The use and possibilities of m-applications
in East Africa

Discussion paper
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BACKGROUND

This discussion paper is based on a forthcoming Sida-report on the use and possibilities of m-applications in East Africa (Kenya, Rwanda, Tanzania and Uganda). During 2006 and 2007, another Sida commissioned study was carried out in the Philippines. The study looked into the potential of m-applications and its possible impact for development. Meetings, field visits and a workshop in Manila were organised and a report, "*The innovative use of mobile applications in the Philippines – lessons for Africa*", was published in September 2007. The report positions the Philippines as the leader in the use of mobile applications for access to a range of services from m-banking to m-education and m-governance. The Philippines experience shows that it is possible to increase access to mobile phones, not only for the well off but also for the poorer segments of the society.

The report finds that the Philippines' success was due to a number of reasons such as; appropriate regulatory policies, a developed retail network and prevalence of a pre-payment system, low cost ratio of SMS to voice, and a critical mass of users (Sida, 2007). Many of these prerequisites also exist in East Africa. However, despite the fact that more than 70 percent of East Africans have access to mobile networks, that the number of users ever increases, and that the prices keep on dropping – that the number of mobile services are still few and/or limited geographically.

The key questions for the forthcoming report are; what hinders the take off of m-applications for development in East Africa and what role could donors play in this process? The assignment has two main components: 1) the planning of a workshop in Uganda with the aim to discuss and explore the current and future use of m-applications for development in East Africa (see www.m4d.kcl.co.ug); and 2) gather material for the report through interviews, meetings and field visits in order to detail lessons learned/best practices and way forward of m-applications for development in East Africa.

This discussion paper is divided into 3 sections: 3 things you probably *know* about mobile phone usage in East Africa; 3 things you *might not know*, and finally; 3 things you *should know*.

3 THINGS YOU KNOW

First and foremost, the mobile market in East Africa is booming and penetration has grown exponentially over the last few years. Mobile phones are literally seen everywhere, you hear and see adds all over (radio, TV, papers, billboards) and in Uganda, operators have painted the front of almost every house in either purple (Zain), yellow (MTN), blue (UTL) or white and red (Warid). The newest operator on the scene – Orange, is yet to paint the remaining houses. 16 operational operators (though ownership boils down to 10) cater for over 35 million subscribers with a penetration rate that varies from 12% in Rwanda to almost 42% in Kenya (CCK 2008, MTN 2009, TCRA 2008, UCC 2008). Access to mobile phones is likely to continue to increase, mainly due to the sound policy and regulatory environment that encourages competition and thereby further infrastructure investments and hopefully, lower tariffs for the end-user. Rural areas that do not yet have coverage will be the winner in this race.

Secondly, the 'killer' applications in East Africa are voice, SMS and beeping (i.e to call someone and hang up before the call is picked with the hope to be called back, also called to flash or tickle). Data in East Africa is not yet widespread. The number of available and relevant simple (SMS or USSD) applications for social and economic development are still limited seen to the number of users due to a number of reasons. So far, the study has identified more than 60 interesting applications (see the forthcoming report for a full list).

The *third* thing you already know is that affordability is a major issue and key in reaching existing and new subscribers. The majority of East Africans do not have much disposable income to play around with and the technology and the services offered must therefore be affordable in order to attract enough subscribers. Innovative business models must be developed, new partnerships formed and efforts need to be coordinated. And there must be a business case for the operator and the service provider, because at the end of the day it is all about making a profit. When competition increases and the subscriber base goes up, the ARPU (average revenue per user, ie the operators total revenue divided by the number of subscribers) goes down since the total revenues must be spread more thinly. To keep the ARPU high or to increase it, East African operators (in close partnerships with local companies) often try to sell extra services or so called value-added services (VAS) such as ringtones, logos, sport results, sex tips etc. Of the services offered by the operators or content providers, very few would fall under the social development category. The question is whether this is because there is no money to be made in this category, a lack of innovation or something else?

Also related to affordability is that of the ever changing tariffs and promotions. It is not easy for mobile phone customers in East Africa to choose the best call tariff. Operators are using multiple tariff products, products that come in well packaged promotions. A typical promotion would be to offer free calls within the network, given that you spend a minimum amount daily. While many of the promotions and tariffs are considered cheap, the operators know exactly what they are doing and how to control the costs to still make a profit. Profit in this case is a game of margins multiplied by volumes. Designing the tariffs are also a numbers game and there is always a precondition before the customer joins a certain tariff. The basic logic behind VAS, promotions and tariffs are that if the operators can afford to bring down margins they will do it because it will increase usage that in the end will make profitability go up. The final result is often that customers end up spending more money than intended. In line with this discussion on affordability and whether or not mobile phones empowers or impoverish the poor, see Prof. Richard Heeks' blog entry Mobiles for Impoverishment? (Heeks 2008).

3 THINGS YOU MIGHT NOT KNOW

1) East Africa is a place for *innovation*. A variety of interesting mobile phone related projects and pilots are taking place throughout East Africa which has emerged as a test-bed for new technology implementations, specifically in the health and agriculture sectors. There are a number of "traditional" laboratory/R&D units in East Africa:

- Nokia Research Africa opened a research unit in Nairobi, Kenya in July of 2008 (officially launched in September 2008). The basic idea is to carry out research into its products and services closer to the market that they are intended for. They work together with East African universities and NGOs to develop prototypes of devices and applications designed for the African market.
- Ericsson opened up one of its three African application development hubs in Nairobi, Kenya, last year (the other two are based in Nigeria and South Africa). The aim of the Ericsson Innovation Centre is to better meet the needs of poor and rural populations and to

focus on developing affordable, sustainable applications and solutions in health, education, agriculture and small business development. The centres will further "*develop business cases that enable network operators to introduce and expand mobile broadband services*" (Ericsson 2008) and it will provide tools for local developers and entrepreneurs, and in that way "*foster a good environment for the creation of new small businesses throughout Africa*" (Ericsson 2008).

- The Application Laboratory (AppLab) is an initiative of the Grameen Foundation in partnership with the operator MTN (http://applab.org/). Since September 2007 they have been working with different partners in Uganda, "*to recruit, train, and support local entrepreneurs who can serve as information hubs for their communities and provide information that can improve the lives of the poor*" (AppLab 2009). AppLab has piloted a range of mobile applications and will launch some of these shortly.
- In 2006-07 MIT and Nokia launched a trial initiative called EPROM (Entrepreneurial Programming and Research on Mobiles) in East Africa to develop a mobile phone programming curriculum within Computer Science departments in ten Sub-Saharan African countries. In East Africa it is the University of Nairobi (Kenya), University of Dar es Salaam (Tanzania), Makerere University (Uganda), and the Kigali Institute of Science and Technology (Rwanda) that are involved.

Mobile phone usage in East Africa is characterised by innovative innovations like unconventional ownership models (shared handsets), decentralized payment plans (prepaid subscribers), improvised use of the shared village phone. These grass-roots innovations where ordinary people create new uses for technology based on need, are interesting. A good example from Uganda is the forerunner to mobile money transfers, Sente. Basically it uses prepaid airtime vouchers as a way to transfer money. Someone who wishes to send money back to the village buys airtime but instead of loading it into the phone, the person calls the shared village phone operator and reads the code. The airtime is then bought by the operator and the transfer is completed when the operator hands over the money, minus a commission, to the waiting recipient. Sente is however not that common any more since the operators now have developed airtime-sharing applications which cuts down on the number of transactions and costs but serves as an interesting innovative example.

Another example is that of an Ugandan registered company called Mobank Ltd (short for Mobile Banking) who offers cross border money transactions between Uganda and Kenya. They act as an unofficial M-PESA agent using mobile phones with Safaricom (Kenyan operator) SIM-cards roaming on UTL (Ugandan operator). The M-PESA credit is balanced through their partner in Kenya which is an official M-PESA agent. Receiving money costs 4% in commission on top of the M-PESA charges. The cost for sending money is negotiable depending on the sum and bargaining skills. According to the managers at Mobank, Safaricom knows about their existence but do not seem to care.

Other examples of innovative projects in East Africa include that of the operator Zain who first introduced the product One Network in East Africa in September 2006. One Network is a border less network that has now spread to 17 countries (out of 22 countries where Zain operate) in Africa and the Middle East. The idea is to allow customers to make calls at local rates and receive calls for free and seen from an alignment perspective, Zain are now able to synergise and develop products that are regional and easier to scale-up. The m-banking service Zap is a good example.

2) There are some interesting discussions going on in the East Africa Community on *ICT policy and regulatory harmonization*. The aim is to create a framework for regional ICT policy integration in order to promote regional co-operation and cross-border trade. It is expected that the harmonization will strengthen the quality of national ICT policies and facilitate cooperation. Already, East Africa is united by technology thanks to the operators who have created regional markets through "seamless"

roaming where you automatically connect to other networks, where there are no incoming call charges and where you can load usual airtime of any of the networks (ie the possibility to use the partner networks' scratch cards). There are even some discussions under way about creating common short codes in the region, meaning that you can access the same applications and services regardless where in East Africa you are.

3) East African m-banking is much more than M-PESA. In the same way as the Kenyan operator Safaricom has been using M-PESA as a loyalty product to aid in retaining and acquiring new customers, other operators are now looking for similar solutions. M-PESA is also to be found in Tanzania run by the operator Vodacom but with the main difference that while Safaricom uses SIM toolkits, Vodacom relies on USSD as the user interface for accessing the service. The African giant Zain recently launched ZAP in Kenya and Tanzania and Uganda will follow shortly. Will this service open up for legal cross-border transactions? Regulators are to decide.

MTN, another giant on the African market, recently launched the product Mobile Money in Uganda (in partnership with Stanbic Bank who will function as transaction outlets) just a few weeks after the Ugandan branch of Standard Chartered launched their m-banking solution. Then there is a mishmash of other partnerships and implementations. In Tanzania Z-PESA is run by ZANTEL in partnership with the Tanzanian R&D company E-Fulusi who back in 2007 launched Tanzania's first m-banking solution called MobiPawa. E-Fulusi has also entered a partnership Mobiliser and the two will work together to provide a fully integrated m-banking service in the region. In Uganda, operator UTL partners with Redknee Solutions Inc and will soon launch a m-banking service, and the Ugandan content provider True African and Nile Bank have been working together for a while. In Kenya Equity Bank offers m-banking services too. There is just so much going on at the moment and the technology is not the challenge, neither is access: the main challenge is how to reach all and get people to use the service. M-PESA, being the first successful m-banking case in the region surely shows the way.

3 THINGS YOU SHOULD KNOW

The 3 take home messages are:

1) When designing, developing and implementing solutions for development needs we have to understand the context, the challenges and needs in each particular setting – then we can try to look for appropriate solutions (if really needed and wanted). Otherwise we as practitioners and implementers create a situation where there are too many solutions looking for problems and this constitutes a problem in itself. We need to document more (lessons learned, technology used, successes and failures etc) and we need to coordinate and collaborate more and find a right fora for this collaboration (focused workshops, discussion lists, blogs, wikis, etc).

2) Customer care in East Africa is crap. This might change with time as competition increases and when/if number portability is introduced/allowed. However, as for now the customer care is really moderate to say the least. Long waiting times, jammed toll free numbers, insufficient and incorrect replies etc. Typical issues include billing complaints (airtime never loaded or unclear tariffs), poor quality of service (undelivered SMS, poor voice quality, dropped calls), high failure rates of hardware (like promotional mobile phones). Further, few customers know about their consumer rights and obligations resulting in a situation where end-users do not get value for money from operators and service providers. Consumer rights are usually a form of government regulation and consumer education as a prerequisite for consumer protection. As the mobile industry is turning the ordinary citizen into a consumer, who gets more and more dependent on the network and available services, it becomes extremely important that the end-users know their rights and that there is some sort of body which protects the interests of consumers, alternatively that the consumers unite and put pressure on the operator when the service is bad.

3) If you are a rural end-user you have most likely no idea of which services are available. There is no service or application directory available for the simple mobile phone user, ie no meta-data meaning that if you do not know what is out there, there is no way to find out. Some type of marketing is needed and lacking at the moment. Or is it simply too expensive or impossible to bring something to scale without the operators consent?

LIST OF ABBREVIATIONS
ARPU = average revenue per use
m-application = mobile phone application
MIT = Massachusetts Institute of Technology
Sida = Swedish international development cooperation agency
SMS = Short Message Service
USSD = Unstructured Supplementary Service Data
VAS = value added service

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