Applied research on the use and potential of mobile-friendly content in the context of local and community media in developing countries

By:
Jerry Watkins

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Contents

1 KEY POINTS

The objectives of the overall project are:

- To analyse the potential for mobile-friendly content generated and distributed by local and community media and audiences in developing country contexts.
- To provide an assessment of related barriers, including language issues; and capacity and training needs.

This study recommends that both local and media organisations and funding agencies should carefully reconsider what kinds of mobile-friendly content will be demanded by consumers over the medium-term. The long-term question is about which existing organisations will survive or thrive; which new players will emerge; and which development objectives can be effectively targeted by mobile-friendly content.

This study categorises mobile-friendly content as follows:

a) Low-bandwidth content, i.e. SMS and voice.
b) High-bandwidth content, i.e. radio and TV packaged for delivery to mobile devices.
c) Offline rich content, i.e. compressed audio and video.

An optimal high-bandwidth content delivery system could enable a paradigm shift in the understanding of the concept of 'mass media', by enabling both mass-market and niche content to be delivered via mobile devices. It is probable that in the medium-term, high-bandwidth content systems will be confined to those developed economies or large corporates that can afford to build and maintain 3G or WiMAX networks.

In many areas, radio content can be free to the listener at point of consumption. In contrast, specialised content consumed via mobile handset is often paid for by the consumer. Therefore any organisation contemplating the production of mobile-friendly content must be sure of sufficient *demand* from paying consumers; and must produce content of sufficient quality that consumers will want to pay for it. This proposition is achievable by local media organisations but presents a considerable challenge to those community media organisations which do not charge consumers, and/or do not attract significant advertising revenue to offset production and distribution costs.

Mobile handsets can facilitate a range of new opportunities for those program managers, policy makers or community activists seeking to reduce the digital divide. But mobile applications can facilitate inappropriate actions and/or behaviours that are difficult to detect by a family or community. This includes communication with inappropriate parties; video cyber-bullying; or SMS harassment. These are very real issues which demand serious consideration by all those who promote mobile-friendly content for development objectives.

1.1 PR summary

The following summary statement for PR purposes is adapted from an email from UNESCO Chief, Media Capacity-Building to the Consultant, 03 June 2009:

"A balanced national media environment requires a mix of public, private, local and community media organisations. This project addresses the advancement of local and community media within the media mix of developing countries. It investigates how and why local and community media organisations and their audiences can benefit from the integration of mobile-friendly content for information, education, or entertainment. Furthermore, this project aims to make mainstream media players aware of the niche audiences for mobile-friendly content that local and community media can deliver".

Local & community media and mobile devices

2 LOCAL & COMMUNITY MEDIA AND MOBILES DEVICES

Section 2.1 provides context for this study by examining the different functions of community, local, and mainstream media; and discussing the impact of the web on the media landscape. It illustrates changing communication models in terms of the evolution from analogue to digital; and indicates how mobile production and distribution devices impact on the connection between content and audiences.

Sections 2.2, 2.3, and 2.4 review and comment upon existing projects which involve mobile devices and/or systems for content production and distribution. These examples are categorised as follows:

a) Low-bandwidth content, i.e. SMS and voice.
b) High-bandwidth content, i.e. radio and TV packaged for delivery to mobile devices.
c) Offline rich content, i.e. compressed audio and video.

Section 2.5 uses examples from outside the local/community media sphere to indicate the importance of human intermediaries to successful ongoing content production and distribution.

Section 2.6 provides a checklist of possible success factors to mobile-friendly content production derived from the review of examples.

Section 2.7 identifies candidate sites for a demonstration project.

Section 2.8 outlines both opportunities for and barriers to the uptake of mobile devices and systems by local and/or community media organisations, including foreseeable issues associated with wider usage of mobile handsets.

2.1 Context

2.1.1 Community, local, and mainstream media

For the purposes of this study, a **community media** organisation is understood to be one that is committed to dealing with local issues; or perhaps national or international issues from a local perspective. Community participation is a key ingredient, which might entail volunteer staff and/or listener groups. Some organisations 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 large number of community media organisations, which typically are not owned by government, and operate on a not-for-profit basis.

Other small-scale initiatives can adopt a less participatory approach than community media organisations. For example, a station manager may have a background in mainstream media, with 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 media initiatives can resemble a scaled-down version of the mainstream media – in terms of ownership, business models, advertising revenue, and/or programming – and this study will categorise these initiatives as **local media**. Such local media organisations are often owned privately, and operate on a for-profit basis.

This study takes the position that the basic function of the **mainstream** media industry is to make a one-way connection between content (i.e. information, music, stories) and audiences (readers, listeners, viewers). Although the mainstream media landscape has changed dramatically through the introduction and uptake of digital information and communication technology (ICT) for both content production and distribution, it has *not* been transformed. We recognise many familiar features of the landscape: the mainstream media are still dominated by newspapers, radio, and television. Content is still dominated by entertainment, sport, and news.

2.1.2 Impact of web

The digital ICT which has impacted so heavily on the mainstream media landscape is also redefining the implementation of community media. The World Wide Web was first ignored by professional media players, and then acknowledged as an additional (yet secondary) mass medium to carry content that had been repurposed from newspaper headlines or TV news. This underestimation of the web medium is witnessed by the growing list of failed US newspapers that did not react to the migration of advertising revenue from the printed page to the web browser.

So the web is becoming a very significant mass medium; and it's also on the web that we can experience truly participatory community media. Widespread access to and penetration of web browsers in developed countries has catalysed a thriving and diverse community media environment online. Social networks and blogs support both communities of interest and practice. Online participants can and do interact over politics, knitting, sports, pets – and this interaction can range from informative, educative, and entertaining; to misleading, inappropriate, or illegal. The diversity of online communities arises from the diversity of behaviour, personality, and values of participants.

For the purposes of this study, the terms 'web' and 'Internet' are not used interchangeably. In very basic terms, the Internet is a data network which supports TCP/IP communication protocol. The web (i.e. World Wide Web) is a software system that supports user interaction. Therefore the web is a medium that enables content production and distribution; the Internet is an enabling technology platform.

2.1.3 Changing communication models

In order to study the use of mobiles in the context of local and community media, it's worth reviewing how digital information and communication technology has reshaped communication models. Figure 1 demonstrates a content-oriented communication model for analogue radio broadcast (for professional, local or community media).

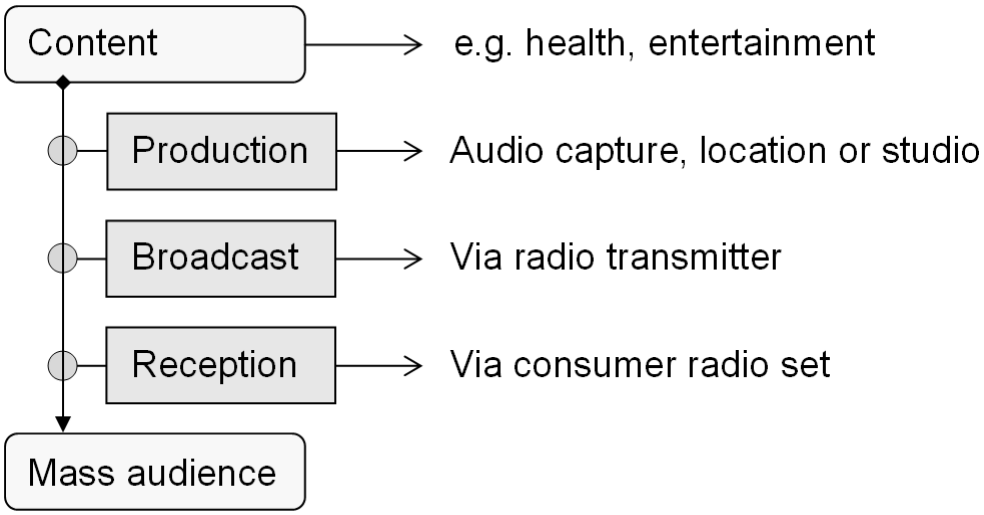


Figure 1: content-oriented communication model for analogue radio

Content such as health, entertainment, music, news etc. is captured through the *production* function (on location, in the studio, or otherwise) using the audio medium. This content is *broadcast* via radio transmitter and *received* by a *mass audience* via consumer radio sets. Communication is defined as one-way; transmission technology cannot differentiate between segments, and does not facilitate a response by the audience. Due to the analogue technologies involved, the content is locked into the medium. In other words, once the content is captured during the radio production function, it must be used for radio broadcast. To convert the content to another analogue medium would require significant effort. Because content has been locked into analogue media through this model for many years, we can understand how the words 'media' and 'content' are used interchangeably by many people. In other words, analogue content is considered to be specific to the radio medium. The over-quoted Canadian commentator Marshall McLuhan suggested – with regard to the traditional (analogue) mass media industries – that "the medium is the message" but this is no longer true in the digital environment; if indeed it ever was. On the contrary, digital ICT has reinforced the separation of content and medium; even global media baron Rupert Murdoch – trained in the traditional mass medium of newspapers – declared that "content is king" in response to the ICT 'revolution'. The availability of compatible digital data formats means that content and media can no longer be considered as the same entity. In other words, content can be captured by different devices using digital formats, and distributed across multiple platforms to target segments.

Figure 2 shows how digital ICT has changed the analogue communication model.

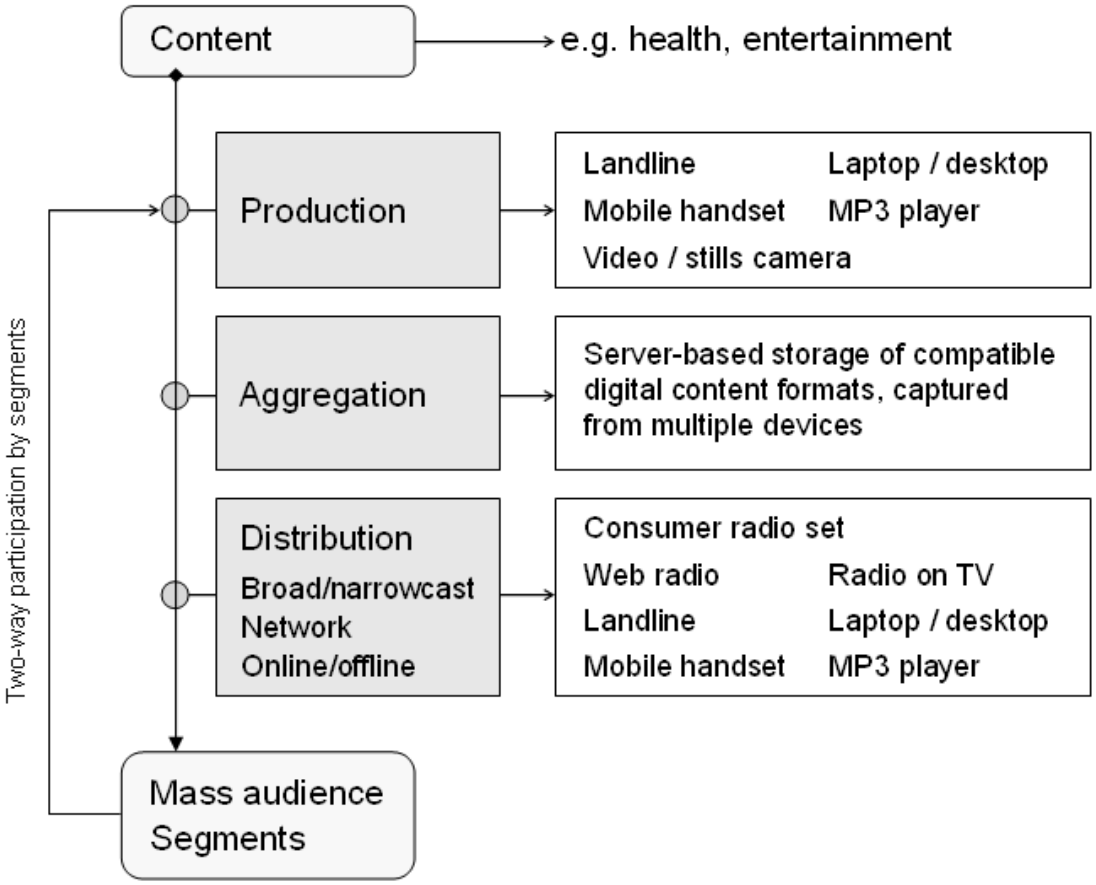


Figure 2: content-oriented communication model for digital audio

- *Production*: audio content can be captured in digital format either on location or in the 'studio' – although a formal studio environment is not necessary. A laptop or desktop with a microphone is suitable, or a mobile handset or MP3 player with voice recording function; even a video or stills cameras can be used for recording audio.
- Once captured in digital format, multiple content sources can be *aggregated* in a storage facility for distribution via single or multiple platforms. The aggregation function is a very important feature of the digital content value chain, and is sometimes overlooked in broad discussions about mobile devices.
- Content *distribution* is possible through a variety of media. For example, audio content captured by MP3 player can be broadcast to a *mass audience* via web or FM radio. The same content can be repackaged and distributed to target *segments* using mobile handsets. This multi-platform distribution capability provides local, community, and mainstream media organisations with an expanded range of content production and distribution opportunities, in contrast to the analogue communication model (Figure 1).
- The diagram indicates how segments can contribute to the communication model not just as passive consumers of one-way communication, but also as active participants in a two-way communication relationship. For example, communities can capture

their own local content which can be added to the value chain. However, it should be noted that although digital systems can greatly enhance the technical capacity for two-way communication, it does not follow that individuals and/or communities will necessarily engage in content creation activities unless they are motivated to do so.

2.1.4 Production and distribution

There is a focus by many industry commentators on the role of the mobile handset as a *personal content receiver*. Depending on the capability of the device and the network, a mobile handset can receive voice, SMS, email, audio and video content. This is a very important capability for the mobile handset. It should be noted that Figure 2 (above) indicates that the contribution of mobile devices is not only as a tool for distribution and content consumption, but also as a tool for production. At the consumer level, *these tools are converging*. A mobile handset can download content; it can also capture content such as digital images. Likewise, many MP3/4 players can record audio.

However, just because mobile devices have both a production and distribution function, it does not follow that local and community media systems can easily integrate such devices. Figure 2 demonstrates the importance of *aggregation* to multi-platform content distribution. And to maintain a system of production, aggregation, and distribution, a network of trained and motivated human operators and intermediaries is essential. For example, the use of mobile devices by citizen journalists is often seen as one direction for the future of news-gathering. At time of writing, videos of street demonstrations in Tehran are being recorded by citizens using mobile phones and uploaded to content sharing portals such as YouTube. These videos are then replayed on terrestrial and cable television stations across the world. This example clearly shows the application of mobile devices and multi-platform delivery systems. But it should be remembered that it takes more than a mobile device and a citizen journalist to make this content chain work: the system also requires a well-established online content sharing medium (e.g. YouTube) and TV broadcast players (e.g. CNN, BBC). It's interesting to note here that not only does a player like CNN rebroadcast content from YouTube, it also encourages viewers to become citizen journalist by submitting content to CNN in return for an onscreen credit. This content is often captured by a video camera on a mobile handset.

The following review of current practice is categorised as follows:

a) Low-bandwidth content, i.e. SMS and voice.
b) High-bandwidth content, i.e. radio and TV packaged for delivery to mobile devices.
c) Offline rich content, i.e. compressed audio and video.

2.2 Low-bandwidth content

Low-bandwidth content includes voice and SMS. The following examples demonstrate low-bandwidth content production and distribution suitable for local and community media organisations.

2.2.1 Freedom Fone, Zimbabwe

Freedom Fone is a form of dial-up radio which aggregates audio content via a Content Management System and distributes this content via mobile handset or landline. Freedom Fone is designed to be a Mobile Information Service which permits limited contributions by users. Arguably, the Freedom Fone system attempts to provide a local information browser: "Freedom Fone will provide a voice database where users can access news and public-interest information via land, mobile or Internet phones. In a concept similar to a telephone tree employed by many private companies, users will call in and then dial specific numbers to find the information they need. Independent radio station content will be broadcast, along with frequently updated audio reports created specifically for Freedom Fone. Users will be able to pose questions and leave answers on a voicemail system. The concept, which employs both new and old technologies, will allow the poor to receive and contribute information in a practical and economical way". However, there are foreseeable issues with the Freedom Fone service; these include cost of deployment; cost to users; and the need for multiple phone lines to support simultaneous users. Call-back functionality could reduce cost to user, but will increase cost to the host organisation. Freedom Fone was in prototype stage as of April 2009.

Sources
http://www.newschallenge.org/freedom_fone
http://kubatana.net/html/ff/ff_cont.asp
http://www.pbs.org/idealab/2009/04/waiting-for-the-bill-gates-in-qatar110.html
http://mobileactive.org/calling-content-freedom-fone

2.2.2 One World M4G (Mobile for Good), Kenya

M4G is comparable to Freedom Fone in that the system aggregates and distributes content. M4G provides a range of information services for low-income segments via SMS. Now a franchise scheme, the company has reportedly reached break-even point with annualised revenues of US$100,000. Its information services include:

- *Kazi560*, a job information service for which job-seekers pay 7 Kenyan Shilling (Ksh) per SMS received during the pilot phase. It offers jobs in more than 40 categories, from carpenters to secretaries.
- *Health Tips* provides subscribers with useful information on various pertinent health issues for 7 Ksh per SMS received.
- *MyQuestion*, where customers anonymously ask HIV/AIDS and breast cancer-related questions for 7 Ksh per question and 7 Ksh per answer.
- *Her560*, a lifestyle channel for professional women with information on health, diet, fitness, fashion, family etc. One-off tips are available at 7 Ksh per SMS.

Information is not available regarding why these services were selected, and to what extent the target segments were involved in developing services and content.

Sources:
http://news.bbc.co.uk/2/hi/technology/4054475.stm
http://uk.oneworld.net/article/view/117284
http://community.eldis.org/.598dd962/0

2.2.3 Jasmine News, Sri Lanka

Jasmine News provides a production, aggregation, and distribution function which employs reputable stringers – freelance reporters who deliver news to known wire news agencies – to gather information for a one-person news wire service. Set up by Chamath Airyadasa – a journalist with experience at Reuters and AP Dow Jones – Jasmine News had approximately 100,000 subscribers by mid-2008, paying 30 US cents a month across Sri Lanka's four mobile phone networks to receive a news alerts service.

Jasmine News shows how small-scale media organisation can generate revenue from low-bandwidth services. Although its use of stringers is consistent with a professional news wire service structure, it is possible for local and community media organisations to use volunteer networks to imitate some aspects of the Jasmine News model.

Sources:
http://www.jasminenews.com
http://ict4peace.wordpress.com/2006/12/

2.2.4 Fisher Friend, India

Fisher Friend is a mobile application for 3G CDMA handsets. By selecting options from a phone-based menu, fishermen can access to market prices, weather updates, or emergency information in local languages.

Fisher Friend was launched in December 2007, incorporating feedback from local fishermen gathered during a pilot study. The project is based on previous MSSRF research which had indicated substantial demand for locale-specific, dynamic content such as current market prices of fish, or best fishing zones. The system is a collaboration by the M.S. Swaminathan Research Foundation (MSSRF), Qualcomm, Tata Teleservices and Astute Technology Systems. Fisher Friend is being implemented in coastal areas of Tamil Nadu; there are plans for implementation in other Indian coastal communities. The initiative is intended to support the long-term goals of post-tsunami rehabilitation by expanding MSSRF's implementation of Village Knowledge Centres (VKCs).

Sources:
http://www.thehindu.com/2007/12/27/stories/2007122753790600.htm
http://www.nasscomfoundation.org/index.php/Employability/Information-for-Fishing-Community-by-Qualcomm-through-the-Fisher-Friend-BREW-Application.html

2.2.5 Comments

Both Freedom Fone and One World M4G demonstrate interactive systems for low-bandwidth content aggregation and distribution. Information is supplied on-demand to mobile handsets. Although highly innovative, these technologies are usually designed for the one-way delivery of information, and do not offer an obvious mechanism to motivate contribution by users. Furthermore, the interactive menu system employed by Freedom Fone may not necessarily be easy-to-operate for inexperienced users. A critical factor for a pay-as-you-consume content service is the quality or relevance of the content being supplied. One blogger reports asking for a general health tip from the One World M4G

service, and receiving a recipe for an avocado facial (http://community.eldis.org/.598dd962/0). Fisher Friend is comparable to Freedom Fone and One World M4G at the interaction level, i.e. users interact with a basic interface on the phone. However, Fisher Friend demonstrates a much more targeted communication strategy by providing work-related content to a specific segment (i.e. the local fishing industry). By starting with a more focused core offer in this way, it is possible that Fisher Friend will be able to generate more rapid growth than Freedom Fone and One World M4G. Jasmine News is different to the other examples in this category in that it has adapted a more familiar model of news aggregation and distribution which motivates content contribution by stringers in return for financial payment. This basic form of motivation underpins what appears to be a successful subscription service offer.

2.3 High-bandwidth content

High-bandwidth refers to radio and TV content packaged for delivery to mobile devices. High-bandwidth content remains the focus of research and marketing by handheld device manufacturers, network operators, and system engineers. As mobile handset penetration approaches saturation in developed economies, the ability to upsell high-bandwidth content and/or services to corporate and individual subscribers is regarded as an important boost to the revenue for these players. One recent estimate (and there are many) suggests that the high-bandwidth content market earned revenues of USD725.0 million in 2007, and estimates this to reach USD2.6 billion mark by 2012 (http://en.sourcews.com/high-broadband-penetration-drive-world 10 Mar 2009). The following examples highlight audio and video content respectively.

2.3.1 Tata Indicom Internet Streaming Radio

Tata Indicom Internet Streaming Radio (ISR) launched in 2007, with content available in English, Hindi, Telugu and Tamil. ISR is effectively a content distribution offer; in this case, radio content is available via mobile handset. The service offers international music, news and sports radio stations including Bloomberg, BBC, CNN, Fox Radio, ESPN Radio and Seattle WM. The subscription service makes radio content available in areas where FM radio has yet to achieve coverage.

Sources:
http://www.tataindicom.com/pressroom/pr_docs/Press-release-Internet-Radio.pdf
http://www.tataindicom.com/popups/domore/radiodemo.html

2.3.2 UTV mobile video

UTV New Media is another content distribution offer; in this case, music video content is downloadable via mobile handset. UTV is due to launch India's first mobile music video channel ‘UTV@Play’. According to the company, the facility will be accessible by consumers with mobile accounts with Vodafone, BSNL, MTNL and Idea. Users can download the application to access the content from a WAP portal. The mobile channel is an extension of Internet portal UTV@play and costs Rs10 per day or Rs 30 per month. UTV already offers a mobile service of its Bindass channel. During the initial phase,

UTV's mobile TV channel will showcase music videos in Hindi, English, Punjabi, Tamil, Telugu, Kannada, Bhojpuri and Marathi.

Sources:
http://www.utvatplay.com/
http://www.topnews.in/utv-arm-launches-india-s-first-mobile-music-video-channel-utvplay-2153766

2.3.3 Comments

An optimal high-bandwidth content delivery system could enable a paradigm shift in the understanding of the concept of 'mass media', by enabling both mass-market and niche content (one-way and interactive) to be delivered via mobile devices. However, an optimal high-bandwidth content delivery system requires a very significant value chain in order to connect with the user:

- A suitable mobile device, e.g. a 3G handset, smartphone or PDA.
- A range of content suitable for a mobile device, e.g. TV, radio, games.
- A broadband-capable mobile network, e.g. 3G, WiMAX etc.

It seems likely that in the medium-term, high-bandwidth content systems will be confined to those developed economies or large corporates that can afford to build and maintain 3G or WiMAX networks. As such, their study within the ICT for development context will remain rather limited over the medium-term.

2.4 Offline rich content

The obvious limitation of mobile high-bandwidth content such as music or video is that such content requires a suitable high-bandwidth network for content distribution. In contrast, many mobile devices can also store, play and/or record offline audio and video content, such as MP3 / MP4 devices, personal digital assistants, smartphones, and mobile handsets. Therefore a number of projects have chosen to use these devices within offline or hybrid delivery systems that distribute rich media.

2.4.1 One Media Player per Teacher (OMPT) / Digital Green

OMPT is a strong example of offline production and distribution. OMPT selects portable media players, speakers, battery powered video projectors and power generators (solar and human kinetic) for possible deployment to international educational development projects. OMPT is a collaboration with several NGOs which specifically targets teachers and students in remote areas without Internet access. Portable Media Players (such as MP3 players) can be used to support formal school curricula, or informal learning programs for health care, agriculture, sanitation etc. OMPT is involved in a number of projects including Digital Green (DG), a project in India that disseminates targeted agricultural information to small and marginal farmers in India through digital video.

Sources:
http://www.ompt.org/index.html
http://www.digitalgreen.org/

2.4.2 EduVision, Kenya

The EduVision project is an example of low-bandwidth content (section 2.2) but is included here because it provides an interesting contrast to OMPT and Digital Green (above). EduVision, OMPT and Digital Green are all attempting to provide quality educational materials to regional and remote regions. Whereas OMPT / Digital Green are using off-the-shelf devices to deliver offline rich content, EduVision uses a complex transmission system to deliver content to classrooms in Kenya. EduVision comprises an extensive system including a bespoke handheld device for the user (an 'e-slate'); a digital satellite radio distribution network; and an extensive training and support effort. This solution demonstrates a one-way educational content broadcasting model. E-slates are small handheld computers connected to a wide-area, low-cost content distribution network powered by digital satellite radio. Textbooks are converted into digital files and sent from the Network Operation Centre via Internet to a WorldSpace radio satellite, and then bounced to a base station consisting of content routing hub at the school. The hub transmits to the e-slates, which update automatically each morning. The entire platform is referred to as the EduVision E-learning System (EELS). It is claimed that the installation of an EduVision receiver at a local school is cheaper than setting up an Internet connection and local area network. However, the EELS system is one-way only and depends on complex technology chain to digitise and deliver content to the classroom, in contrast to OMPT and Digital Green's off-the-shelf rich content strategy.

Sources:
http://www.eduvision.or.ke/technology/tech4.html
http://www.elearning-africa.com/newsportal/english/news80c.php
http://news.bbc.co.uk/2/hi/technology/4304375.stm

2.4.3 StoryBank, India

The StoryBank project demonstrated how mobile devices can be used for both production and distribution. Working in partnership with a community radio station, the StoryBank team used personal digital assistants (PDAs), cameraphones and public touchscreens for the production and distribution of community-generated content in the village of Budikote, Karnataka state. The aim of the project was to use these devices to enable mobile digital storytelling by the community. The PDAs and cameraphones were distributed to community members, who used these mobile content capture devices to construct simple digital stories of relevance to the community. This digital content could be played back on a mobile device, or uploaded to a public touchscreen via Bluetooth connection so that the digital stories could be retrieved and watched by the community. This offline rich content delivery could be used to enhance the distribution channels of local and community media organisations.

Sources:
http://www.dwrc.surrey.ac.uk/ResearchProjects/CurrentProjects/StoryBank/tabid/110/Default.aspx
http://www.dwrc.surrey.ac.uk/

2.4.4 Mobile Multimedia Laboratory, Australia

The Mobile Multimedia Laboratory (MML) is an interesting example of how a library has supplemented its traditional services with a mobile creative ICT facility. The MML was launched in 2005 by the State Library of Queensland, the state's main reference library and the governing body for the state's 333 regional, rural and remote library facilities. The MML system was designed around a wireless network of five Sony VAIO widescreen notebooks preinstalled with an integrated range of creative applications including image manipulation, video capture and edit. The VAIOs were supplemented with a range of peripherals including: mini-DV video and digital stills cameras; scanner and printer; wireless data projector; and speakers. The entire system packed into three toughened suitcases, easily transportable by car or plane. The MML was designed to be easily expandable and has since been increased 10 VAIO laptops. One of the main roles of the MML was to facilitate the co-creation of community digital stories as part of the State Library of Queensland's *Queensland Stories* project.

Source: http://qldstories.slq.qld.gov.au/

2.4.5 Comments

It can be argued that the successful establishment and adoption of offline rich content systems can actually demonstrate interest in future high-bandwidth content services. Offline delivery is effective if the content being distributed is not 'volatile', i.e. doesn't need frequent update. Hence offline rich content is suitable for distributing an audio or video lecture by a teacher; but could be rather less effective for community news and events. It's interesting to note what kind of content was created by community participants during the StoryBank experiment. The most popular themes for content creation were education, student issues, and entertainment. The least popular were news, legal information, and panchayat information. In comparison, the digital stories created by community participants during the State Library of Queensland's *Queensland Stories* project reflected either cultural or community heritage, or family anecdotes. To some extent, these content themes were the result of the interests of the program participants selected by the Library.

2.5 Importance of human intermediaries

The following two examples are drawn from outside the accepted local/community media sphere. United Villages in India is a private company, established by social entrepreneurs to promote ICT access in regional and rural areas. Mirror Arts Group in Thailand is an arts/culture initiative, which aims to preserve vanishing indigenous culture. Both initiatives make substantial use of mobile devices to create and distribute digital content; and both require a substantial network of human intermediaries to maintain their content initiatives. The indication from these two examples is that it might be unwise for local/community media organisations planning to implement a mobile-friendly content offer to assume the availability and suitability of local volunteers (or other staff) to sustain such a project. Instead, the role of intermediaries must be carefully planned and managed to contribute towards ongoing success.

2.5.1 United Villages / DakNet, India

United Villages is a private company which aims to provide affordable ICT access to regional and rural users. The company has developed a low-cost Internet access model called DakNet ("Postal Network"), using proprietary Mobile Access Points technology. The system was launched in the state of Orissa in 2005. Village-based franchisees sell subscriptions for users to access a range of services on the franchisee's laptop. This data is uploaded periodically to a roadside access point. Wi-Fi transceivers mounted on local buses send and receive data from the roadside access points, for later transfer to/from the Internet via wireless protocols. This store-and-forward system allows United Villages to offer an asynchronous network communication model to users at low cost. Services include:

- Job Search: a subscriber sends a curriculum vitae to United Villages and receives relevant job vacancy updates.
- Matrimonial: a subscriber receives information about potential brides/bridegrooms from United Villages.
- Infoguru: a United Villages operator conducts a web search on behalf of a subscriber.
- E-shopping: a subscriber can order items from the United Villages e-shopping catalogue.

The DakNet store-and-forward system is an innovative solution to rural ICT access. However, it is a complex system that is highly dependent on proprietary technology, and can become vulnerable if and when a more advanced system emerges (a similar situation is faced by EduVision, section 2.4.2). Indeed, as mobile handsets become more affordable in regional Orissa, it is quite possible that off-the-shelf mobile systems could replace DakNet's bus-mounted Wi-Fi. However, there are two important lessons for local/community media organisations here:

- Rather than providing information on human rights or local issues, United Villages' services like Job Search and Matrimonial provide content that is focused on the individual, rather than the community – although the community can benefit. This is comparable to the Fisher Friend service (section 2.2.4), which provides targeted information for the local fishing industry which knock-on economic benefits to the wider community.
- United Villages has developed an extensive system of human *intermediaries* such as salespeople, franchisees and technical support personnel who work in the field to promote and sustain the company's e-shopping offer. The importance of these intermediaries to the overall success of e-shopping demonstrates how a focus purely on universal access to ICT is simply insufficient to guarantee the take-up of services by rural users. A sustainable ICT intervention is not just about building infrastructure and providing reliable bandwidth; it must also develop a network of intermediaries who provide an interface to rural users with low digital literacy skills. Indeed, these human intermediaries could be considered as one of the most valuable forms of capacity building that result from rural ICT projects of this nature. It is likely that local/community media organisations wishing to establish and sustain mobile-

friendly content will also have to look beyond technology challenges in order to generate and sustain demand for compelling content, supported by intermediaries.

Source: http://www.unitedvillages.com/

2.5.2 Mirror Arts Group, Thailand

Mirror Arts Group (MAG) is a NGO committed to establishing a strong, active community within the indigenous highland hill tribes located in northern Thailand. It operates on the tenet that ICT can help preserve and document a vanishing way of life. Among its various initiatives, MAG runs two content-oriented projects:

- The Virtual Hilltribe Museum, an online resource for tribal culture which distributes traditional music, videos, transcripts of genealogies as well as still images, stories and general interest for the mutual benefit of community members and broader audiences. Staff and volunteers from the Mirror Art Group capture cultural knowledge through the participation of hill tribe villagers, using folk music recordings, community interviews and documentation of traditional festivals.
- Bannok TV is a community co-creation initiative. Video production equipment and training is provided by MAG to local youth volunteers, who act as video journalists by reporting on relevant local issues. This project provides positive media images to the hill tribe youth community, as well as addressing a lack of knowledge in the wider community about hill tribe culture.

Mirror Arts Group demonstrates how to achieve synergies in content production and distribution. By operating a number of different initiatives such as the Virtual Hilltribe Museum and Bannok TV, MAG is able to use scarce production resources and personnel to produce substantial amounts of online content on an ongoing basis. Furthermore, MAG is comparable to United Villages (above) through its use of human intermediaries to maintain close links with its network of content-providing villages. Simply put, MAG shows the extensive network of people and technology required to produce and distribute community content on an ongoing basis. It is likely that a local/community media organisation seeking to produce and distribute mobile-friendly content will require a similar foundation of equipment, human networks and motivated intermediaries.

Sources:
http://www.hilltribe.org/index.shtml
http://www.bannoktv.com/

2.6 Factors contributing to successful implementation

Four factors have been identified from the review of examples which are of particular importance to any local/community media organisation planning a mobile-friendly content initiative.

2.6.1 Appropriate technology

This study is concerned with supporting the production and/or distribution of mobile-friendly content by local and community media organisations in developing areas. As discussed in section 2.3.3, a high-bandwidth content delivery system requires a very significant value chain in order to connect with the user:

- A suitable mobile device, e.g. a 3G handset, smartphone or PDA.
- A range of content suitable for a mobile device, e.g. TV, radio, games.
- A broadband-capable mobile network, e.g. 3G, WiMAX etc.

It is assumed that this configuration will not be available to many local/community media organisations in the medium-term, therefore the distribution of high-bandwidth content is not considered here; it is anticipated that this will be the subject of further research.

A number of examples of low-bandwidth content have been discussed which feature a bespoke delivery system, including Freedom Fone (section 2.2.1); Mobile for Good (section 2.2.2); and EduVision (section 2.4.2). These initiatives are based on proprietary systems which aim to establish a low-cost software and hardware platform for information and content delivery. By their very nature, the technologies involved are specific to these initiatives and it is unlikely that these proprietary systems will be available to local/community media organisations in the short-term. Hence these kinds of proprietary systems are not considered here.

The recommended approach to the introduction of appropriate technology to support the production/distribution of mobile-friendly content for local/community media organisations – at this point in time – is to base implementation as far as possible on off-the-shelf software and hardware. This approach eliminates the cost and time required for the development of either proprietary systems for low-bandwidth content; or the expense of establishing the infrastructure required for high-bandwidth content. An off-the-shelf approach to technology is evident in a number of the examples discussed, including Jasmine News (section 2.2.3); One Media Player per Teacher and Digital Green (section 2.4.1); Mobile Multimedia Laboratory (section 2.4.4); and Mirror Art Group (section 2.5.2). By using appropriate, cost-effective, off-the-shelf technology, local/community media organisations are spared the burden of investing in and testing proprietary platforms; which in turn liberates available time and resource to focus on innovative content production and distribution processes.

2.6.2 Supply of content

The timely production of relevant and varied local content in sufficient quantity remains an ongoing challenge. 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. Simply put, how can local/community media organisations produce enough mobile-friendly content to ensure a varied supply to users? Jasmine News generates sufficient revenue to motivate stringers through micropayment for new stories. The State Library of Queensland encouraged users of its Mobile Multimedia Laboratory to repurpose content from its extensive community archive. The Mirror Art Group maintains an active relationship with indigenous hill tribe communities in order to record cultural content. *None of these examples attempts to produce all its content in-house* – they have all recognised the value of collaboration in content production. It is advisable that a local/community media organisation wishing to expand its offer with mobile-friendly content will have existing comparable relationships with allied content producers. Furthermore, the supply of content is not simply an issue of production quantity. The quality of supply must meet the expectations of consumers – note the anecdote of the avocado facial information supplied by Mobile for Good in response to a paid-for request for a general health tip (section 2.2.5). If quality of supply is insufficient or inappropriate, consumers will not pay for mobile-friendly content.

2.6.3 Demand for content

It is often the case that consumption of content is affected by the nature of the delivery medium. For example, listeners to digital or analogue radio usually expect consumption to be free – the cost is borne by the broadcaster, and offset by public funding and/or advertising (although different systems exist; in the USA, local or community radio stations might raise funds from listeners via requests for donation). Similarly, terrestrial television is often free at point of consumption; although premium content via satellite or cable might require additional payment. In contrast, content delivered to mobile handsets is rarely free at point of consumption. Depending on the tariff, the consumer is paying per SMS, per call; or pays more for a prepaid service. Premium high-bandwidth content usually attracts a higher cost. In this way, we can compare consumption via mobile handset to a quality newspaper – in other words, the consumer pays for targeted content. Although it is possible to reduce user payment through the use of a freefone number, this usually shifts costs onto the content distributor (not ideal if the distributor is a small local/community media organisation). So any organisation contemplating the production of mobile-friendly content must be sure of sufficient *demand* from consumers; and must produce content of sufficient quality that consumers will pay for it. This proposition is achievable by local media organisations (e.g. Jasmine News) or private companies (e.g. United Villages' Job Search and Matrimonials service, section 2.5.1) but presents a considerable challenge to those community media organisations which do not charge consumers, and do not attract significant advertising revenue to offset mobile distribution costs.

2.6.4 Intermediaries

The examples of United Villages in India (section 2.5.1) and Mirror Arts Group in Thailand (section 2.5.2) were provided to indicate the importance of *human*

intermediaries to the sustainability of innovative ICT-based initiatives. Human intermediaries can provide an interface between inexperienced users and new mobile devices and networks. In this context, intermediaries might include community media staff; development workers; educators; community animators and volunteers; local government representatives; or any other person or group that mediates between a media organisation and its segments in order to facilitate the production/distribution of mobile-friendly content. The actions of human intermediaries can be significant to the initial implementation and longer-term sustainability of mobile systems interventions in developing contexts. Therefore the role of intermediaries must be carefully planned and managed to contribute towards the ongoing success of mobile-friendly content.

2.7 Candidate site characteristics

What characteristics does a local/community media organisation require to indicate that it might successfully implement a mobile-friendly content initiative? To approach this question, the four 'success factors' identified above are now applied to current community media organisations in India (these sites have been short-listed by COL as potential candidates for the demonstration project for this study – see section 3 below).

2.7.1 Radio Bundelkhand, Madhya Pradesh

Radio Bundelkhand was launched on October 2008 by the NGO Development Alternatives. Its mission is to provide community information and entertainment. The station is jointly managed by the community and Development Alternatives, with a focus on women, youth and marginalised groups. Four hours of content is broadcast daily, morning and evening, seven days a week. Broadcast range is between five and ten kms, covering 25 villages and a total population of 15,000. The station features five community reporters and six community coordinators and its programming includes agriculture; folk songs and heritage; women-specific content; career opportunities and advertising.

In July 2009, Radio Bundelkhand became the first test site for the Gramin Radio Inter Networking System (GRINS), a software platform designed by participatory media initiative Gram Vaani which allows radio station operators to schedule broadcasts; preview programs; record live transmissions; and maintain a content library. It is claimed that future releases of GRINS will be able to handle telephony calls, SMS messages, and Internet connectivity to share and stream content with other GRINS deployments.

At first inspection, Radio Bundelkhand does not fit the success factor of 'appropriate technology' (section 2.6.1) because it has made some commitment to the proprietary GRINS platform. However, GRINS is a station management platform which allows for the archiving of digital content (an important prerequisite for a mobile-friendly content initiative) and does not preclude the addition of off-the-shelf devices to enhance content production and distribution. The recent introduction of the new GRINS platform indicates that Radio Bundelkhand could be a suitable candidate site.

Sources
http://devalt.org/radio.pdf
http://gramvaani.org/about/strategy/
http://gramvaani.org/2009/07/grins-piloted-at-radio-bundelkhand/
http://gramvaani.org/news/software/
http://www.pbs.org/idealab/2009/04/tech-design-decisions-behind-gram-vaanis-radio-platform112.html

2.7.2 Radio Mandakini, Uttaranchal

Radio Mandakini was established with support from Ideosync Media Combine (www.ideosyncmedia.org) and Equal Access (www.equalaccess.org). The station is a five-hour drive from the nearest town of Rudraprayag. The community radio group aims to create an open platform for discussion of policies, schemes and financial budgets by villagers and panchayats. Community volunteers have distributed radio sets throughout villages and the radio group has involved local self-help groups (SHGs) to support ICT adoption. As well as facilitating a discussion platform, the radio station also provides an opportunity for local content production; for example, two junior schools produce content for broadcast. The station does not operate in isolation; a Village Knowledge Centre (VKC) has been made available to all villagers, equipped with a basic PC, radio, audio recorder, and a small library of children's books. The VKC collates content from the SHGs and junior schools, and forwards it to Ideosync Media Combine and Equal Access for further editing and broadcast on Asia Development Channel (www.equalaccess.org/tech/channel.htm).

Radio Mandakini seems to exhibit a number of the defined success factors. It collaborates with a number of associates in the supply of content; there is demand for its content from the Asia Development Channel; and it has a track-record of appropriate technology. Furthermore, the station has an active group of community volunteers and collaborators which can form the basis of a network of human intermediaries.

Source:
http://www.i4donline.net/articles/current-article.asp?articleid=1337&typ=Rendezvous

2.7.3 Namma Dhwani, Budikote

Established in 2001, Namma Dhwani ("Our Voices") is reputedly India's first cable community radio station. In response to broadcasting restrictions, the station narrowcasts content via cassette tape, or public address loudspeakers. Eight community workers run the Namma Dhwani studio, which distributes content on agriculture, health, education, and music to up to 34 villages. Budikote is on the Karnataka - Andhra Pradesh border and the community speaks a mix of Telegu / Kannada, which is not serviced by All India Radio. There is no local radio in the area, but a mobile telephony antenna was installed in 2007. Budikote was the site of the StoryBank mobile storytelling device experiment (section 2.4.3), during which potential synergies were observed between Namma Dhwani and the use of mobile devices for content production and distribution.

The StoryBank project indicates that there is a role for mobile devices in the production and distribution of offline rich content in Budikote by Namma Dhwani. This is reinforced by the lack of a local/community radio broadcaster in the area. Furthermore, the lack of local language content available from other sources might suggest some intrinsic demand for local content available on mobile devices. On the other hand, the sustainability of a mobile-friendly content initiative might be challenging in this area, as revenue generation possibilities are limited and ongoing support from development agencies or equivalents might be necessary.

Source:
http://www.comminit.com/en/node/114735

2.7.4 Deccan Development Society, Andhra Pradesh

Deccan Development Society (DDS) is a grassroots organisation which reports 5000 members working with women's sanghams in about 75 villages across Medak District. In 2001, DDS formed a rural women's media collective known as the DDS Community Media Trust which has produced successful videos to stimulate dialogue within their sanghams and beyond. The group also controls and operate a community FM radio facility which supports a participatory approach to content production. DDS personnel use standard portable video cameras and audio recorders to produce local content on issues including agricultural needs of semi-arid regions; education and literacy; public health and hygiene.

DDS could be a strong candidate for a mobile-friendly content initiative. It has a track-record in producing and distributing video and audio content. There is an established demand for its content from the community. In terms of supply, the Media Trust has a substantial back catalogue of previously produced content which could be repackaged for multi-platform mobile distribution. Furthermore, DDS reporters are familiar with off-the-shelf technology. On the other hand, DDS focuses on participation by non-literate segments, which may have ramifications for the production and distribution of a mobile-friendly content.

Sources:
http://www.ddsindia.com/www/default.asp
http://maraa.in/2008/06/dds/comment-page-1

2.8 Opportunities and barriers

This report has focused on *content* – specifically, what mobile-friendly content do local and community media audiences want to consume? Section 2.6 identified four factors from the review of examples which are of particular importance to any local/community media organisation planning a mobile-friendly content initiative. There are a number of other foreseeable barriers to the uptake of mobile devices for the production and distribution of mobile-friendly content by local and community media organisations. These include:

- *Economics*. Many commentators in developed economies refer to the advantages of always-on network access, and ubiquitous mobile services. But the cost of a mobile

handset, network subscription, and content download is significant. Although handset penetration in developing economies is impressive, it is likely that these are used for the very basic services.

- *Infrastructure*. As mentioned above, high-bandwidth mobile-friendly content distribution require substantial technology infrastructure, such as GPRS, 3G or WiMAX networks. Even where a national economy can afford such infrastructure, it remains difficult and expensive to provide access to rural and remote areas which do not offer sufficient return on investment to justify the expenditure.
- *Local/community media culture*. It is likely that a traditionally trained radio station manager is not in an immediate position to implement a communication model that integrates mobile-friendly content capture by community volunteers using MP3 player/recorders, and distribution of this content via broadcast and podcast. To realise the potential of mobile device production and multi-platform distribution, station managers and programmers should have a mental model of the change in communication from analogue to digital (i.e. the differences between Figures 1 and 2 above). In short, they should be able to conceive of 'content' and 'media' as different entities. Introducing station managers and programmers to this new conception will be a feature of the training curriculum outlined in section 4 below.

The examples presented in Sections 2.2 to 2.4 were categorised as follows:

a) Low-bandwidth content, i.e. SMS and voice.
b) High-bandwidth content, i.e. radio and TV packaged for delivery to mobile devices.
c) Offline rich content, i.e. compressed audio and video.

These categories should not be considered as exclusive. On the contrary, if local and community media organisations are to leverage the opportunities provided by digital content production, aggregation, and multi-platform distribution, then they should be creative in the formulation of new communication strategies and organisational set-ups. For example, a community organisation without web access could produce and distribute audio or video content offline through a motivated team of volunteers. Once a critical mass of local content has been produced, it can be aggregated and distributed by a local player (similar to Jasmine News) or a regional player via Internet Streaming Radio or mobile video. In this example, a community organisation with no web access can become a producer of local content for targeted segments. The possibilities are intriguing, and – as the review has shown – they are all technically possible. The local or community media organisation could evolve from a site-specific 'mini-broadcaster' to become a 'production house', perhaps based at a physical station but embedded more deeply within the local community using mobile devices and systems to produce and distribute relevant content. However – in order to be realised – these kind of mobile-friendly content projects must find ways of maintaining a demand for services over the long-term. They will also require access to and cooperation from networks of human intermediaries to provide an interface between new technology and inexperienced users.

Local and community media may be empowered by mobile content and devices in some cases; in others, they may be overwhelmed (http://www.pbs.org/idealab/2009/08/when-

fm-radio-meets-the-mobile-phone-in-pakistan224.html). Pakistan had 94.3 million mobile subscribers by June 2009, or about 58 percent of the population (according to the Pakistan Telecommunications Authority). In contrast, a LIRNEasia study indicates that 24% of Pakistani own radios (http://lirneasia.net/projects/2008-2010/bop-teleuse-3/). Many mobile handsets sold in Pakistan integrate a FM radio receiver; although only roughly 7% listen to radio on their phones, it's conceivable that such mobiles will become as or even more popular than the radio for personal audio content consumption in areas with network coverage. It's interesting to consider how local and community media organisations would be affected by such an environment.

This is an ongoing debate in the USA, where the free Apple iPhone application 'Public Radio Player' allows users to access live programming and podcasts from over 300 radio stations, from anywhere in the country with network coverage. Although the potential audience coverage of audio content by local and community media organisations might be greatly increased, there is a fear that listener donations to community radio (a major source of funding in the USA) will dry up as users stop listening to a single local station, and begin instead to consume digital audio content from multiple providers (http://www.pbs.org/idealab/2009/07/saving-or-destroying-public-radio-on-a-mobile-phone208.html). So returning to the Pakistan example, how might local and community media fare if high-quality cricket commentary becomes available at low/no cost on mobile handsets?

These kinds of questions challenge both media organisations and funding agencies to carefully reconsider what kinds of mobile-friendly content will be demanded by consumers over the medium-term. Will news content be overtaken by features and stories? Will content become more segment-specific in order to maintain an audience, by focusing on agriculture, health, or education? These kinds of issues will feature in the Due Diligence phase the research design (section 3.3.1 below). It seems that local and community media will have to change in a more mobile world, whether they wish to participate in this world or not. The long-term question is about which existing organisations will survive or thrive; which new players will emerge; and which development objectives can be effectively targeted by mobile-friendly content.

2.8.1 Foreseeable issues

Mobile handsets can facilitate a range of new opportunities for those program managers, policy makers or community activists seeking to reduce the digital divide. But extreme caution is required by those intent on promoting content via mobile devices – particularly the mobile handset. Mobile applications can facilitate many socially beneficial actions and/or behaviours: parents can stay in constant contact with children; the devout can be reminded when and where to pray; the geographically challenged can be guided through unfamiliar locations; and local content can be both consumed and produced by individuals and groups. Many other positive applications exist. But the same mobile applications can facilitate actions and/or behaviours that will be less welcomed by some communities. As cost of ownership reduces and devices multiply, the drawbacks of

promoting a *personal content receiver* throughout developing communities will become evident. Young people will engage in unsuitable conversations, away from the supervision of their caretakers. Improper content will be both produced and consumed via mobile devices, such as pornography or cyber-bullying. Text messages will be used to harass or confuse the recipient. And of course, network operators will strive to persuade the owners of mobile handsets to subscribe to increasingly expensive tariffs, and consume high-bandwidth content at a premium price. A mobile handset is not a PC; it does not live in a telecentre or CMC under the supervision of a trainer. It is designed to be used in private, and it shows content on a screen too small to be easily seen by others. This is an issue which demands very serious consideration by all those who promote mobile-friendly content.

2.8.2 Further resources

The following links provide further information on – and examples of – mobile devices, and local and community media:

Eldis ICT for development pages
http://www.eldis.org/ict/

Media Development pages of the Communication Initiative Network.
http://www.comminit.com/en/mediadev.html

MobileActive.org (mobile technology for social change)
http://mobileactive.org/

PBS Mobile Phone site
http://www.pbs.org/mediashift/mt4/mt-search.cgi?blog_id=31&tag=mobile%20phone

World Bank ICT & education blog
http://blogs.worldbank.org/edutech/

Research design

3 RESEARCH DESIGN

3.1 Aim, objectives, benefits

This project **aims** to investigate how community media organisations could increase audience numbers through the introduction of tools and processes to support the sustainable production and/or distribution of mobile-friendly content for information, education, and entertainment. In order to achieve this aim, two **objectives** will guide the design of this research project:

- To analyse the potential for mobile-friendly content generated and distributed by community media and audiences in developing country contexts.
- To provide an assessment of related barriers, including language issues; and capacity and training needs.

The findings of the research project will be of direct **benefit** to local and community media organisations. Managers and sponsors of these organisations will be able to use findings from this project to:

- Plan for the adoption of mobile devices and the production and/or distribution of mobile-friendly content by their organisations
- Plan for the changes to their organisation and its resources that will be required for the successful implementation of mobile-friendly content, including training of staff and other capacity-building requirements.

3.2 Approach

As demonstrated in section 2 above, systems for the production, aggregation, and distribution of mobile-friendly content are currently *specific to each initiative*. This specificity makes exact comparison between sites of investigation problematic, and therefore limits the validity of a quantitative and/or statistical research design. Therefore a qualitative research design will be used by this research, which will generate valuable data on how mobile-friendly content is currently perceived and/or implemented by community media organisations and stakeholders at the site of investigation. This approach looks beyond traditional design issues for ICT for development systems (such as online access and network bandwidth) to consider the four factors contributing to successful implementation of a mobile-friendly content initiative (section 2.6 above):

i. Appropriate technology
ii. Supply of content
iii. Demand for content
iv. Intermediaries

This approach acknowledges that the medium-term success of this project will not be achieved by providing appropriate technology and one-off training only. A comprehensive strategy is required that acknowledges the importance of supply and demand for content (i.e. a content ‘market) and the role of human intermediaries in ensuring the ongoing success of a mobile-friendly content initiative.

3.3 Method

The project will be driven by a Participatory Content Creation Method (PCCM) which was designed to structure research into group-based digital content production and distribution techniques (Figure 3). PCCM is a structured method which begins with Due Diligence (Phase 1). This is followed by iterative cycles during which participants produce and distribute innovative content, which is evaluated by stakeholders and then leads to adjustments in organisational strategy to facilitate the next cycle (Phase 2). The iterative cycles stop when key stakeholders judge content production/distribution process to have achieved 'Acceptable Output' (Phase 3).

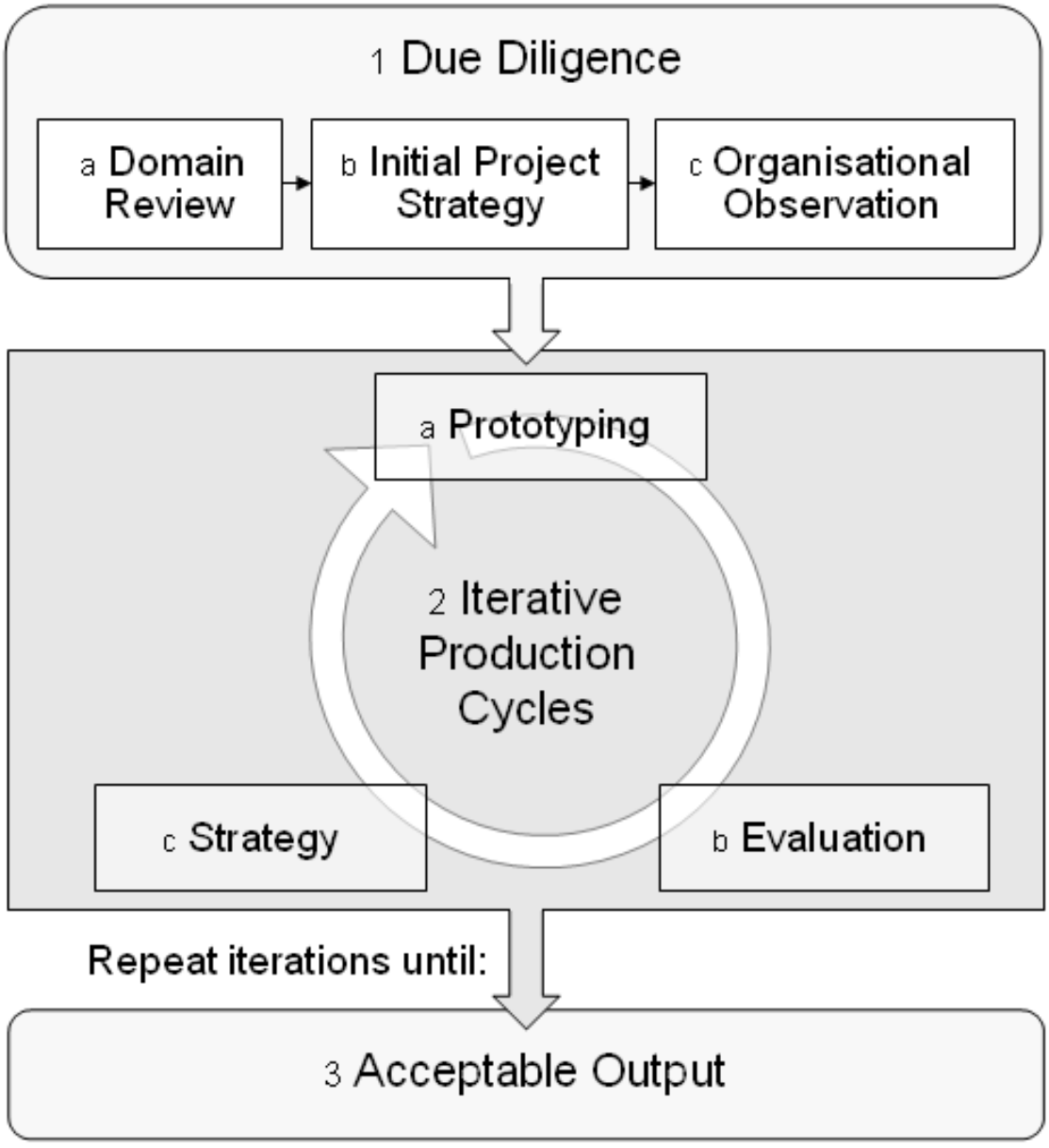


Figure 3: Participatory Content Creation Method [1]

[1] from Watkins, J. (2007) 'Social Media, Participatory Design and Cultural Engagement'. In *ACM Proceedings of the 2007 Conference of the Computer-Human Interaction Special Interest Group of Australia,* vol. 251, pp.161-166.

3.3.1 Phase 1: Due Diligence

Phase 1 of PCCM ensures careful and systematic investigation of the research area. Its three stages are described below.

a) A *Domain Review* is an in-depth review of comparable practice in the domain of small-scale local/community media. The review informs a short-list of candidate fieldwork sites (section 2.7), with whom COL will negotiate in order to select and confirm of a final fieldwork site.

b) *Initial Project Strategy* is informed by the Domain Review and integrates input from key stakeholders and participants. The strategy will be further directed by a *content audit* of mobile-friendly content will be conducted at two initiatives. This purpose of this audit is to study the nature of current high-bandwidth content production in order to inform the medium-term strategic direction of the selected community media organisation.

c) *Organisational Observation* of the fieldwork site will be conducted by an experienced field researcher. The aim of the organisational observation is to understand if and how mobile-friendly content initiative will fit into the existing communicative ecology at the field site. It is recognised that any 'new' connections and networks (social and technical) that develop as a result of the creative use of individual technologies are necessarily interconnected with existing systems and structures. Through this approach we can ask how digital technologies articulate with more traditional technologies, what purposes they serve in different contexts, and how they are used in people's everyday lives. This entails an investigation into the current use of information and content by stakeholders. The field researcher is also looking for potential applications of mobile-friendly content that can bring about community development and social change at the field site. An ethnographic orientation will be adopted – rather than an action research position – which looks beyond immediate issues of access and use in order to consider how mobile content and systems are relevant to community development. In so doing, the study acknowledges that the environment and the community are constantly changing, and any ICT intervention must attempt to map to this change. Therefore – rather than look for formulae for social change via ICT – the researcher conducting the observation is trying to understand the wider processes that lead to social change. Tools used in this stage include an informal observation of a candidate community media organisation and the wider community; and semi-structured depth interviews with key stakeholders at the organisation and in the community.

3.3.2 Phase 2: Iterative Production Cycles

a) The structure of Phase 2 of PCCM has some similarity to the model of evolutionary prototyping familiar to information technology developers. The first step is *social prototyping* of mobile-friendly production techniques. 'Social prototyping' in this context refers to the trial and iteration of those social processes which enable effective group interaction and participation to support content production/distribution outputs. Social

prototyping reinforces the importance of human systems to support ICT-enabled projects; in short, we are prototyping 'people with technology', rather than just the technology.

b) *Evaluation* is conducted on the content outputs developed in the prototyping stage. The measure used for evaluation is be decided by stakeholders; multiple measures can be used. It is likely that the evaluating group will widen with successive iterations.

c) Each cycle of evaluation should add to the store of knowledge, skills, and experience of participants. As this store increases, the project *strategy* should also be adjusted incrementally by key stakeholders in order to frame the next iteration of production, and so redefine acceptable output.

3.3.3 Acceptable Output

Traditional structured techniques for ICT systems require pre-project specification of desired performance in order to define final outcomes. This kind of specification is inappropriate to the current project, whose final outcomes will be shaped throughout its duration by the active participation of multiple stakeholders. Instead of trying to specify desired performance pre-project, the iterative production cycles of the Participatory Content Creation Method end when the majority of stakeholders judge the content produced by the participants to be an *Acceptable Output*. Factors influencing this decision might include segment penetration; audience feedback; quantity of supply; or impact on community development.

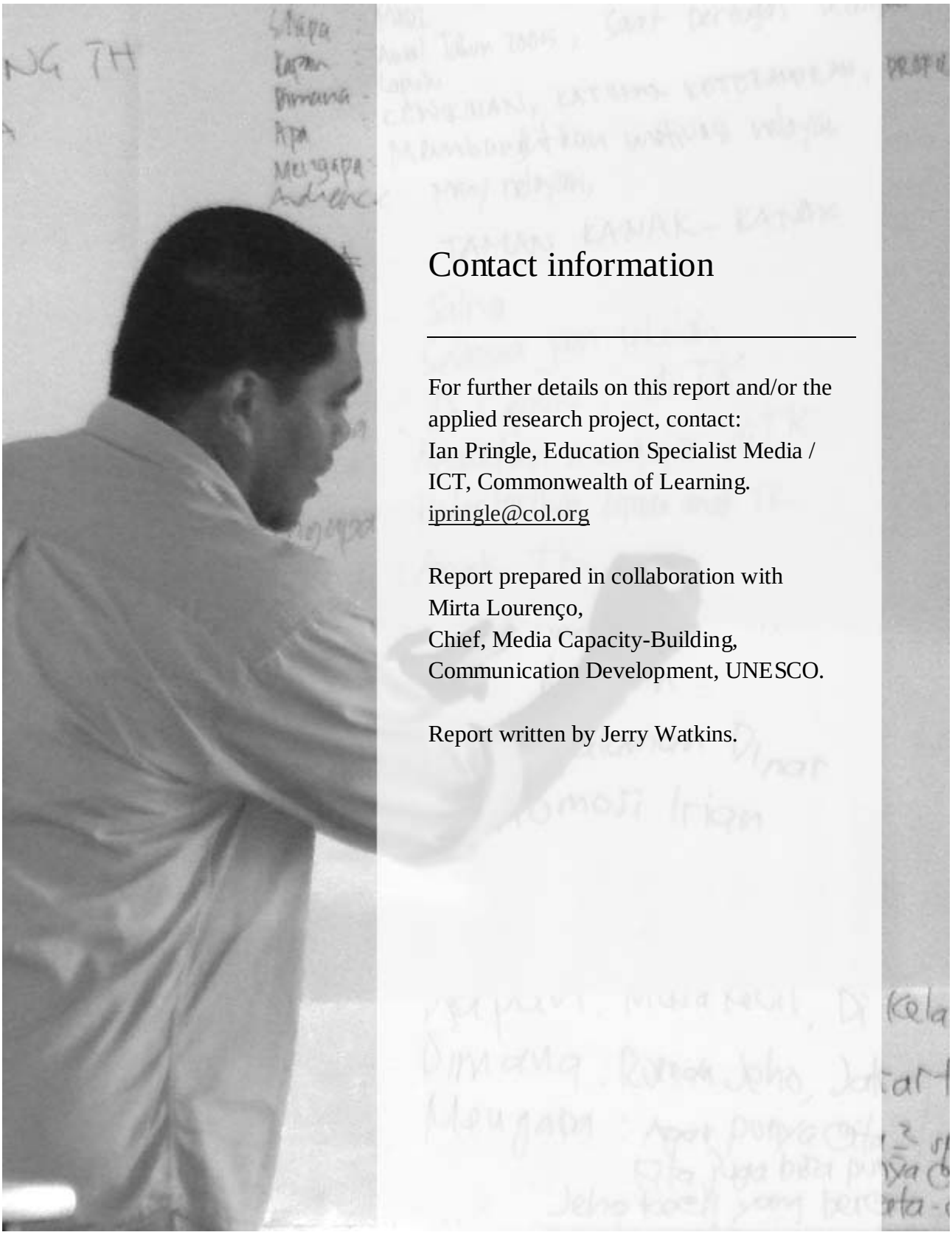
3.4 Core research team

3.4.1 Jerry Watkins

Watkins has a substantial international track-record in digital content production from both public and private sectors. He researches Communication for Development, broadband and mobile systems, and participatory media. He is Associate Professor in Design at University of Western Sydney and a member of the Institute for Culture and Society. He holds a BSc with First Class Honours in Communication and IT from University of Westminster; MSc in Human-Computer Interaction from University College London; and PhD Computing Sciences from University of Technology, Sydney. http://www.jerrywatkins.info

3.4.2 M.S. Kiran

Kiran is an experienced field researcher with extensive experience of ethnographic techniques for the investigation of ICT / media initiatives. He holds both a BA (Political Science, English Literature and Sociology) and MA (English Literature) from Bangalore University; and a Masters in Development Studies from Uppsala University. http://www.findingavoice.org/team



Contact information

For further details on this report and/or the applied research project, contact:
Ian Pringle, Education Specialist Media / ICT, Commonwealth of Learning.
ipringle@col.org

Report prepared in collaboration with
Mirta Lourenço,
Chief, Media Capacity-Building,
Communication Development, UNESCO.

Report written by Jerry Watkins.