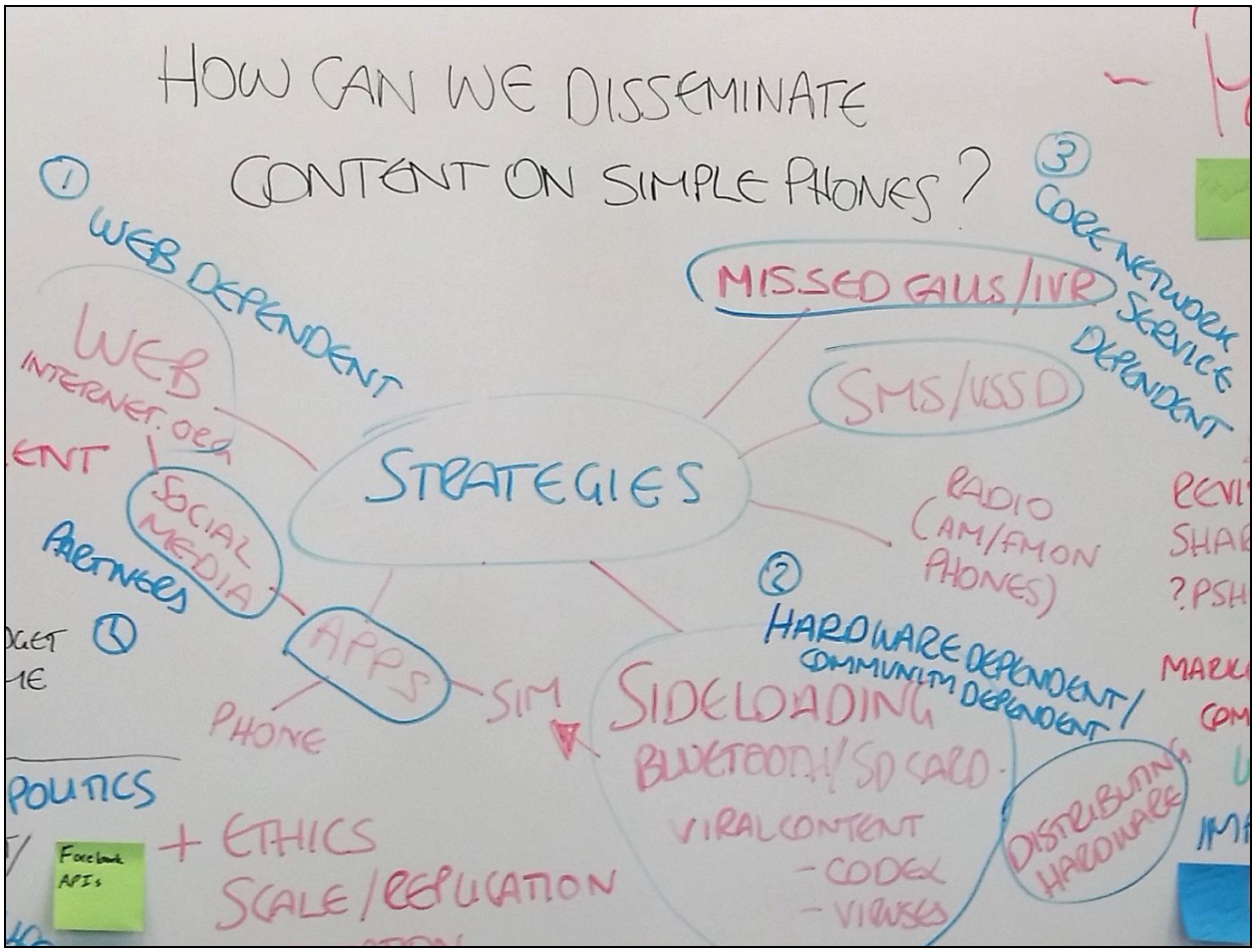
SOCIAL IMPACT LAB

Disseminating content on basic phones



Background

At SIMLab, we're committed to sharing learning from our work. This paper is the output of a one-day workshop in September 2015, run by SIMLab with the Global Disaster Preparedness Center (GDPC) hosted at the American Red Cross.

In response to the 2014 Ebola outbreak in West Africa, the GDPC modified their First Aid app for release in 13 West African countries to include Ebola-related content. In addition to providing information on Ebola transmission, identification and treatment, the app serves as a platform to disseminate messages and alerts through push notifications. However, acknowledging mobile apps can't reach everyone, GDPC asked SIMLab to help create a strategy to extend their First Aid and Hazard information to reach portions of the population who have not yet gained access to smartphone technology, and considering ways to get content onto basic phones to reach audiences that do not yet have access to smartphone technology.

The workshop, facilitated by SIMLab, invited guests from Mercy Corps, Facebook and Medic Mobile, among others, to share case studies across the spectrum of mobile dissemination tactics. We discussed the pros and cons of each strategy for disseminating content on basic phones, and set out the options clearly. Using this information, GDPC was able to decide on a mobile site for their next generation accessible, inclusive first aid information.

We hope this resource will be helpful for others who find themselves wondering how best to get information to people using low-end mobile technology. As always, it's important to keep in mind that every context is different. SIMLab recommends conducting a context analysis to understand how technology is already used in the context in which you work. SIMLab's open-access Framework on context assessments is available here.

The challenge: translating rich, web-based content onto basic phones

Although global growth in smartphone use is growing, and gathering pace as handset prices drop and low-cost, unbranded phones flood out of east Asia, there are and perhaps will always be important groups who don't have access to them. Even in the US, only 68% of subscribers use smartphones, and 10% aren't online at all, either at home or using a mobile phone. In the rest of the world, of the 3.5bn mobile subscribers, only 1bn have smartphones.[1] Those without them are excluded by inaccessible handset prices, data and airtime costs, and availability and affordability of electricity for these power-hungry devices.

[1] Pew Research Center, 2015.
http://www.pewinternet.org/2015/10/29/technology-device-ownership-2015/

Nonetheless, the 'basic phone' remains dominant in many of these markets, providing low-cost messaging capability through SMS and low-bandwidth apps like Whatsapp and MXIT, voice calls, low-quality images and in many markets, mobile money and other operator-supported services. Making information accessible through these devices makes a lot of sense.

But the basic phone market is complex. Even ten years ago, at the height of its power, individual handset manufacturers would maintain tens of handset models, upgrading each of them multiple times each year with minor hardware and software changes. Nominally identical phones varied per mobile operator, and per market. Operating systems for basic phones were far more diverse and unpredictable than for smartphones – in contrast to the iOS/Android/Windows trifecta, many manufacturers had their own OS, which were tailored to the handset and managed the phone's interaction with its hardware in a deep way. Ten years on, the picture is similar – but massively complicated by the vast second-hand phone market and glut of phones from China and elsewhere in Asia, about which little can be predicted.

Strategies for disseminating content on basic phones

Created by Pravin Unagar
from Noun Project

Created by icon 54
from Noun Project

Created by Josh Sorosky
from Noun Project

Web Dependent	Hardware Dependent	Core Network Service Dependent
Mobile sites	SIM cards	USSD
Social media	Modems	SMS or text messaging
Web based messaging apps	Phones, tablets, e-readers	Voice calls
Other mobile apps		

Web-dependent strategies

Created by Pravin Unagar
from Noun Project

More phones than ever before can access the internet, and data-driven services, over the mobile network. Even 'feature' phones can access websites, albeit on low-quality screens and browsers, and cheap new and second-hand smartphones are increasing the theoretical number of people with access to widening 3- and 4G coverage in frontier markets, particularly in urban areas and on major roads.[2]

These strategies include mobile websites, social media, 'IP-dependent' messaging such as WhatsApp and Facebook Messenger, and apps requiring internet access.

Opportunities	Challenges
Relatively low-cost and can be spun up swiftly. **If the target population use it, social media can be a great place to 'meet people where they are'** **Easy to track and measure engagement** **Easy to have two-way conversations** **Relatively easy to refresh content, e.g. by pushing an update to an app**	**Requires connection to data, appropriate hardware and access to electricity to keep devices charged. Differing access to time and disposable income for this means that the most vulnerable are more likely to be excluded, including women and girl children, low-income people, and people with disabilities. This may be difficult to make visible.** **Social media platforms are not all**

[2] May 2017 edit. Low-cost high-end feature phones are increasingly available on the market and boast additional opportunities for content dissemination.https://cfi-blog.org/2017/05/16/promising-developments-in-mobile-financial-services/

	created equal, but have differing functionality, users, and affordances (for example, Twitter has an API but Facebook and WhatsApp do not).

Fundamentally, the uneven access to data means that these services are not usually an option, unless you can address the cost and coverage gaps in order to provide access to your users. These services often need complementary strategies to reach 'left-behind populations', with options that do not require the internet and a multi-channel approach to offer people choices.

The Internet.org example

Facebook shared with the workshop that their Internet.org program opens websites to users for free in 17 countries. Any site can apply to be listed, and is then proxied by Facebook in order to zero-rate them. They are particularly interested in including sites providing information on education, health, economic empowerment, women's issues and disaster preparedness and response.

Case Study 1: Digital Campus and mPowering Frontline Health Workers: Oppia Mobile Learning Program

Oppia Mobile provided training materials to frontline health workers by distributing carefully developed video and other content on smartphones and training healthcare workers on their use. The project replaced the requirement to print, ship and distribute large paper manuals which swiftly became outdated.

The content was pre-existing and openly-licensed, although converted to a lighter html version.

The health workers were encouraged to view the phones as their own and quickly embraced them, setting up Facebook profiles and looking after them so well that only one out of two hundred needed replacing over the life of the project. The phones contributed to the health workers' status and the respect they commanded in their communities.

Hardware-dependent strategies

These strategies include a number of options:

- **'sideloading' content, for example by uploading from the SD card slot on some of the more advanced 'basic' phones or via Bluetooth**
- **SIM apps, which are usually installed by the operator or handset manufacturer and can therefore be rolled out at scale through partnerships at this level. An alternative approach, taken by Medic Mobile, is to use a parallel SIM inserted in the phone next to the normal SIM card.**

A parallel SIM (Image credit: CISCO)

Opportunities	Challenges
Content can be richer, meaning that you can provide a more compelling experience and control the format. Done well, you can ensure that local habits and customs are taken into account.	**Variable devices, software and operating systems mean that troubleshooting can be difficult. If devices break down, replacing or repairing them can be difficult. It's impossible to test comprehensively.**
This method avoids any issues with connectivity, as the content does not need to be downloaded.	**In low-technology contexts, participants may need training to use and maintain devices.**
As our case studies show, it is possible to relatively quickly develop and distribute content under pressure.	**This approach is difficult to scale well in a because of the high human resources need. Ideally you might have a way to automate manual tasks, e.g. to copy content onto multiple devices at once.**
Distributing hardware provides the opportunity to have an additional positive effect on participants - for example, the recipient of a smartphone may be able to access Facebook and read the news online for the first time.	**Given how fast technology and tastes move on, this approach may not be built for longevity.**

These approaches may be appropriate if you have a deep understanding of the context and your target audience, have a local implementer or supporter who can help troubleshoot.

Case Study 2: Medic Mobile

Medic Mobile used basic phones equipped with parallel SIM cards as part of a child protection program in Liberia, during and after the response to the Ebola outbreak in 2014-15.

SIM apps use a second SIM card mounted on the phone alongside the operator one to load custom forms and menus with drop-down lists, instant data validation, and skip logic onto any phone with a normal SIM card.

Medic worked with Root Change and their local partner, ChildFund, using their platform to register children orphaned by Ebola and connect them with alternative care through supported social workers and child welfare committees. The Medic Mobile platform uses available technology - basic phones equipped with parallel SIMs, or SIM apps, carried by social workers - together with their platform running on desktop and laptop computers, to send and receive child registration forms. The forms were developed and approved by the Ministry of Gender, Children and Social Protection, and installed on the phones through the parallel SIM cards. This made it impractical to update the forms once the program was rolled out but meant that the process was easy to follow for the social workers.

The social workers were trained by ChildFund and Root Change to use Medic's platform, but some had already had experience using mobile phones to gather similar data through an earlier trial using OpenDataKit. 60 parallel SIMs and phones were distributed, only two of which broke during the course of the project - one physically, and the other developed problems with the software.

The project evolved during the Ebola response. Originally run from the interim care coordination center, as the response wore on and numbers of cases dropped, the team saw an opportunity to redesign the platform and leave a sustainable system behind. The forms on the phones, and the system itself, were redesigned to relate to more generic health issues, and deployed in local NGOs. The project is less than a year old as of November 2015, and is slowing down as Ebola-focussed funding

dries up, but Medic see strong potential for this technology to be built into longer-term community projects.

Although the technology used in this pilot is relatively fragile, and this project is relatively small, Medic have successfully implemented this tech with thousands of Community Health Workers (CHWs) in other places, rolling it out in phases of 250 CHWs at a time. Medic continues to trial improved, ruggedized versions of the technology and point to successful commercial applications such as Equity Bank's ultra-thin SIMs in Kenya to demonstrate its potential scalability. They anticipate that the cost per unit (currently $26) will also drop as low as $5. This might make this a scalable, sustainable technology to distribute content to specific community members or resource hubs like libraries, clinics and churches, where community members can access them by borrowing the phone or asking a designated person.

Globally, Medic's platform is used mainly for drug stock monitoring, disease surveillance, antenatal care, and childhood immunizations.

Case Study 3: Mercy Corps: Agricultural advice videos for farmers in Timor-Leste

Agricultural extension workers were given handsets with 20 mobile-formatted how-to videos installed on them. With a $20,000 budget, they were able to implement in under a month, capitalizing on the work of the local team who created and manually loaded the media, and distributed the phones themselves. Such a high-touch approach is hard to scale, but after six months, 70% of the farmers had viewed the videos either on their own phone or through peers. All farmers reported 'liking' the videos. However, these outcomes are hard to track accurately.

Challenges encountered when distributing hardware

In the Oppia Mobile example above, although the project was relatively high-touch, healthcare workers took good care of the phones and were encouraged to use them as their personal devices.

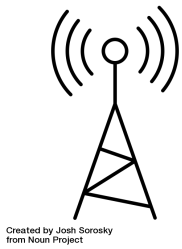
In contrast, EngageSpark found that large numbers of their distributed phones were lost or damaged. Some participants sold their new phone batteries and replaced them with old ones, leading to short battery life. Although a challenge for the project, this behaviour is rational in a low-income environment where incomes have

to be creatively supplemented. Therefore, we can theorize that handset distribution may be more successful where recipients are not under severe financial pressure.

Viral content

In this variation, your target audience do the distribution for you. If you can create content that is so compelling that it becomes 'viral', it may be passed from hand to hand by bluetooth or by 'sideloading'. Viral content passed from person to person benefits from the trust relationships between people, increasing the likelihood that the content will be acted on. It also benefits from local, human networks. Measuring outcomes is challenging or impossible, without being able to access and track at least some of the consumers of your content. It goes without saying that making 'viral' content is very challenging!

Core Network Service-Dependent Strategies



These options are perhaps the most straightforward, and rely on the standard operator services provided by all mobile networks:

- **SMS or text messaging**
- **Voice calls**
- **USSD**

Opportunities	Challenges
These projects are perhaps the oldest in the mobile for development canon and there are therefore many success stories - projects which provided coaching, reminders and alerts via text	**These operator-provided services can become very expensive at scale, as the MomConnect case study below showed.** **At scale, they may require involvement with mobile partners, which can take many**

messaging, for example. **They are perhaps the easiest to use, and in that way has perhaps the broadest reach of any digital data transfer mechanism. Users are familiar with using them.** **These services reach all phones with a network connection, and may not require a strong signal. They do not require mobile data and will work on any type of mobile handset. Relative to other technologies, and bearing in mind the costs of hardware and charging as well as airtime, they are affordable.** **In the case of voice, illiterate people are not excluded from services.**	**months to negotiate. Intermediaries currently play that role, but may simply avoid the harder markets or may increase your project costs. Providers may not have APIs, or their APIs may not be very rich.** **Generally speaking these technologies are not secure, which means that implementers need to have regard to the legal requirements on the transmission of the data they are disseminating. For example, the transmission of health information specific to the patient is usually regulated.** **These types of information are either simple text or voice, and as such are not as rich, and can fail to be as engaging, as other modes.** **They still require electricity, mobile network coverage and some degree of technological literacy, as well as access to mobile.** **Because of spam, some countries now block mass SMS messaging and some voice calls, which is making those technologies harder to use**

Case Study 4: Praekelt Foundation and South African Department of Health: MomConnect South Africa

South Africa's first mobile phone-based pregnancy registry launched in 2012, targeting 1m pregnant mothers every year. The service registered expectant mothers, provided stage-based, personalized SMS messages to mothers in the right language about how to care for their children, and provided help desk services to women through a USSD rating system for clinics and an SMS helpline for questions, compliments or complaints.

The budget was approximately $15,000 for the first phase, with $30,000 set aside for the planned expansion. From a technology standpoint, MomConnect was built to scale, with a robust-back-end that could function at a national level and automated workflows that did not require scaled human resources (with the exception of the helpdesk).

However, budget seems to have been a less predictable element of the project. A USSD service initially provided longer articles for frequently-asked questions, but proved very expensive and had to be shut down pending further funding. In future, the platform will include a mobile site, and move towards 'IP-based' messaging (sent over the data network and not the mobile network) which is hoped to be less expensive. A nurse-focussed project will target content at service providers to support their work with mothers and pregnant women.

The project required Praekelt to negotiate the shortcode and USSD service with the mobile network operator directly. Even with existing technology integrations and a prior relationship, this negotiation took four months - and would have taken longer had the Ministry of Health not stepped in.

Case Study 5: Mercy Corps and EngageSpark: Financial Literacy via SMS and IVR (Interactive Voice Response) in the Philippines

Mercy Corps worked with EngageSpark to develop and deliver 2 family dramas with 11 episodes each via robocall to 20,000 households. With a budget of $20,000, they were able to implement in under a month, leveraging EngageSpark's existing integrations with MNOs. Automated calls (robocalls) got far higher engagement rates than text messages (48% compared with 4.5%), but the campaign was a success, demonstrating a high correlation between the campaign and the amount saved.

Per response, they found that voice can be cheaper than SMS, as the cost is only incurred when a call connects, and content can be richer and more actionable in a call than a text message. Nonetheless, between the human resources and the cost of the calls themselves, this was a high-touch and expensive project.

Update May 2017:

Hybrid smart feature phones various manufactures and are still an important feature of emerging markets, where they can be a low-cost but more fully-featured alternative. Boasting some of the smartphone features that can drastically enhance user's experience and ability to interact with the content, these phones generally run on the Android operating system, have small screens, and have low memory capacity but are able to access 3G and 4G and have keypads for easier posting and messaging.[3] One potential downfall of a hybrid phone entering the market is an increasingly chaotic marketplace with opaque standards and features. This reality will make it more complicated to build apps and websites that rely on specific features, meaning that leveraging these phones effectively will still mean using core features like low-end mobile websites, and the functionality common to every phone - SMS, voice, and SIM cards.

About SIMLab

We provide strategy, design, and evaluation support to engage hard-to-reach communities, all over the world.

For people on the wrong side of the digital divide, technology can help or hinder access to their rights and basic needs.

SIMLab helps organizations to design strategies that meet people where they are, using inclusive technology. From radio to social media, from SMS to Whatsapp, from the mobile web to community noticeboards, the right channels are accessible and easy to use, affordable, two-way, and trusted. We help you find them and build for them.

We are closing early next year. You can read more about why in this blog post. But at the moment, we're open for business, preserving our resources and learning for posterity, dropping some last-minute wisdom on our blog and in op-eds, and providing consulting services. Read more about what we can do for you, here.

[3] Promising Development in Mobile Financial Services. Center for Financial Inclusion Blog.May 16th, 2017 https://cfi-blog.org/2017/05/16/promising-developments-in-mobile-financial-services/