MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

FOR DISCUSSION

COMMUNITY ACCOUNTANCY

ABOUT DATA AND DATAFLOWS

Peter Burgess (2008)

Background Note

The following was prepared in 2008. This paper was written while a book length analysis of development assistance was being prepared, and the focus is largely on the systemic failure of this segment of the global socio-economic system.

Subsequently it has become clear that there are also major systemic issues in other segments of the global society and economy.

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Community Accountancy

PUTTING ACCOUNTANCY TO WORK FOR ALL OF SOCIETY
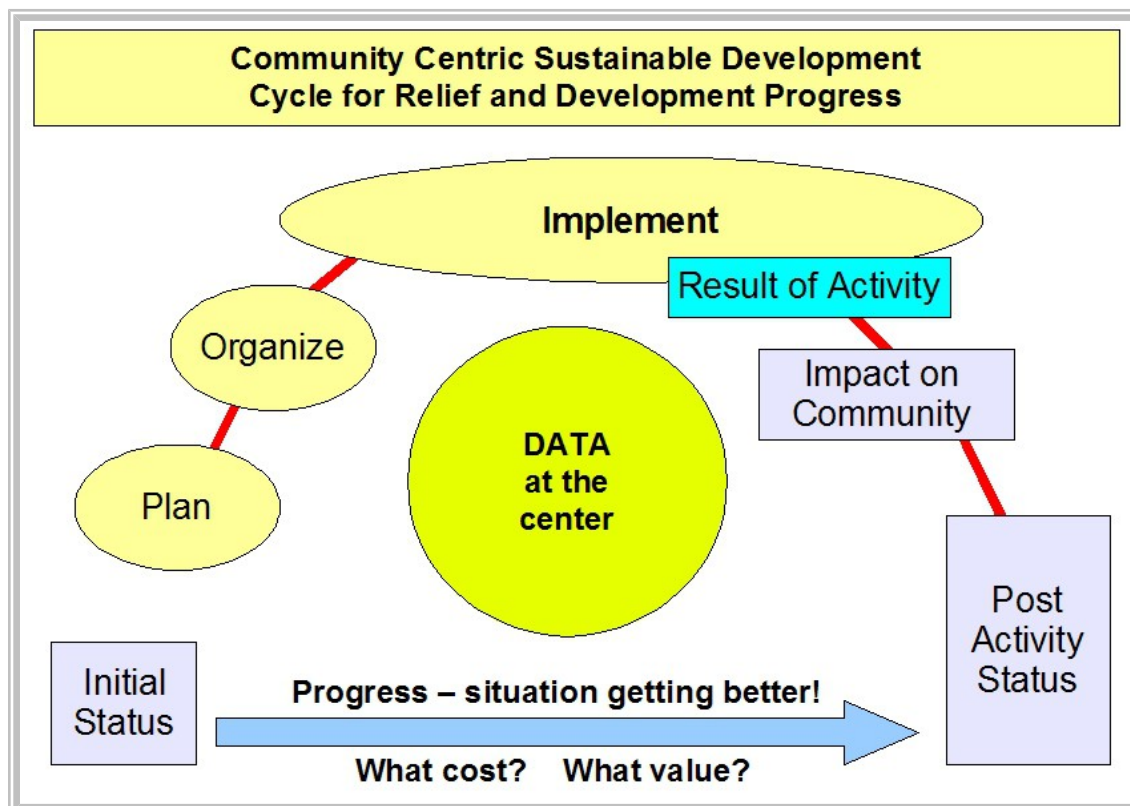
ABOUT DATA AND DATAFLOWS

FOR DISCUSSION ONLY
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COMMUNITY ACCOUNTANCY … DATA

Data at the center

Data are critical to decision making ... and the management process. The following graphic puts data at the center where it may be used for planning, for organizing, for implementation and then the measurement of the activity and its impact on the community. Overall, data may show the change from pre implementation to post implementation and address the question of how much progress there was, and how much it had cost.

Data needs to be at the center in order to be most effectively used. At one time data at the center had the potential to be a serious constraint with the key operating entities starved of what they need to know, but that should not happen in a modern information system.

The same facts should be used for everything ... and the data should be representative of facts. There might be different levels of detail ... but the essential underlying facts are the same.

And it might be advantageous to have different levels of detail so that it is easier to make decisions ... but again the underlying facts are the same.

Data accessible where needed

The critical aspect of access is that the data should be accessible where needed, and on a basis that is in time and on time.

Millennium Village Project

Columbia University's Earth Institute has launched an initiative to reduce poverty called the Millennium Villages Project (MVP). While this embraces seven development ideas ... (1) fertilizer ad seeds to improve food yield; (2) anti-malarial bed nets; (3) improved water sources; (4) diversification from staples into cash crops; a school feeding program; deworming for all; and, (7) new technology introduction (energy saving stoves and mobile phones) ... it does not appear to embrace the data and management concepts of Tr-Ac-Net's Community Accountancy.

It is not easy to evaluate MVP performance and learn anything from it because, though they are reported to have collected a vast amount of data, none of the data are accessible to the public ... to independent researchers and analysts. Rather, what is accessible to the public is a tiny amount of public relations oriented material and a growing body of academic literature that is characterized more by lateness than by immediate relevance.

While this may appear to be success when looked at from the University and academic perspective, this may well be total failure from the perspective of cost effective high performance socio-economic development. Using the basic concepts of Community Accountancy all the indications are that the MVP is a lot of money not doing very much.

CHARACTERISTICS OF GOOD DATA

Data neutrality

Good accountancy is neutral. A good accountant does look for an answer to support a hypothesis, but rather merely presents the data so that the answer is clear. The nearest an accountant gets to an opinion is to decide what data might be important.

Community Accountancy has to be neutral ... and the data have to be neutral. The data are merely facts about a transaction ... usually an economic transaction or a situation, a movement in time, of something that results from an economic transaction.. The data are a representation of a fact, and not an opinion or any form of judgment. Six feet is the depth of the water at a specific place at a specific time ... it is a fact, and this datapoint does not tell anything about whether six feet is a good situation or a bad situation.

Data are a record of reality

Data need to be neutral ... but data also need to be a record of reality. This is not always easy.

Accountancy has always operated with simple data that are easy to understand and clearly reflect the facts of the transaction. In most accountancy the reality of a transaction can be recorded by describing what it is, when, where, how many, unit value (cost of price) and total value of the transaction.

But data about facts that do not have the properties of economic transaction may be recorded in a similar manner ... weather is a good example. Rainfall, temperature, humidity, wind speed, wind direction are a set of facts that are interesting ... data can be collected and put in the community record. These data need to be identified with time, place and the person responsible for making the record. These data may help explain some of the successes and failures of the community.

Maybe these weather data will show something about health in the community ... is malaria increased when there is more rainfall ... or not. Does the direction of the wind make a difference? But in order to do this analysis there has to be neutral data about the health situation. Maybe data about cases reported at the community health clinic is a starting pint for data about the health situation.

Performance proxies

Data are efficient when they provide the foundation for understanding and when the cost is low. Techniques should always be adopted that facilitate understanding and keep costs low. The specific approach will depend on the metric ... for example, the prevalence of the malaria parasite may be monitored using just a few sentinal sites ... and the work done may be further reduced by monitoring weather and only doing testing when temperature and rainfall indicate that potential conditions for malaria parasite transmission are present.

On time … in time … but not real time

Time is very important.

Good organizations organize their data collection so that the data are in time and on time.

In contrast the typical inefficient organization rarely have data in time and on time ... rather they engage with data about performance as late as possible when it is going to have the least impact on the prevailing modus operandi.

Low cost … reliable … clear

Good data should not cost a lot ... they should be reliable, that is they should reflect the underlying facts ... and they should be clear. Simple data often tell a lot more than complex data because of the clarity, something that accountancy has been concerned about since the advent of financial reporting.

Neutral data ... important information

Six feet of water may be an important piece of data. If six feet of water is a flood, there are a lot of socio-economic consequences. There are also questions about responsibility and accountability.

If the flood depth is caused by failed levies ... and these levies were weak because of inappropriate allocation of money and poor construction, there is a situation where economic transactions produced a result and impact that has huge money cost to many members of the public.

Community Accountancy aims to provide this sort of accountability ... not merely as as an ad-hoc story as reported by journalists ... but as a system that intrudes into society to provide accountability.

TYPES OF DATA

There are several different types of data ... and a good system will work on each type of data in the most appropriate manner. One way to characterize data is into the following (1) permanent data; (2) transaction data; and (3) summary data.

Permanent data

Some data change very slowly, and the update for these data can be infrequent. The methods used for updating may also be low cost and simple without causing inefficiencies. These data are permanent data ... they can be put into the record once, and rarely change.

> **Okehampton ... little changed over 900 plus years**
>
> My childhood home was in Okehampton, Devon ... in the Southwest of England. It was a small market town with a population of around 4,000 and on the road through central Devonshire to Cornwall.
>
> When William the Conqueror had the Domesday Book prepared in the years just after 1066 ... Okehampton was in the same strategic location and a castle was built to fortify the Norman frontier. The castle is in ruins ... but the physical geography remains the same, 900 plus years later.

Though there is a huge amount of data ... surprisingly little is organized to inform about the status and progress of communities. In many cases these data are very slow to change ... life is not much different in many communities than it was years ago ... generations ago ... centuries ago.

The first challenge of Community Accountancy is to put some of the permanent data on the record for as many communities as possible.

Transaction data

Some data are fast moving. These data need to be put on the record in a very different manner in order to be of much value. Statistical techniques may be helpful ... but in many situations accounting methods may be more powerful than statistical methods.

> **How big is the fishing fleet? What is the fishing effort?**
>
> These data were meant to be compiled for me prior to my arrival to do a fisheries resource management study. But the researchers failed totally to get any meaningful data because they were trying to figure out how to "sample" a fishing fleet and its operations and then use statistical calculations to get some results.
>
> To get data about the fishing fleet ... a better way was to use the Fisheries Department data on fishing boat registrations ... a permanent record of all fishing boat registrations ever ... and then sample this to do physical validation of the data and confirm something about the validity of the dataset.
>
> To get data about fishing effort ... it was possible to classify the fishing fleet into different types of vessel, learn something about each type of fishing and then get data about how much of the fleet was operating every day. These data gave a very good measure of the fishing effort not only for the fishing fleet as a whole, but for the various fish catches.
>
> An approach that was driven by an analytical accounting mindset yielded more information rather than less ... had more accuracy than statistical method would have had ... was done in less time and with far less cost.

But typically in accountancy all transaction data are put into the record ... and only one operation is done on these data, that of putting the data into accumulators ... accounts ... and adding them up.

For Community Accountancy, this is problematic, at any rate at an acceptable cost. How, therefore can Community Accountancy handle transaction data at an acceptable affordable cost.

The primary use of transaction data are to "add the data" so that there is a useful summary ... for example the total of a specific type of transaction over a period of time.

Another use of data is to help in the understanding of behavior ... how do costs behave as situations change. While this may not be known at an academic or senior level, it is common for these critical pieces of information to be understood by operating staff.

And accountancy also has a structure so that the aggregate impact of transactions is to change a balance sheet.

The challenge is to put these various elements together so that there is a cost effective understanding of the situation in a community and the way in which the transactions in the community are impacting the community.

Summary data

One of the ways in which accountancy makes for efficiency is that the summary data are simple to prepare and easy to understand. Simply put, accounting reports are no more complicated for a very large operating entity as for a small one ... a rather small number of accounts are used ... but while the number of transactions recorded in the account may go up ... there is only one total for the period no matter how many transactions.

Accounts are nothing more than a summary of transactions prepared in a common organized manner ... anything more, and the reports cannot be said to be a true and fair representation of the activities of the organization. Transactions are the source material for preparing summary data ... for the preparation of accounts and financial reports.

The only operation that accountants want to see done on transaction data is the simple operation of adding ... no statistics ... nothing sophisticated.

No matter how big an organization ... summaries are simple
Part of the genius of accountancy is that no matter how big the organization the summaries are simple. While any analysis that is based on transactions will scale based on the volume of transactions ... which may constrain performance and be expensive ... accounting summaries may be analyzed very effectively and very simply. This is a powerful tool in corporate accountancy, but unusual up to now in the international relief and development industry.

The data of an accounting system

The data of an accounting system are especially powerful because they are part of a system that has an inherent coherence. The system is founded on accountancy's double entry principles with every transaction embracing the idea of "debit" and "credit" ... and the main approach to summarization organized around the idea of "balance sheet accounts" and "operating statement" accounts.

This translates into a lot of very powerful techniques for the management and control of resources, and for routines like incomplete records to be used to fill in gaps that would otherwise remain ignored. Sadly, statistics without an appreciation of accounting's double entry genius is produces results that seem to be of rather little practical use.

Debit and credit

Balance sheet accounts

Operating statement accounts

Derived data

A powerful technique that emerges because of the structure of accounting is the use of "incomplete records and standards" to derive data that would otherwise be very difficult or impossible to obtain at a reasonable cost.

In business accounting it is possible to prepare a full set of financial statements from incomplete records ... knowledge of the balance sheet accounts makes it possible to deduce some of the key facts about the operating statement, including the most critical fact, the profit for the period. Many elements of the operating statement may be deduced from records that exist, but are not formally included in the (missing) accounts. For example ... data about payroll may be obtained by looking at the payroll record, even where there is no posting to the accounting records ... data about some costs can be obtained by reference to cheques and bank records ... a lot of the blanks can be filled in.

But the critical control in incomplete records is that the change in the balance sheet is the same as the operating profit (surplus or deficit). Incomplete records is the key technique that makes it possible for Community Accountancy to be valuable a long time before it is complete ... in fact cost effective Community Accountancy is unlikely to ever be complete ... but is likely to be very valuable very quickly, especially when rapid analysis is done of data that seems to suggest an issue is arising and there is a disconnect between resources deployed and results being achieved.

Standards are a way for accountancy to simplify the potentially complex area of costing. In Community Accountancy standards are central to an understanding of cost performance ... but they are also used to help understand impact and the value adding in the community.

DATA COLLECTION

Mobilizing existing data

There is a huge amount of data that has been collected over the years ... but almost all is dramatically underutilized. In fact, in the relief and development industry, a very large proportion of the funds have been used for surveys and data collection, with rather little spent on doing what was most needed ... helping to fund practical activities.

Sixteen studies of the health sector

Why would anyone want to have sixteen studies of the health sector ... but this was the outcome when Namibia made health a priority for its first development plan after independence and sixteen difference donors made doing a health sector needs assessment study a pre-condition to funding anything else.

If there was no data, that would be one thing ... but three major studies had been prepared within the previous 12 months ... by Germany, by the UN system and by Namibian professionals ... all of which were available and clear about what needed to be funded.

Data collection and surveys are popular with donors because they are also popular with international consultants and NGOs. But sadly, these expenditures add to cost without doing very much for results.

After a long time the stock of old data is huge ... and there is the potential to use these data as a starting point for better data about development. Mobilizing these data is a challenge ... and potentially very valuable. New data might well cost $20,000, yet similar existing data may well already exist, and could be retrieved for a small fraction of the cost of getting new data.

But while the cost argument appears strong, there is little effort evident indicating a movement to use of existing data. The reasons for this appear to be governmental concerns about sharing official data, and corporate and academic concerns about sharing intellectual property that might possible have the potential to be monetized for profit.

Data collection

In a corporate setting, data collection is done throughout the organization, and recorded in a systematic way. For Community Accountancy data collection has to be done throughout society, and also recorded in a systematic way. Data collection can be done by anyone and everyone.

If you know something, the Community Accountancy provides a way for this information to be used as a part of the body of data that are needed. This is addressed in the section o functional structure.

Getting control over the data

Accounting has value because the data are reliable. The data are reliable because they are organized and under control from very early on. Because of this they can be checked, and errors identified. I an accounting system all the data that are needed are recorded ... and registered.

Journals and Day Books

There is a reason why "journals" and "day books" are the basic books of original entry in old fashioned accountancy. Every transaction is written down every day. Regular precomputer accounting used day books and journals to record financial transactions and to start the process of accumulating the information. After compiling information in a daily record, the information was then "posted" to accounts where the data starts to have analytical meaning.

In a computerized world, storage is now electronic, but the concepts of organization do not change.

Data validation

Data validation is critical. If the data are valid and respected, the data have power. Data may be seen to be valid when the same view of facts appears using data from different sources. The functional structure described in this paper addresses the question of how different dataflows will provide confirming validation. Data validation takes place in many different ways. In a good system, it is almost impossible to fool the oversight team because the data are being looked at and validated from many different independent perspectives.

It will be very rare for the crooks to know all of the validations that are going on. Some of the validations include:
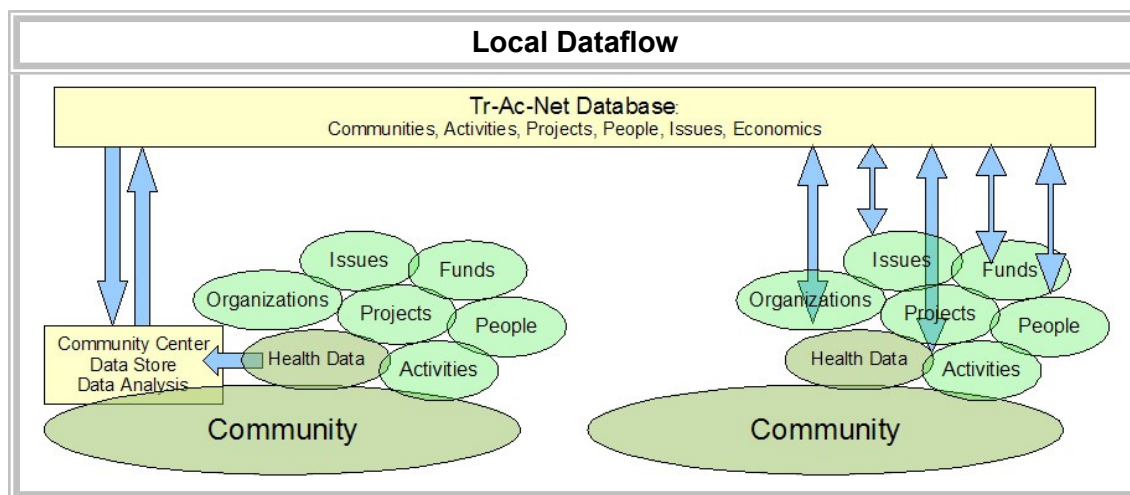
- Is this what was expected? If not, why not?
- How does this compare with the past?
- How does this compare with some other location?
- How does this compare with some other organization?
- How do cost compare with value realized?
- How do costs compare with budget?
- Etc.

These questions are part of and integral with the data collection piece of the system. Everything gets checked and controlled so that only good and valid data are used. In the Community Accountancy system there is a need to validate the information being reported as well. This is done by encouraging multiple data flows that verify the underlying facts being recorded.
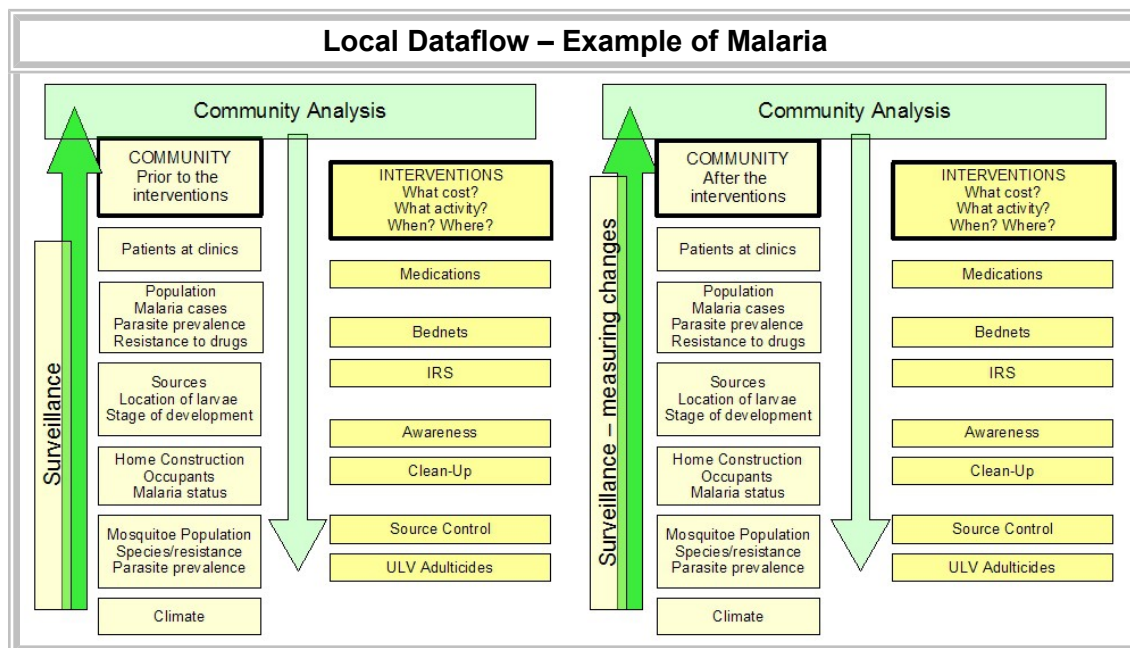
DATA FLOW – LOCAL

Progress is facilitated when there are data that describe the situation, what is being done, and what is being accomplished. The following graphic shows two approaches to collecting and handling data. In one case there is a local capacity for data store and data analysis ... in the other case the various data elements flow directly into a Tr-Ac-Net run web accessible database.

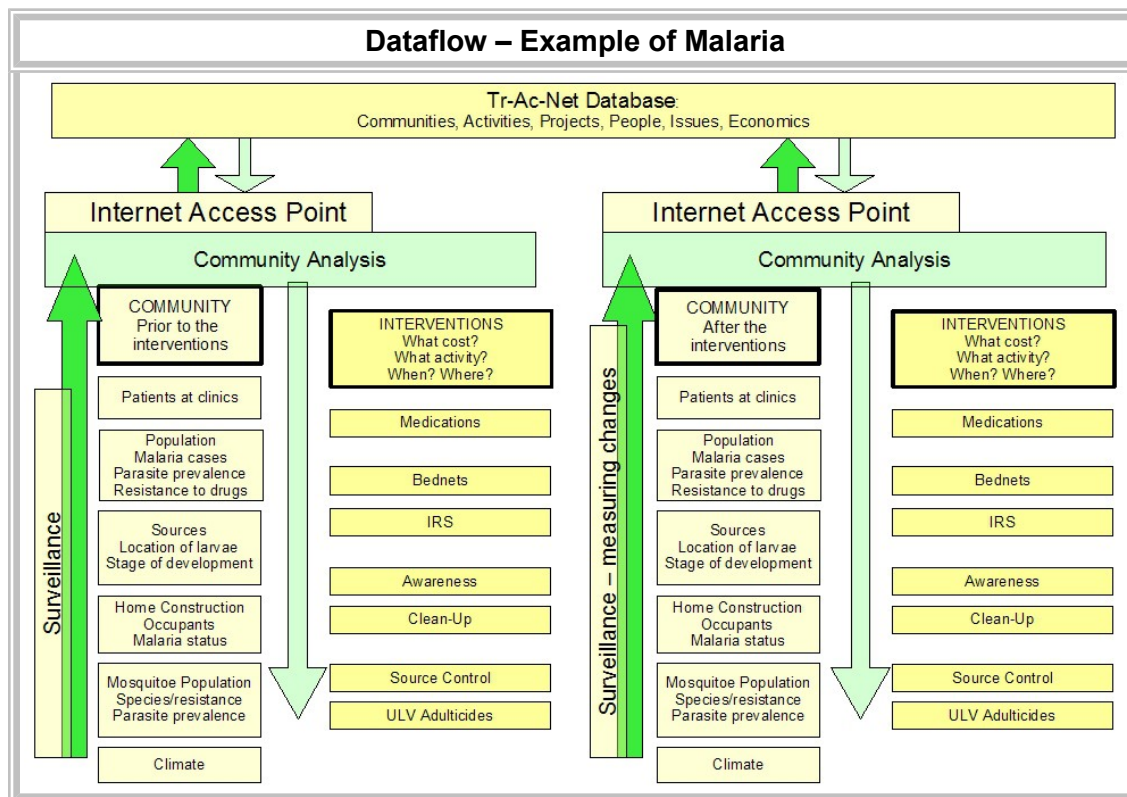In both cases, simple data are collected and used to build the data foundation for analysis.

The most important use of data is use locally to improve something that is local and important. The following is the example of malaria. A lot of data are collected and used locally to plan anti-malaria interventions. The data are updated ... and progress is measured. The process goes on for ever. In the following example local data are collected about malaria ... and local decisions are made about how to treat the malaria situation in the community based on these local data and local analysis.

The data used in the above example have local value ... but they also have additional value when they are included in a broader database. In a broader database, it becomes possible to compare a lot more

variables and to gain a better understanding of what interventions work best and what should be done to use resources most effectively. There is a need to go beyond merely knowing what was done and how much it cost to being able to know also what things should have cost and what results should have been achieved. This is a norm of good management practice in the corporate organization, but is not a part of the modus operandi of the relief and development sector organizations.

Dataflow – Example of Malaria

Tr-Ac-Net Database:
Communities, Activities, Projects, People, Issues, Economics

Internet Access Point

Community Analysis

COMMUNITY
Prior to the interventions

Patients at clinics

Population
Malaria cases
Parasite prevalence
Resistance to drugs

Sources
Location of larvae
Stage of development

Home Construction
Occupants
Malaria status

Mosquitoe Population
Species/resistance
Parasite prevalence

Climate

Surveillance

INTERVENTIONS
What cost?
What activity?
When? Where?

Medications

Bednets

IRS

Awareness

Clean-Up

Source Control

ULV Adulticides

Internet Access Point

Community Analysis

COMMUNITY
After the interventions

Patients at clinics

Population
Malaria cases
Parasite prevalence
Resistance to drugs

Sources
Location of larvae
Stage of development

Home Construction
Occupants
Malaria status

Mosquitoe Population
Species/resistance
Parasite prevalence

Climate

Surveillance – measuring changes

INTERVENTIONS
What cost?
What activity?
When? Where?

Medications

Bednets

IRS

Awareness

Clean-Up

Source Control

ULV Adulticides

DATA FLOW – GLOBAL

The following schematic shows how data originating in a community may be used many times: (1) for local community level analysis; (2) for cross community and cross country analysis using the Tr-Ac-Net database; (3) global analysis (as for example using the NCSA systems; and (4) a variety of research modalities at universities, in official organizations and in private centers.
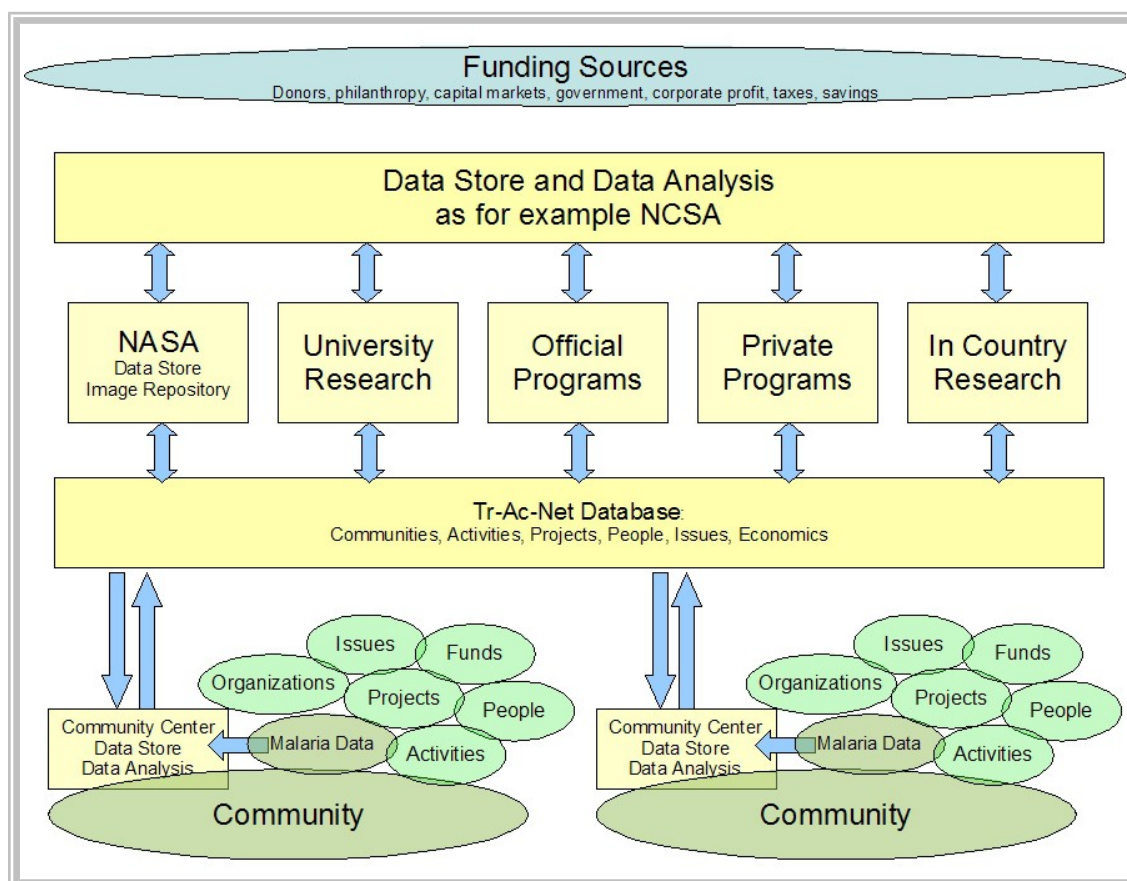
The fall back system is for a piece of paper to move from a source location to a central place. But this can also be done using electronic means, including a mobile phone, an Internet message, floppy disks and CDs.

The key to use of technology is to ensure that the costs are low relative to the value of the data.

Paper has been an effective way of recording and moving data, but modern electornic ways have the potential to to be many thousands times more cost effective.

The deployment of Community Accountancy requires the collaboration of many to facilitate cost effective reliable movements of data to the Community Accountancy datastore ... and central to this are organizations that have low cost access and use of the Internet.

This is a variant of these same dataflows highlighting the role of surveillance and data collection for all aspects of the process so that these date may be used for local, area, international and global analysis.

DATA STORE

DATA STORAGE – RELATIONAL DATABASE

For organizational accounting all the financial transactions are accumulates in accounts and the storage is usually in a relational database

For Community Accountancy, the financial and socio-economic transactions are accumulated in an organized manner like accounts and stored in relational database ... but not only numbers, but also non-numerical facts of importance.
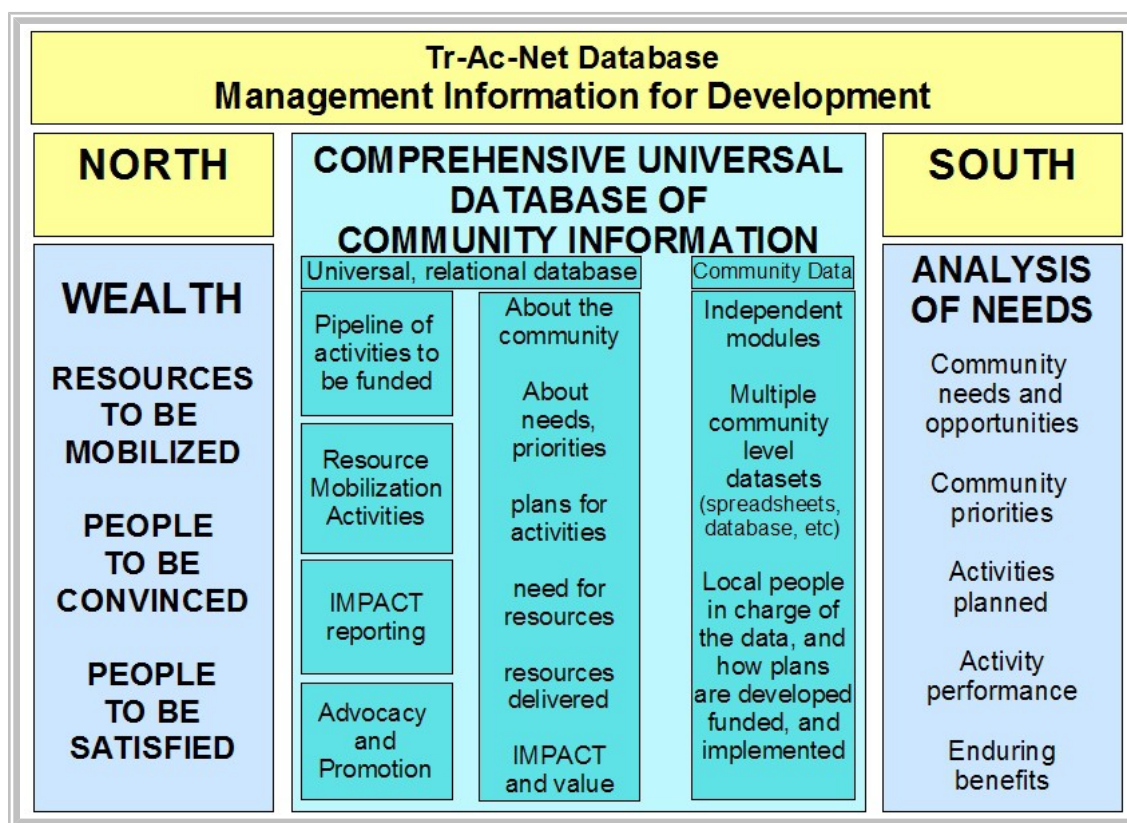
Management information for development ...

The first step is getting the data ...

The second step is getting the data organized and into a data store where it can easily be accessed ...

The north has wealth ... and the resources to be enormously helpful.

The south has needs that are urgent.

Management information is the missing element that is needed to bring the north and the south together for global benefit.

DATA ACCESS

EASY ACCESS

Collecting data is expensive ... and data only have value when they are used.

As in other areas of socio-economic analysis there is a value chain challenge associated with data ... data are known to be valuable and therefore there is competition around the individual or organization that is going to accrue the benefit from the data.

It's my data!

The academic community embraces data as a way to enhance academic reputation ... obtain advanced degrees ... build institutional capability ...

But all of this is at the expense of the potential value of the data to society as a whole. The opportunity costs ... or lost opportunity value of this academic behavior is huge. Sadly there are few in the academic world who have given this issue very much attention even though it is critical matter in the performance of socio-economic development.

Intellectual property

Research and development (R&D) that results in breakthrough knowledge that can save lives and reduce disease is wonderful and should be encouraged ... but what is the best way to provide incentive ... what is the best way to allocate resources to R&D and to the deployment of new therapies.

What has evolved over the past several decades is a chaotic system where the biggest driver of decision making is profit potential and the outcome of investment determined excessively by those that control the system. There is little or no weight given to social value arising from any specific course of action ... as evidenced by the "orphan drug" syndrome where good science lies dormant because theres life saving therapies are unprofitable albeit cost effective.

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