

(Experience of interaction design in developing countries)

Designing for the DrumNet Application: A cell phone based information and transaction platform for Kenya's agricultural sector

Large populations in many African countries earn their living by engaging in some form of agriculture. Smallholder farmers in Kenya, as in most of sub-Saharan Africa, make up approximately 70% of the country's 35,000,000 population. This represents over 24 million individuals who generally count their small farms as their only asset. The process of designing applications that service the needs of all the relevant actors in this environment requires a markedly different approach especially in relation to usability issues.

Increasing rural-based and wealth creating opportunities have been identified as key drivers for sustainable economic growth and access to formal financial, information and market channels is critically important to transform the agricultural sector. Therefore applications built for these needs must focus on the farmer and the supply chain linking them to formal networks of Buyers, Suppliers and Financiers. The DrumNet application is meant to create a virtual bridge between existing committed institutions such as banks, buyers and suppliers using a cell phone linked database. Designing applications for this environment provides many challenges especially on usability issues.

In many cases it has been extremely difficult to know exactly for whom we are going to design. While there is pervasive technology in some companies or sets of communities, executives still use their administrative assistants and older individuals their grandchildren as their interface to these technologies. We have found that youth and novelty are not necessarily always highly regarded. Literacy is also a very important aspect. There are new literacies, brought on by the information age and they portend new problems. For example older people tend to have a much harder time getting used to the shortening of words as is common with SMS usage.

The envisaged users of the Drumnet application are extremely diverse. At an institutional level these users consist of companies with huge resources, human and financial while there are also very small self help groups that may lack even the capacity to take minutes at their weekly meetings. These institutions exposure to technologies, access to infrastructure and organizational cultures are extremely diverse. It is thus important to bear all these aspects in mind while designing for their divergent needs.

There are very limited funds that are available for developing applications for this sector of the economy. It is thus more important that the development of applications for this sector be financially optimized. There are higher levels of return on investment (ROI) when applications have usability at the heart of their development cycle; however the intangibility of usability design and testing makes it more difficult to justify to project participants. The financiers will usually prefer to spend funds on the "important tangible aspects". We remain aware that it is only by improving the usability that we can increase productivity through optimal application usage as well as user satisfaction, it will also lead to decreased development time and costs and minimize training and maintenance costs.

The telecommunications sector is an area that is rapidly changing. In order to develop applications that maintain their relevance for considerable periods requires a different thought process. We have been forced to think about designing interfaces that are simple enough to be used off SMS constrained environments for the very low end cell phones as well as interfaces for SIM tool kits that allow embedded applications on high end PDA/cell phones such as the I-mate or I-PAQ. Since the costs of phones have been falling precipitously it becomes necessary to plan for their availability to vast numbers of people in much shorter time scales than we may anticipate. The future seems to catch up with us sooner than we imagine as telephone carriers rapidly deploy new services. We must however always focus more on the people than on the technology.

The cell phone, which is as the main interface to the DrumNet application is still seen by most users as a communication tool and more so one of a social nature rather than a businesses tool. Cell phone usage thus still elicits quite a bit of attention particularly so if it is voice, most local cultures frown upon calling attention to one. While SMS negates this, it brings an artefact that is at once personal and private in a society that encourages socialization, this level of individualism may also be frowned upon. Such contradictions or complexities are very hard to plan for or circumvent.

Another interesting observation has been the low expectations by the potential users of the DrumNet application. This is both a pro and a con. These low expectations relate to technologies and or the infrastructure that they are built upon. People will thus describe a 2 minute turn around time for a response as fast, whilst we may ordinarily have termed that as unacceptably slow. A GUI that takes 10 seconds to load does not necessitate any anxiety on the part of certain users. We must thus build interactions that are sensitive to this much unexpected contexts or cultures while constantly aware that they may change rapidly.

Getting all the parties buy-in with the level of diversity that we have is proving to be a huge challenge. We decided to use Outcome Mapping (OM) for project design as well as monitoring and evaluation. The originality of this methodology is its shift away from assessing the products of a project, to focus on changes in behaviours, relationships, actions, and/or activities of the people and organizations with whom a development project works directly. We are looking to push the use of OM as an adaptation to participatory methods in community development projects. We plan on using it to capture and assess behavioural changes related to interface design while we do focus group studies.

We are excited about the possibility of creating optimal usability in the DrumNet application and having it successfully deployed, however we remain cognizant of the inherent complexity of the environment that we are operating in. We must therefore remain vigilant of opportunities that may exist to help optimize our design processes. We are consciously making an effort to continue to experiment.