



Designing mobile information and content strategies for grassroots participation

A report on research by the Commonwealth of Learning
July 2011



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Contents

1	Introduction.....	3
2	Recommendations.....	5
	2.1 Sustainable technology intervention is about more than providing access... 5	
	2.2 Complex mobile services require complex human support	5
	2.3 Effective program design must include community representation.....	6
	2.4 Demand, supply and cultural hurdles should be anticipated.....	7
3	Project aim & background	9
	3.1 Aim, objectives	9
	3.2 Background	9
	3.3 Participatory content creation	10
4	Conduct of research	11
	4.1 Review of initiatives	11
	4.2 Site of investigation	12
	4.3 Method.....	13
	4.4 First training workshop	13
	4.5 Main content production period.....	18
	4.6 Second training workshop.....	19
5	Project summary	22
	5.1 Sustainable technology intervention is about more than providing access. 22	
	5.2 Complex mobile services require complex human support.	22
	5.3 Effective program design must include community representation.....	23
	5.4 Demand, supply and cultural hurdles should be anticipated.....	23
6	Acknowledgements.....	24
7	References.....	25

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1 INTRODUCTION

A networked mobile device (e.g. a phone, smartphone or tablet) can give its user access to a range of potential services far beyond one-to-one voice communication. We can play games, listen to music or radio, watch (and in some cases make) TV, films, and videos; communicate with family members or business acquaintances by txt, pxt, email or messaging; search for information, buy products, manage a bank account – the list of possibilities increases according to the capabilities of the device and its host network, the digital literacy of the user, and the time and money available for some or all of these activities. And the relationship is increasingly two-way, since the same device can give a range of potential services access to the user. Location-based mapping, targeted marketing messages and passive social networking are among the early examples of such services.

One notable example: civil unrest and street demonstrations in Tehran surrounding the 2010 elections were recorded by citizens using mobile devices and then uploaded to online content sharing portals such as YouTube. These videos were replayed on terrestrial and cable television stations to audiences across the world. The Iranian example may be used to demonstrate how citizen journalists or activists can bypass restrictions on media distribution by using increasingly commonplace and affordable mobile devices.

If a camera-equipped mobile phone and a content sharing portal are all that are needed to change the face of human rights reporting via mobile activism or citizen journalism, is there a comparable mobile ‘killer application’ that can become a breakthrough tool for development communication? How can the mobile device – in any of its varieties – support or initiate social development programs for education, health, governance or welfare at the grassroots level? An increasing number of options are discussed regularly, although many device-driven technological innovations can be left behind by the rapid evolution of the mobile communication sphere.

If we take a closer look at the Tehran example, it becomes apparent that rather more was needed than a mobile device and a citizen journalist to create the content value chain that brought the images of violence from Tehran’s streets to international screens. The content value chain also required a well-established online video sharing portal (e.g. YouTube) for upload and hosting, and international TV organisations willing to broadcast often unverifiable material posted on such portals (e.g. CNN, BBC). Simply put, effective mobile communication systems require a complex system of users, intermediaries, organisations and technologies to function. A user, a mobile device and an idea for a killer application on their own will not change the development communication paradigm.

In much the same way, it is likely that the design and implementation of mobile information and content services to support development objectives will require more than clever technologies and willing users. Policy makers, program managers, system designers and community members will all need to contribute to cost-effective ongoing solutions. This high-level challenge should be familiar to those who have had experience of information and communication technology for development (ICT4D) initiatives which seek to deploy specific devices or platforms as a featured component of a development strategy. The history of ICT4D indicates that the mobile device joins a succession of innovations – from radio onwards – which promise much as a stand-alone technology, but require substantial organisational and community support (both internally and externally) to deploy and maintain. It is this wider relationship between organisations, communities and technology (the ‘sociotechnical system’) that this report addresses.

2 RECOMMENDATIONS

This report is based upon a number of ongoing initiatives by the Commonwealth of Learning (COL) and UNESCO's Communication and Information (CI) Sector which aim to promote an enabling environment for access to and provision of information, education and informal learning. COL and UNESCO CI acknowledge the importance of local and community media and the impact of mobile devices and networks on development communication and open and distance learning. Within this context, this report makes four main recommendations to any small- to medium-sized organisation aiming to design and implement communication strategies using mobile devices and systems:

1. Sustainable technology intervention is about more than providing access.
2. Complex mobile services require complex human support.
3. Effective program design must include community representation.
4. Demand, supply and cultural hurdles should be anticipated.

The intent of these recommendations is to underline that sustainable mobile information and communication systems require well-defined strategies and complex human networks.

2.1 Sustainable technology intervention is about more than providing access

Some top-down policy approaches to information system design can assume that user behaviour will be influenced by increasing dissemination of access to appropriate and reliable information (Guo 2011). However, the provision of access through infrastructure and bandwidth is insufficient to guarantee sustained interaction by users with restricted or no access to education or reliable information sources. Rather, mobile information and content should be designed to achieve sustained interaction with both end-users and intermediaries in order to achieve optimal engagement over the long-term. This level of interaction is not necessarily achieved through a policy focus on growth of per capita access. Rather, the design of sustainable mobile information and content programs within the development sector requires policy-makers to go beyond high-level challenges such as infrastructure and regulation. Elements such as service and content quality, information reliability, system usability, and community participation must be highlighted as significant design factors.

2.2 Complex mobile services require complex human support

In the context of developed economies, the ease and speed of access to online / mobile information services has led to a process of *disintermediation* whereby existing intermediaries are bypassed by end-users (Eysenbach 2007). This process has transformed a number of sectors including financial services (Clemons et al. 2002) and travel planning (Tse 2003). Equally – in the context of developing economies – the disintermediation process can be considered to be beneficial in terms of bypassing existing intermediaries in order to allow the user direct access to reliable information (e.g. legal, medical or governmental). However, intermediaries remain critical to some complex non-transaction-based public services and utilities.

Human intermediaries and intermediary organisations exist between technologists, policy-makers and end-users. The “often hidden” work that intermediaries perform is “highly significant for the shifting governance of the urban infrastructure systems of today” (Moss 2009, p.1481). A review of European policy designed to support large-scale “system transition” towards more efficient energy management proposes that “intermediaries are in the unique position of being able to bring together and align expectations and demands of a variety of actors across different contexts” (Backhaus 2010, p.97). A study of a rural e-commerce system indicates that human intermediaries can have significant impact on initial implementation and longer-term system sustainability (Watkins et al. 2009). It should be noted that intermediaries and end-users can also erect barriers to system adoption: an investigation into an apparent lack of cost-effectiveness in e-health systems found that the issue was not technological “but rather the human system in which the technology is implanted” (Bangert et al. 2005, p.6).

It can be argued that those agencies and organisations with a grassroots presence are positioned to serve as intermediaries in the provision of mobile information and content services. In so doing, they may be able to facilitate the complex stakeholder networks that are required for the sustainable provision of mobile services. Without the active participation of intermediaries, the ongoing provision and growth of such services may remain challenging at the grassroots level.

2.3 Effective program design must include community representation

Whether mobile or fixed, the successful and sustainable adoption of information and content services requires more than the distribution of appropriate devices. Collaborative planning and program design by a network of stakeholders is usually required to underpin a community-oriented service, motivate users and contributors, and produce appropriate content and information over a given time period. Based on a range of pilot projects conducted by COL and its community partners in parts of Africa, the Caribbean and the Pacific Islands, the stakeholder network must include a grassroots organisation which represents the users targeted by the communication program. For example, the planning team of a communication program for maternal health should be composed of – but not be limited to – the following players:

- Appropriate policy / governance body with funding resources. In this scenario, this might be a district health organisation.
- Subject experts to provide reliable information and content, such as doctors, nurses or health providers.
- Grassroots organisation/s with active networks in the target community – for example, a women’s group or NGO.
- Communication hub with ability and expertise to send information and content to target communities, and receive feedback and input from the same communities. This might include a community/local/regional media organisation, or an internet or mobile service provider.

Some traditional development communication programs may be based upon a top-down strategy whereby subject experts generate key messages, which are distributed by a policy body such as a government department. The inclusion of a communication hub and a community-based organisation in the list of essential stakeholders (above) is intended to leverage the opportunities for participatory communication that mobile devices can provide. In so doing, traditional top-down development communication programs can be enhanced by two-way interaction with target segments through the inclusion of stakeholder-planned participatory strategies (see section 3.3 below).

A representative stakeholder network is more than a collection of appropriate players. Robust management, clear communication and achievable grassroots outcomes are required. However, these ingredients may be overlooked in the collective enthusiasm that surrounds a new technology roll-out supported by external funding. Therefore system designers and policy makers should consider the “social and organisational complexity of the environment in which the systems are deployed” as an essential design factor (Baxter & Sommerville 2011), rather than assume and impose large-scale implementation models on small- to medium-size region-specific projects. The human and organisational systems required for adaptation to – and interface with – technology-based innovations in health, education and welfare usually do not evolve into an efficient and effective form unless they are planned as carefully and precisely as other essential infrastructure.

2.4 Demand, supply and cultural hurdles should be anticipated

In some developed economies, discussion around mobile services can assume always-on high-bandwidth network access to ubiquitous cloud computing and mobile services. But the cost of a mobile device, network subscription, and content/app download is significant for low/no-income earners in both developed and developing economies. So although handset penetration in some developing economies is high, subscription to paid-for premium mobile content may remain limited for low/no-income users. Nevertheless, it is likely that those small- and medium-sized organisations with limited funds who wish to produce mobile information and content will have to operate some mechanism to charge users. Therefore any content produced must be of sufficient quality that consumers both have a need for it and want to pay for it. This proposition is achievable by some organisations but presents a considerable challenge to community-based or donor-supported organisations which do not charge users for services, and/or do not attract advertising revenue to offset production and distribution costs.

Furthermore, any paid-for mobile information or content may have to compete for recognition and consumption in a market that is already dominated in some instances by commercial content providers. This competitive environment is complicated by the fact that much radio and TV content can be free to the audience at point of consumption. Therefore mobile content for development must be distinctive in the marketplace from commercial mobile content, radio and/or TV. This distinction can be achieved by providing information on local issues, in a local language and with the active participation of community members (see section 3.3 below).

The provision of mobile information and content via personal devices opens the door to numerous inappropriate sources that are difficult to police or even detect by a family or a community. These include unmonitored communication with inappropriate parties; access to incorrect or unsuitable content, games or information; and video cyber-bullying or SMS harassment. For example, during the research conducted as part of this report, unsupervised access to online content by young adults was considered by an organisational gatekeeper to be a major barrier to the use of smartphones within a community media organisation (see section 4.5 below). These are very real issues which demand serious consideration by all those considering the use of mobile information and content for development objectives.

3 PROJECT AIM & BACKGROUND

3.1 Aim, objectives

Draft Resolution 050019 of UNESCO CI's Major Programme V specifies that "Further support will be provided to foster editorial independence and quality programming in public service broadcasting, community media and new digital media" (2009 p.10).

In response to this directive, the aim of this research-based project was to test how a community media organisation could deploy smartphone devices and mobile content strategies to increase active participation in program planning and production by community members and groups.

To achieve this aim, a pilot project was implemented to achieve two main objectives:

- Train community radio staff and community members in participatory content creation techniques, supported by smartphone devices.
- Facilitate the production of mobile information and content formats by the community media organisation in collaboration with targeted community members and groups.

The site of investigation was a community radio station based in Madhya Pradesh, India.

3.2 Background

COL describes local/community media as any kind of media which are focused on the local community, including radio, TV, newspapers, telecentres and the web. For the purposes of this report, a *community media organisation* (CMO) is understood to be committed to dealing with local issues and/or national or international issues from a local perspective. Community participation is a key ingredient, such as volunteer staff and/or listener groups. Some CMOs aim to provide a supplement to mainstream media channels; others seek to provide a conscious alternative. This community-focused participatory vision is implemented successfully by a number of CMOs, which typically are not owned by government and operate on a not-for-profit basis. In comparison, a *local media organisation* (LMO) can be privately owned and operated on a for-profit basis. A LMO might adopt a less participatory approach than community media organisations. For example, a station manager may have a background in mainstream media and a focus on constructing and achieving a traditional programming schedule into which the community has little or no input. Or – in the case of some radio initiatives – daily output can be dominated by music programming, with little community-specific content apparent. Such LMOs can resemble a scaled-down version of the mainstream media in terms of ownership, business models, advertising revenue and/or programming.

3.3 Participatory content creation

The popularity of the word ‘participation’ in the development sector means that it may have become a “concept that means different things to different people in different settings” (World Bank 1998). Even so, amongst the various concepts of participation in the development sector, there is a recurring focus on community involvement in decision-making processes.

Many community media organisations may not consider themselves to be part of a formal development agenda and might not consider their mission to be a participatory one. However, those community media organisations that do actively identify themselves with the development process could be considered to be participatory if they consult with community groups and local government; record and play local cultural forms; and/or interview community members as part of their output. “Participatory content creation” has been described as media content created after extensive discussions, conversations and decision-making with a target community; and where community group members take on content creation responsibilities according to their capacities and interests (Watkins & Tacchi 2008).

A participatory content creation method has been developed to support the aims of ICT4D programs through creative strategies for the inclusion and engagement of marginalised users with media ICT facilities such as community media organisations, learning centres or multimedia centres. Participatory content creation methods such as digital storytelling and microdocumentary production have underpinned a number of pilot projects by COL and UNESCO in India, Indonesia, Nepal, Sri Lanka and the Solomon Islands. The results of these pilot projects have:

- Revealed the bottom-up perspectives of underserved community members with regard to everyday development issues.
- Demonstrated how intermediary and governance organisations can establish innovative two-way communication and interaction with hard-to-reach communities.
- Encouraged ICT-supported cultural participation by marginalised community members and groups.

These pilot projects also indicated that medium-term sustainability of participatory communication programs requires substantial motivation and commitment from intermediary organisations such as community media organisations, learning centres or local government departments.

4 CONDUCT OF RESEARCH

4.1 Review of initiatives

A 2009 review of development communication initiatives featuring an innovative use of mobile devices and content highlighted a number of projects, including:

Initiative	Summary
Freedom Fone, Zimbabwe ¹	'Dial-up radio' which aggregates and distributes audio content via mobile handset or landline. Intended as a phone-based local information browser.
One World Mobile for Good, Kenya ²	Aggregates and distributes information services to mobile handsets for low-income segments via SMS e.g. job information, health, lifestyle, HIV / AIDS.
Jasmine News Sri Lanka ³	News wire service distributing via SMS. Uses freelance stringers to gather information.
StoryBank, India ⁴	Production and distribution of village community-generated digital stories using handheld and mobile devices. Content was displayed on public touch screens.
One Media Player per Teacher ⁵	Portable audiovisual devices used for educational development in remote areas without internet access.

Table 1: selection of comparable mobile content initiatives

The One Media Player per Teacher and Storybank projects used non-networked portable and mobile audiovisual devices (such as digital cameras and audio recorders) to facilitate content creation activities in target communities. The Freedom Fone, Mobile for Good and Jasmine News initiatives used mobile handsets to distribute low-bandwidth information and content, usually SMS or voice. Jasmine News generated revenue through user subscriptions. No development communication projects featuring user-pays high-bandwidth premium content (TV, video, web) were located during this review (see Watkins 2009). As noted by a 2011 WSIS debate on mobile phones and development⁶, the rapid evolution of mobile devices, content and applications means that research findings in this field can become quickly outdated. Therefore it is possible that projects established since 2009 are deploying user-pays content due to wider mobile network coverage, higher penetration of cheaper handsets, and cheaper tariffs.

¹ http://www.newschallenge.org/freedom_fone

² <http://news.bbc.co.uk/2/hi/technology/4054475.stm>

³ <http://www.jasmine.news.com>

⁴ <http://www.dwrc.surrey.ac.uk/storybank.shtml>

⁵ <http://www.ompt.org>

⁶ <http://www.wsis-community.org/pg/file/read/244736/wsis-debate-1-background-paper>

Based on this review, a host organisation and site of investigation for the research project was selected using the following criteria:

- Sufficient network coverage for low-bandwidth mobile content distribution.
- A social development agenda, with established links to marginalised communities.
- Experience in digital content creation methods using portable and mobile devices.

4.2 Site of investigation

Radio Bundelkhand (RB) is a community radio organisation situated on the border of the states of Madhya Pradesh (MP) and Uttar Pradesh (UP), India. RB was launched in 2008 by the Delhi-based non-governmental organisation Development Alternatives (DA), which focuses on sustainable eco-friendly livelihoods. RB's mission is to provide community information and entertainment and its programming features agriculture, folk songs and heritage, women-specific content, career opportunities and advertising. It broadcasts for two and a half hours daily from 4:00pm to 6:30pm, and repeats this programming from 10:00am to 12:30pm the following day. It employs five reporters and six community coordinators.

The Bundelkhand region experiences relatively high levels of poverty. Its audience is largely drawn from villages in two districts: Jhansi (UP) and Tikamgarh (MP). Many villagers in the region use Hindi-based language dialect, customs and traditions. RB started FM broadcast on October 23, 2008 on 90.4 MHz via 50 watt transmitter with 100 watt effective radiated power. Broadcast range is between five and ten kilometres, covering 25 villages and a total population of 15,000.



Radio Bundelkhand studio at TARAGram, Madhya Pradesh, India

4.3 Method

The review of initiatives (section 4.1 above) indicated that the design of communication programs which feature mobile devices are usually *specific to each initiative*. This specificity makes exact comparison between sites of investigation problematic, and limits the validity of a quantitative and/or statistical research design in this instance. In response, a qualitative research design was adopted in order to return data on how mobile devices and content were used at the site of investigation. This research design looked beyond traditional design issues for ICT for development systems (such as online access and network bandwidth) to consider some of the issues raised in section 2 above, including:

1. Sustainable technology intervention is about more than providing access.
2. The role of human intermediaries.
3. Building active community participation into program planning and production.
4. Demand, supply and cultural hurdles.

A workshop-based training program was designed by COL in collaboration with Development Alternatives and Radio Bundelkhand. The workshop curriculum was based on a structured Participatory Content Creation Method (Watkins 2007). During the workshops, RB staff and community members collaborated closely in the planning and production of content for radio broadcast.

The project commenced with organisational observation of Radio Bundelkhand operations by a field researcher. The purpose of the observation was to look for potential applications of mobile devices, applications and content that could bring about community development and social change at the site of investigation. An ethnographic orientation was adopted which looked beyond immediate issues of access and use in order to consider how mobile systems would be relevant to community development. In so doing, the study acknowledges that the environment and the community are constantly changing, and any ICT-based intervention must acknowledge this as part of its planning and design process. Therefore the field researcher conducting the observation paid particular attention to the wider communication processes that would support social development at villages and communities served by Radio Bundelkhand. Seven research visits were made between March and July 2010, during which the research team observed the sites of investigation and conducted semi-structured interviews with RB and DA staff and community members.

The organisational observation phase of the project served as preparation for two one-week training workshops on participatory mobile content creation, conducted at Radio Bundelkhand. A training syllabus was developed by Commonwealth of Learning to both support the training workshops and to guide future comparable initiatives.

4.4 First training workshop

The first workshop was held over five consecutive days in April 2010. In consultation with Development Alternatives and Radio Bundelkhand (RB), the content creation

activities for the first workshop were based on the theme of the Government of India's Mahatma Gandhi National Rural Employment Guarantee Act (NREGA). The Act provides for enhancement of livelihood security of rural households by providing at least one hundred days every financial year of guaranteed paid employment to every household whose adult members volunteer to do unskilled manual work. By providing employment to those who seek it, this Act serves as a substantial social safety net by providing rural employment.⁷ The selection of NREGA as a content creation theme was due to the fact that Development Alternatives (DA) was already working on NREGA-related projects in villages in the Bundelkhand area. The attendees for the first workshop were selected by DA and RB as follows:

- Eight RB staff members (2F, 6M, age range 18-44 years).
- Three community members from a local agricultural village in Tikamgarh district (MP state) in which DA teams were already working (2F, 1M, age range 19-22 years).
- Two facilitators from Commonwealth of Learning.

A brainstorming session by the workshop participants revealed that:

- All RB staff in the workshop had mobile phones, which they commonly used for staying in contact with friends and family, and for listening to FM radio (mobile handsets in a number of countries can include a FM radio receiver).
- RB communicated with its audience through radio broadcasts and telephone requests, and through interviews and narrowcasting (meaning in this instance that RB reporters physically visit villages to play pre-recorded content, and then record community responses to the content as a basis for follow-up programming).



Radio Bundelkhand reporter narrowcasting to village-based women's group

⁷ <http://nrega.nic.in/netnrega/home.aspx>

The syllabus for the first workshop guided participants through a range of activities which developed skills in strategic communication planning and team-based creative collaboration. The purpose of these activities was to demonstrate how community members could directly participate in RB content planning. As discussed in section 2.3 above, traditional approaches to local or community media organisation planning are based upon one-way information transfer models, in which station managers and reporters produce develop content themes and ideas to fit existing formats i.e. a requests show. Within such formats, community participation may be limited to a phone-in request or an interview *vox pop*. In contrast, participatory content creation requires community members and/or representatives to be closely and actively involved in content planning and/or production. The intended benefit of participatory content creation is that the content produced is truly responsive to – and reflective of – specific community voices and concerns. As a consequence, participatory content creation supports genuine interaction, engagement and two-way communication with communities, as opposed to the one-way information transfer of traditional mass media. One drawback of participatory content creation is that this high level of community interaction (particularly in planning processes) can be time-consuming and unfamiliar to community media organisations.

The workshop participants were divided into three teams. In each team, one community member worked with two or three RB staff to collaboratively develop an idea for a radio package based on an element of the NREGA scheme which directly impacted the community member’s village. Once a broad content idea had been established, the community member from each team returned home to discuss the content idea with friends and family. A NREGA policy expert from Development Alternatives also briefed the content creation teams. These inputs informed the generation of a detailed package outline and interview schedule by each team:

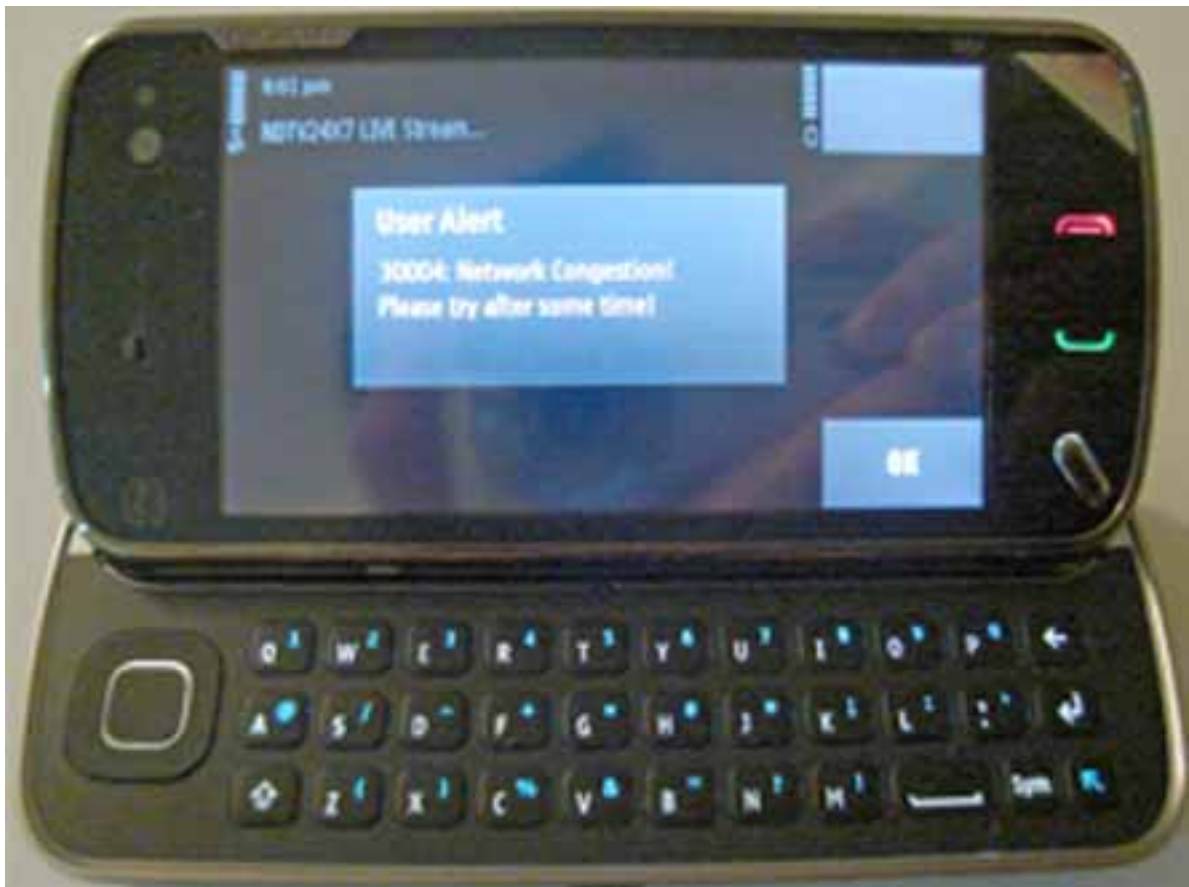
Team: theme	Format
A: NREGA enquiries from community	Community member facilitated group discussion with four villagers in the field to generate some general enquiries about NREGA scheme. Interview recorded by studio via mobile phone for offline edit and later broadcast.
B: completed NREGA projects	Community member + RB reporter interviewed village <i>sarpanch</i> re previous NREGA projects, to catalyse follow-up ideas by RB listeners. RB reporter interviewed other villagers for feedback on the <i>sarpanch</i> ’s comments. Interview recorded by studio via mobile phone for offline edit and later broadcast.
C: NREGA helpline	Community member + RB reporter recorded NREGA questions posed by four villagers in the field, who were linked to studio via mobile phone. Reporter in studio responded to community questions. Recorded for offline edit and later broadcast.

Table 2: workshop one content themes and formats

The three teams of RB staff and community members then proceeded to actual production based on their established themes, outlines and schedules. The packages were all broadcast by RB following the workshop.

Commonwealth of Learning provided Radio Bundelkhand with three Nokia N97 smartphones for use throughout this project. In normal circumstances these smartphones and their tariffs would be too expensive for use by RB. In this case, COL's intention was to encourage the RB team to experiment with the smartphones in order to test innovative mobile content ideas and formats. Hands-on training was provided to the RB teams on the use of the N97 smartphones and included applications. The Nokia N97 unit was selected for a number of reasons:

- Build quality.
- Hindi font options.
- Easy availability in India.
- Wide choice of mobile networks and tariffs.
- High quality camera, video and audio recorder.
- Slide-out physical QWERTY keyboard to facilitate SMS and web browsing.



Nokia N97 smartphone with 'slider' keyboard exposed

4.4.1 Evaluation and critique

During a facilitated group session, RB workshop participants listed their likes and dislikes arising from the first workshop. Likes included:

- New production techniques.
- Smartphone functionality and applications.
- Participation by community members in content research, production.
- Importance of preproduction planning, i.e. outside broadcast links to studio via mobile.

Dislikes included:

- Erratic mobile network reliability.
- Purchase and tariff price of smartphones.
- Potential for reduced physical visits to villages by RB staff due to use mobile phones.

A critique of the first workshop indicates a number of factors that may or may not be found in some other community media organisations:

- The majority of RB staff was young community members who had received all their training on-the-job.
- RB had a phone line available for listeners to leave comments and requests, and self-reported that approximately 250 calls were received every month on any subject. The RB studio used a fixed wireless phone network and due to the location of the studio, fixed and mobile reception were erratic.
- Although every RB staff member had a personal phone, the organisation itself did not have a culture of direct communication with listeners or other parties beyond capturing *vox pops* or field interviews.
- The active and direct participation of community members in content planning and production was unfamiliar to RB staff.

It had been requested that the three community members who participated in the workshop should have some knowledge, experience or interest in the NREGA scheme. The participants who attended were motivated by community issues but did not have any knowledge of NREGA scheme.

Partly as a result of these factors, the NREGA content ideas developed during the workshop (table 2 above) demonstrated a somewhat traditional radio package format. This reinforces the view that the introduction of new technology (in this case, the smartphone) does not lead automatically to significant innovation. In this instance, the RB staff required time to experiment with the new devices and participatory content creation techniques. This requirement had been anticipated in the curriculum design of the training program, in the form of a main content production period (see next section) which preceded a follow-up workshop.

4.5 Main content production period

As part of the training program, RB reporters were asked to produce ten packages on the theme of NREGA over a two-month period. This task was intended to increase their experience of direct interaction with the community, facilitated by the smartphone devices. RB recorded ten NREGA programs and a further two packages on a well-known young freedom fighter that died during the first war for Indian independence. Each package lasted approximately 25 minutes and was broadcast on RB's daily "Aas-Pass" slot ("happenings in my neighbourhood").

The NREGA interviews were arranged by three RB reporters. During unannounced visits to villages, the reporters told any villagers available that RB would be making a program on NREGA. The team collected mobile numbers from interested parties and phoned them the next day from the studio. An NREGA expert from Development Alternatives was in the studio to answer these questions. The RB staff either used smartphones or their own mobiles to conduct the recording depending on network reception on the day. One RB reporter commented that the NREGA phone-ins were somewhat compromised because the technical answers provided by the NREGA expert were too complicated for some villagers to understand. Furthermore, some community members asked unrelated questions during the phone-ins e.g. "how do I get kerosene for the village?".

As part of the preproduction for the freedom fighter packages, posters were distributed in a target village. These listed the numbers of the reporters' smartphones and invited community members to phone with any input or comments.

The smartphones were used to video record the field visits for RB's own documentation and reporting processes. Some RB staff commented that the smartphones made the recording of field interviews easier, as the devices were considered by some villagers to be less "threatening" than a reporter's microphone. Furthermore, the smartphones themselves attracted the attention of passing villagers.

It can be concluded from the activities undertaken by RB staff during the main production period that the main innovation that the first workshop had catalysed was an awareness of the importance of direct communication with local communities, and the ability to make reliable phone calls using the smartphones. It was recognised by some reporters that the use of phone-ins increased direct community participation and feedback, and might make packages sound more 'live' to listeners. However, other RB staff members were concerned that the technical quality of the station's output may have decreased due to the use of phone-ins.

As a whole, the RB organisation appeared to have neither the experience nor the motivation to experiment with the more advanced functionality of the smartphone which may have been useful to their existing scope of operation, such as automated SMS mail-outs in Hindi script, listener databases, survey documentation etc. It was anticipated that the online functionality of the smartphones would be tested during the main content

production period, for example the use of web browsers and search engines to research content. Although the RB studio had PC-based online access, this was restricted and unreliable due to poor connectivity. However, the RB station manager did not activate online functionality as it was considered unacceptable to allow RB staff members to have unsupervised access to web content. This action highlighted a significant cultural hurdle with regard to how the provision of mobile information and content via personal devices opens the door to numerous inappropriate sources that are difficult to supervise or even detect by a family or a community (section 2.4 above).

4.6 Second training workshop

Two COL consultants returned to Radio Bundelkhand to conduct a second training workshop in July 2010, attended by the same eight RB staff members. Building upon the first workshop and the main content production period, the training proposition of the second workshop was that mobile devices allow community media organisations to plan and deliver innovative content and two-way relationships with communities through improved participation, quality and feedback. In order to test this proposition, RB reporters were asked to integrate evaluation and participatory communication processes within their existing planning and production practices. Working either individually or in teams, RB staff devised and produced four programs based on the station's regular content themes: agriculture, women's empowerment, employment, and local music. One program was RB's first live broadcast phone / SMS music request show; another program was RB's first live agricultural Q&A show. All four programs encouraged SMS and phone feedback from listeners.

4.6.1 Employment

The enrolment period for the local government trade college was about to close at the time of the second workshop. RB's employment reporter devised a package for the second workshop which provided information on the trade college system, including a prerecorded interview with the college principal. The reporter established a SMS / infoline using a smartphone and encouraged interested listeners to contact him directly after the package was broadcast in order to request further information. As a result of a call received by the reporter, one listener was able to enrol before the cut-off date.

4.6.2 Women's issues

The RB women's issues reporter worked on the assumption that mobile communication with women listeners might be difficult, since women in local villages might only have access to their husband's mobile phone at night. To test this assumption in the second workshop – during physical visits to villages in order to conduct narrowcasts – the reporter asked interested women to provide a mobile number so that they could be contacted directly as part of a program about diet and food preparation. A simple SMS survey question was sent to the collected mobile numbers and RB reported that 10 responses were received from women. This was the first time that SMS surveys had been used by RB.

4.6.3 *Music requests*

RB broadcasted a prerecorded music show three times per week. The preparation of the playlist in advance of each program was considered to be quite time-consuming. As part of the second workshop, two reporters and a voice impersonator / comedian conducted RB's first-ever live music requests program, using a smartphone to receive listener calls. During the 40 minute slot, 38 calls were answered and 16 were missed due to high demand. Eight SMS requests were received. The majority of requests received were from men, but some phone and SMS requests were also received from women.



Radio Bundelkhand staff during their first live music request show. This was a highly motivational event for the team

4.6.4 *Agricultural Q&A*

RB's daily 20 minute agricultural show is one of its most popular. RB staff reported that there is no similar local program and the only comparable show is pitched at a regional level, which means that the information provided to farmers is more generic.

RB's agricultural reporter organised a first-ever live broadcast Q&A which featured two agricultural experts in the studio, and another expert linked to the studio via phone. Listeners were invited to phone in live with their questions. This special show was extended to 40 minutes' duration, during which six calls were answered and ten were missed due to demand. Two SMS requests were received.

4.6.5 *Evaluation and critique*

During a facilitated group session, RB workshop participants compiled a broad SWOT matrix based on their experiences during the second workshop. The matrix assessed the potential of participatory communication and mobile devices with respect to the organisation's operations:

Strengths	Weaknesses
<p>Participation and feedback from community.</p> <p>Live broadcasts with listener participation save production and editing time e.g.:</p> <ul style="list-style-type: none"> - Live music request show was much quicker to produce than a prerecord, since a playlist did not need to be compiled in advance. - Live agricultural Q&A was much less time-consuming than physical visits to farmers in villages. 	<p>Less SMS requests had been received during the music request and agricultural Q&A show than anticipated. Possible reasons:</p> <ul style="list-style-type: none"> - SMS can be more complicated to send than making a voice call. - Villagers like to hear own voice on radio. - Specific farming questions from listeners may be too complex for the SMS medium. <p>Regular live phone-ins would require specific call previewing software and/or hardware.</p>
<p>Community participation in live phone-in programs could be used to attract revenue through advertising.</p> <p>The broadcast schedule could be adjusted to highlight more ‘popular’ participatory shows – i.e. primetime programs.</p>	<p>Live participation can lead to nuisance calls or inappropriate language from caller.</p> <p>Increased use of mobile communications might lead to decrease in physical visits to villages.</p> <p>Poor mobile network reliability means that live participation via mobile phones is risky.</p>
Opportunities	Threats

Table 3: SWOT analysis by Radio Bundelkhand staff

Critique: whereas the first workshop had introduced methods for active community participation in content planning, the second workshop focused on innovative production using mobile devices. The content implemented by the RB reporters during the second workshop clearly demonstrated improved participation, quality and feedback. The techniques facilitated by the smartphones and participatory communication strategies included live phone-in broadcast, live links to external experts, SMS survey, and live SMS / phone requests. These techniques would be considered familiar to many radio listeners in developed and developing economies around the world. *However, they were highly innovative for this site of investigation.* The SWOT analysis conducted by RB staff (table 3) indicates that members of the organisation were aware that participatory methods and mobile communication could have a substantial impact on station operations, marketing and revenue generation.

5 PROJECT SUMMARY

The aim of this research-based project was to test how a community media organisation could increase active participation by community members and groups in content planning and production via mobile devices. To achieve this aim, a pilot project was implemented to achieve two main objectives:

- Train community radio staff and community members in participatory content creation techniques, supported by smartphone devices.
- Facilitate the production of mobile information and content formats by the community media organisation in collaboration with targeted community members and groups.

The aim of the project was achieved and the specified objectives were met. The findings from both training workshops reinforce the general recommendation made at the beginning of this report (section 2 above) intended for any small- to medium-sized organisation aiming to design and implement communication strategies using mobile devices and systems:

1. Sustainable technology intervention is about more than providing access.
2. Complex mobile services require complex human support.
3. Effective program design must include community representation.
4. Demand, supply and cultural hurdles should be anticipated.

5.1 Sustainable technology intervention is about more than providing access.

The rapid increase of mobile network coverage across India does provide potential access for hundreds of millions of regional and rural users. Barriers to the uptake of mobile communication include economic cost and literacy skills. The findings of this research project indicate that the main impact of smartphones at RB was the ability to make reliable phone calls from the studio. However, even this small-scale technology intervention required the provision of substantial training and support for RB staff in order to explore some of the new formats and processes afforded by smartphones. In this instance it was clear that although mobile communication might leapfrog a whole generation of fixed line technology in India and elsewhere, it does not necessarily leapfrog a whole generation of familiar radio production formats.

5.2 Complex mobile services require complex human support.

By using mobile devices and participatory methods in the field and in the studio, the RB reporters functioned as intermediaries (section 2.2 above) between community members and reliable information, as evidenced by the agricultural Q&A program (section 4.6.4 above). The provision of reliable and highly localised information via intermediaries is a role for which local and community media organisations can be particularly well-suited.

5.3 Effective program design must include community representation.

The importance of a network of stakeholders to underpin community-oriented information and content services was highlighted in section 2.3 above. Although RB is physically co-located with a well-established NGO (i.e. Development Alternatives) the RB organisation did not have strong links to policy / governance bodies, subject experts or grassroots organisations. It is possible that local or community media organisations are not necessarily the appropriate type of organisation to serve as the driver or co-ordinator of a complex, representative stakeholder network which generates communication program design.

5.4 Demand, supply and cultural hurdles should be anticipated.

As discussed in section 4.5 above, online access was not enabled on the smartphone devices throughout the duration of the pilot project as the RB station manager decided that it would be inappropriate for staff members to have unsupervised access to web content. Therefore one of the most powerful capabilities of the smartphone device was not tested during this project. This instance provides a valuable example of varying attitudes towards the online environment, and supports the proposal that even when online access is provided, policy-makers and technologists should not assume that it will be adopted with open arms at the grassroots level.

In terms of the supply of mobile content by community media organisations, the rigid program schedule which is essential to traditional broadcasters (local, community and mainstream) is usually unsuitable for interactive mobile applications, which allow users to consume content at a time and place of their choosing. A change in planning practices and organisational mindset will be required for station managers to fully capitalise on mobile content opportunities.

In terms of demand, local and community media organisations may be empowered by mobile content and devices in some cases; in others, they may be overwhelmed. Pakistan had 94.3 million mobile subscribers by June 2009, or about 58 percent of the population (according to the Pakistan Telecommunications Authority).⁸ In contrast, a 2010 LIRNEasia study indicated that 24% of Pakistani own radios.⁹ Many mobile handsets sold in Pakistan integrate a FM radio receiver; although only roughly 7% listen to radio on their phones, it is conceivable that such mobiles will become as or more popular than the radio for personal audio content consumption in areas with network coverage. It is interesting to consider how local and community media organisations would be affected by such an environment.

⁸ <http://www.pbs.org/idealab/2009/08/when-fm-radio-meets-the-mobile-phone-in-pakistan224.html>

⁹ <http://lirneasia.net/projects/2008-2010/bop-teleuse-3/>

6 ACKNOWLEDGEMENTS

The pilot project was funded by Commonwealth of Learning, www.col.org. For further details on this project, contact Mr Ian Pringle, Education Specialist Media, Commonwealth of Learning, ipringle@col.org.

This project was based on the earlier research project *Applied research on the use and potential of mobile-friendly content in the context of local and community media in developing countries*, funded by UNESCO and Commonwealth of Learning. This report is also based on M.S. Kiran (2010) *Mobile Telephone Devices and Community Media in Developing Countries*.

Commonwealth of Learning wishes to thank Mr M.S. Kiran, field researcher; staff at Radio Bundelkhand and Development Alternatives; and community members from the villages which took part in training workshops, interviews, and content creation activities. This applied research program and report was developed and written by Associate Professor Jerry Watkins, University of Western Sydney, www.jerrywatkins.info

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