



# 3G M&E: Lessons and Solutions from NCBA CLUSA's Conservation Agriculture Project in Northern Mozambique



MSSB Consulting  
M&E Solutions for NGOs



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## **About MSSB Consulting:**

MSSB Consulting is a UK company specializing in data management solutions. For over ten years the company has delivered effective, innovative data management solutions to development agencies. Bringing years of experience of the development space the company has successfully implemented a range of M&E solutions for a variety of project and grant types.

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NCBA CLUSA Mozambique.

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## Summary

Voice and text messaging are still the most common applications on mobile; however, NGOs are looking increasingly to apply the technology in higher-end functions. This report looks at the issues and challenges encountered by NCBA CLUSA in adopting a fully-integrated 3G M&E system for PROMAC - a large conservation agriculture initiative in Northern Mozambique. This system was successfully commissioned in early 2015 at a cost of about USD 110,000.

Serving over 85% of the project's reporting, the system allows extension staff to collect data on a broad and complex range of project indicators. Examples include land area measurement and usage over time; production methods adopted with profit margin and return; and, gender and adult literacy components. Data is collected and stored on tablets using the application [extensionWorker](#); they are thereafter transferred to the project's cloud storage when either a cell network or wireless office connection exists.

For both agency and donor alike: the advantages of this type of system against conventional field collection tools are significant. Not only is data transmitted from the field to management in real or near real time; it is done so with a level of accuracy and integrity unthinkable in systems employing manual collection.

## Lessons Learnt

1. Whilst the perceived benefits of 3G for M&E are significant, these benefits are entirely dependent on the applications an NGO can either find on the open market or develop themselves.
2. The availability of such applications—both fitting the specific data needs of a project and utilizing the power of 3G—is limited. As this is likely to remain the case for the foreseeable future, custom application development should be seen as an important component in the deployment of 3G in M&E.
3. This need to manage application development as part of the deployment of a full 3G system will be driven as much by an entrepreneurial spirit as by any cost/benefit analysis. Given both this and the investment involved, it follows that successful development will require a strong and defined management vision of what such systems should achieve.

4. At least part of this vision should be to transmit data from the field with more speed, and for this data to have greater accuracy and integrity than it currently does. In this, 3G mobile offers enormous potential; unfortunately its cost and complexity makes deploying a system without leveraging these features hard to justify.

5. High-end 3G M&E systems can be developed and deployed. The Conservation Agriculture Project of NCBA CLUSA in Northern Mozambique meets about 85% of its reporting needs with data collected on tablets in the field. This was achieved at an external cost of around USD 110,000.

6. A significant challenge in this deployment was the creation of the back-end beneficiary database essential to this, or any, high-end 3G M&E system. The field logistics of fully and accurately registering tens of thousands of beneficiaries per project is a significant exercise.

7. Even for new projects consideration needs to be given to institutional change and capacity building. Resistance to change is natural, particularly when the technology being introduced can be perceived as having a function to 'police' those who will use it.

## The Perceived Benefits

Whilst most NGOs believe they will likely increase their use of mobile in the future, significant constraints exist. In a sector that tends to justify investment in new working methods through peer example, the lack of cases of higher end mobile use, coupled with the irreversibility and size of entry investment are issues. Likewise, issues such as technical capacity; the state of the capital goods markets most can access; and a perception of high non-pecuniary costs such as staff development will lead most to require a clearer picture of benefits before they adopt.

Thus, in the absence of such clarity, adoption of higher end mobile technology for CLUSA was driven as much by an entrepreneurial spirit as by any cost/benefit analysis. For their PROMAC project this vision was to transmit data from the field more quickly, accurately and with greater integrity. Essentially a shared vision between the project's donor and CLUSA in which a project report will truly reflect a project's activities.

## The System

PROMAC employs an extension staff of around 50 people working across a number of geographically diverse areas. With poor infrastructure typified with poor/unreliable cell coverage, the staff are required to collect and present data on a broad and complex range of project indicators. Examples include land measurement, production values, and gender and adult literacy components.

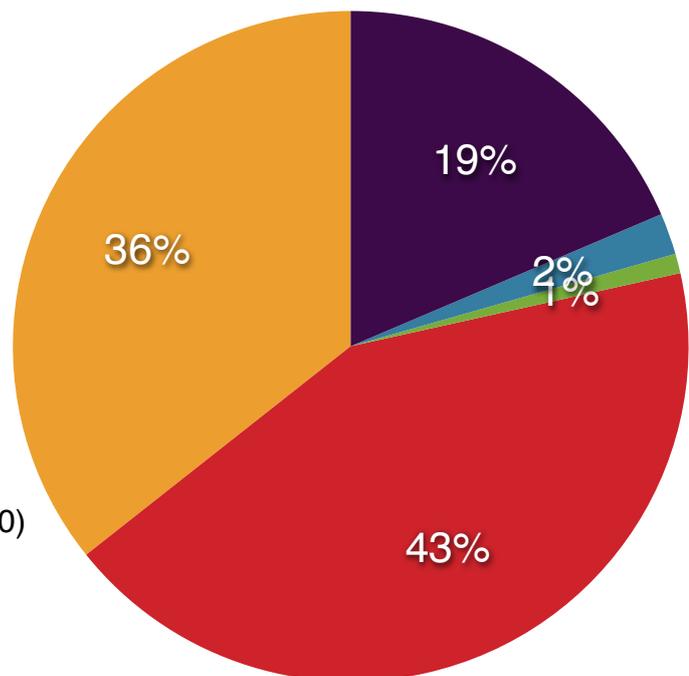
CLUSA opted for android tablets running custom applications. The system was expected to support all of a field worker's data collection duties, transpiring to about 85% of the project's total reporting. Because of cell coverage, this was expected to store collected data locally on the tablets until subsequent synchronization to the project's cloud was possible.



## The Costs

Deployment saw a total external cost of about USD 110,000. The project incurred a further internal cost of approximately USD 24,00 on the beneficiary registration required to develop the systems client database.

- Tablets (30)
- Protective Cases (30)
- Pens (30)
- Custom Software
- Training



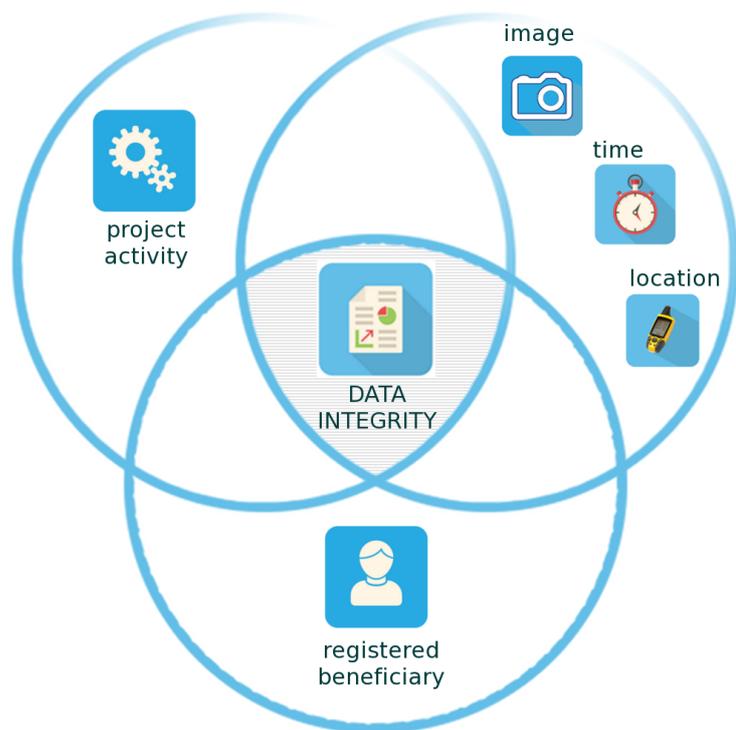
## The Return

Given the vision for CLUSA's system, an analysis on the return of cost needs to focus on the area of speed and integrity of data collected in the field. An area most NGOs feel they have an issue with, data integrity essentially builds from the field and transpires to project reporting that management and donor alike have confidence in.

In its simplest physical sense this is an archive of many hundreds of thousands of records: kept over project life with each detailing the actual location, time and beneficiary at the point of field delivery.

In this 3G is a great fit for field work. It has the capacity to capture and store records directly in the field; records are accurately recorded with a time, location, and image, and this delivers a level of data integrity unheard of in traditional M&E systems.

However, mobile devices are fragile, expensive and, with only rudimentary writing and spreadsheet tools, offer little that NGOs do not already have in their lap tops. It is the applications installed on the devices that release the power of 3G mobile not the devices themselves. In realizing the vision for the system the question was less about which device to use and more about which applications to create.



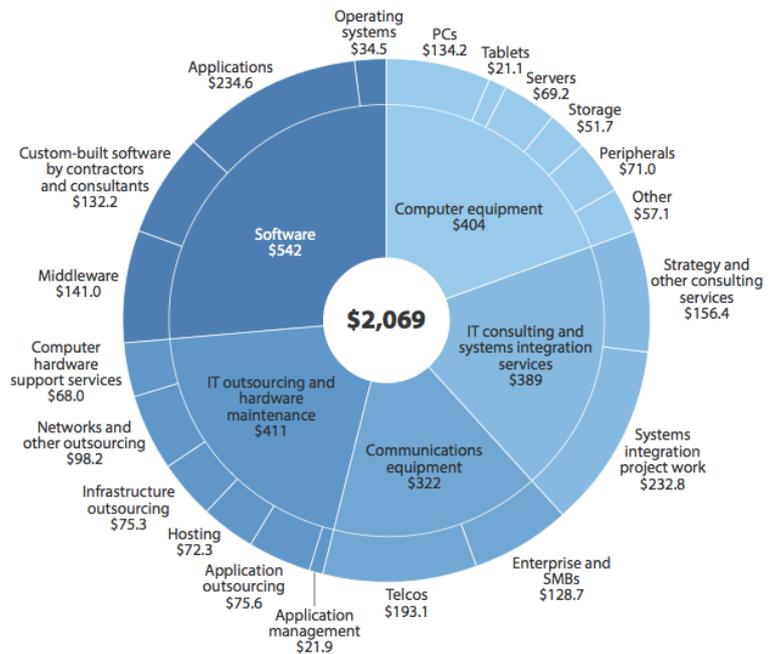
**3G Mobile provides a great fit with data integrity in M&E. However, it is a apps not hardware that release this potential.**

## Custom Application Development

At USD 30,000 the development of custom applications for the tablets was the most significant line item in the budget. A lack of alternatives drove the decision to develop custom applications. There simply aren't that many NGO apps on the market, and certainly not the 'game changers' required to justify the cost of going mobile. As this market is unlikely to change significantly going forward, custom development will likely be a significant factor in the successful exploitation of the power of 3G for M&E.

Managing custom software development poses a significant challenge to NGOs. In contrast to other sectors, agencies invest far less on IT overall, and software development in particular. The lack of exposure this has brought to contracting software services understandably makes development managers reluctant to undertake this at a project level.

However, as outlined above, CLUSA's vision in seeing the need to invest in app development was the enabling factor in creating the mobile-based M&E they now use.



**Global IT spend is in the trillions. Interestingly for NGOs they lag way behind the more than 25% of total IT spend companies typically spend on software.**

## Controlling Mobile Costs

Mobile systems use data and data costs money. These costs vary significantly from country to country in emerging economies; for Mozambique pre-paid data costs come out at about USD 30 per 1 GB.

Controlling these costs was about controlling what applications and downloads staff could access through their tablets. This control was considered to be a balance between providing a tool for work and giving sufficient personal use to ensure a 'buy in' to the new system.

Activity	Data (MB)	Cost (USD)
M&E System (typical use 1 user for 1 week)	10 MB	0.3
1 hour of streamed video	500 MB	15
1 song downloaded	5MB	0.15
1 email sent	0.5MB	0.01
1 Photo Uploaded	1 MB	0.03

The need to strike this balance properly became clearer when the data usage of the system was established and compared with that which could potentially be incurred through personal use.

As the tablets came with pre Android 5.0 software they did not have the sophisticated account control available on later versions. Because of this so called 'Parental Control' software was installed on each tablet. Of the many applications on the market, of which most are aimed at child users, Mobicip was licensed principally for the sufficiently adult-style of its user interface.



Institutional change can be enacted with 'hard' changes, such as salary and job description changes, with 'soft' changes such as training and empowerment, or, with a combination of both. CLUSA did make some changes to job descriptions to ensure staff responsibility for the mobile equipment, but the main the focus was on soft changes with a heavy emphasis on training and field support.

In all about four weeks of training was provided. This was divided roughly between extension staff, M&E staff and upper management. Field staff were given two five-day training sessions, the latter of which included practical exercises in the field. Training was structured to identify early adopters and thereafter to use this sub group in a mentor/facilitator role. Typically, these were staff already familiar with smart phones.

