an easy manipulation of the data for further analysis by staff and end-users; And finally, extracting tables and lists using Microsof Access .
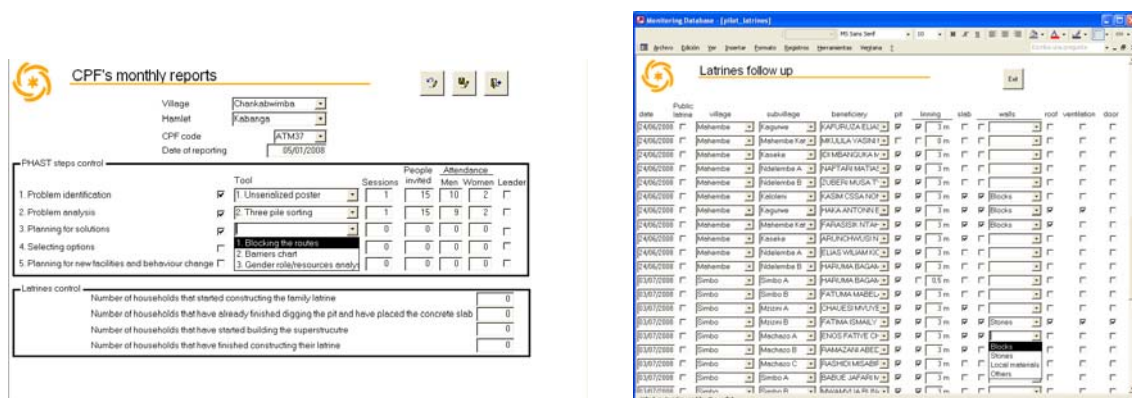

fig 1: Information entrance interfaces. At left regarding to the Hygiene Promotion sessions done. At right, latrines construction follow up.

Using the SIS

The use of the SIS entails some opportunities and new habits: the most important is the real time monitoring that it allows, meanwhile activities are being programmed. Commonly evaluations on programmes' implementation are done usually at the end of them (sometimes also on their mid-term) and also sometimes a further analysis is made when a problem clearly arises. A proper monitoring is hardly being displayed. This tool makes easier this monitoring, and allows the problem detection from the beginning, when maybe the situation can already be corrected before it really erupts.

Furtherore, it allows a long term analysis (on a program time-scale), while an ex-post analysis of the performance can be made, and therefore some aspects can be improved whenever an activity is aimed to be replicated, enhancing its efficency. All the data there introduced may not only be used by the NGO, but also by researchers that may help on a deeper analysis.

Examples of the usefulness of such monitoring tool range from the analysis of the spatial performance of PHAST (Participatory Hygiene and Sanitation Transformation, Wood, 1998?) promotores, the relationship between the physical location of the family and its hygiene and sanitary habits, the different levels of participation of the beneficiaries in relation to the implementation of the program where they live, or which

neigbourhoods are getting off track on the sanitation improvements. At the same time, more standard anlysis can be made, such as relationship among the tribe of origin, the income and the incorporation of new higyene habits, since data from social census are also included.

But something that must be considered is that its implementation requires two different aspects. First of all, a proper trainnig on its use is needed, both, in operating the database and the GIS software. This carries a bit of time, but success is guaranteed, moreover considering that both softwares are growing on importance. Moreover, filling up of the database has to be seen as a day-to-day task, though at the beginning results displayed will seem poor, and can cause a sort of disappointment due to the initial time spent on the trainning and the first results. This can be overcomed through the inclusion of results on reports, which may *force* its use and show how databse outputs are improving its usefulness.
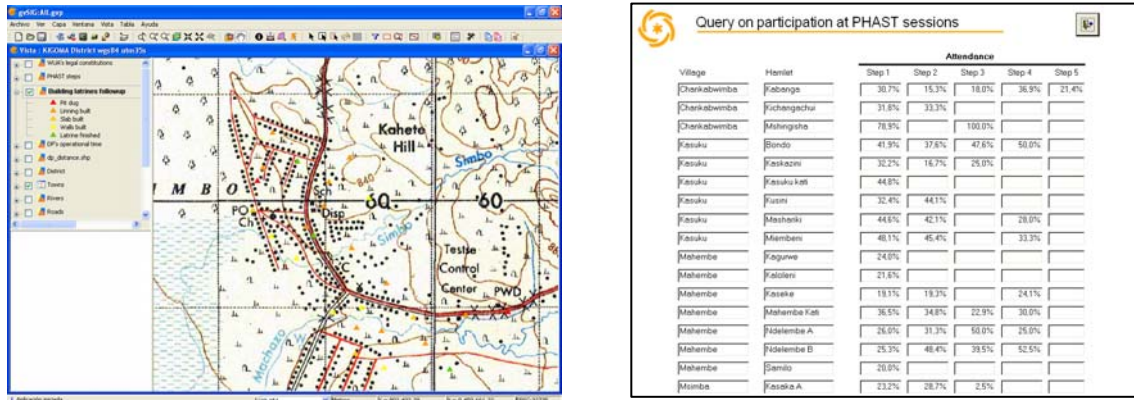

fig 2. Data outputs of the syste. At left, information on latrines construction dispayed on a Geographic Information System. At right percentage of attendance to the Hygiene Prootion sessions dispayed on Access.

Results

After some months on using the tool, the users appreciate its use. The most repeated aspects on the evaluation were improvements on the easiness on accessing information which is considered important, and the simplification find out on data collection.

As previosuly explained, some useful information needed on the work in the field on a day-to-day basis can be displayed, as for example the attendance that beneficiaries have on different activities or the performance they are having on the monetary contributions to the program. This data, which had to be treated each time before, is now being treated automatically by the SIS.

Also having the forms already displayed, helps the personnel to be concise on the data required, simplifying its collection, being it fix and already known. So the process has been stablished as a routine, which also is beneficial though now information is always being collected on an orderly way, and kept all together.

Another remarkable aspect is the modification of the target beneficiary of the SIS. At the beginning of its development, it was seen more as a reporting tool which would be more useful to the headquarters, but as implementation has gone further, it has been seen as a useful tool for everybody (on interviews done to the professionals using it everyday, they all think that the tool is useful for them, meanwhile not all of them seem to appreciate its use for the headquarters).

But already some aspects of the SIS can be improved. One of them is its proper adaptation to the required parameters that national policies ask for attending to the monitoring plans for the water and sanitation projects. Meanwhile the needs of the NGO seem to have been covered, some aspects which are regarded on the policies should be also included such as more information or building new output systems as reports on the way policies define them. Once this has been done, there would be the possibility to adapt such a tool for the different projects that governments and local authorities do, which could be also useful for any civil service, paying special attention to the accountability.

Also some processes of the spatial information collection should be rethinked, though some gaps on this aspect are shown. The problem on this is that there is not much updated geographic information of those zones, and to take it all by the NGO themselves is a great effort which is not easy to be done. At this point, collaboration between the NGO and the University has been undertaken, which represented a step forward, but some information collection should either or be introduced in the routine of the NGO (which sometimes has alreay been done) or rethinked. An added problem to this is also that some information can not be collected due to legal problems, such as the borders of the villages and subvillages, because this information is not clear at country level and arises problems among the population.

As it can be seen, a support after the implementation is needed in order to improve the SIS, so that it can be day after day a more powerful tool.

Conclusions

The paper presents and analyzes a SIS proposal for WatSan programs. It has been developed and implemented for monitoring two medium-scale programs in Tanzania

(between 0.5 and 1 milion euros/year and 7.000 to 10.000 watter-supply beneficiaries/year). Both programs have as a main contribution the Water Facility grant.

The design and implementation of the monitoring tool has been successfully done in a one-year time, including training of filed and headquarters staff. Half a year before finishing first version its use is starting to succeed. Continuous analysis of reporting processes have been useful to adapt and simplify some aspects of the SIS during this period. Its easiness on data introduction and its multiple interfaces on visualizing the outputs seem to be its strong points.

Therefore, and to sum up, although improvements shall be studied, firt version of SIS has shown to be very useful. It does not only collect in a systematic way all the information produced, but also facilitates its analysis, even on spatial representations. These aspects foster the revision of the performance achieved by the main activities, which enable to take decisions on the spot. .

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