



Integrating Mobiles into Development Projects



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How to Use this Document

How should the implementing partner capture and validate data?

A key element of a PMP is a discussion of how an implementing partner will capture and validate data. USAID should carefully review the draft PMP and hold multiple discussions with the implementing partner on how data will be collected and validated. Where practical, USAID should also hold meetings with the mobile service provider and develop an understanding of their standard reporting capabilities and the ease to which reports can be customized. This is a particularly important role for USAID Missions to play in countries where multiple implementing partners might be using mobile services from the same provider. Whereas individual projects might not have the influence to convince the service provider to share some types of data, USAID can use its convening power to represent all of its implementing partners in these discussions. For your reference, a [Sample M4D-oriented Performance Indicator Reference Sheet](#) can be found in the [Resources](#) section.

Certain performance metrics dealing with the attitudes of beneficiaries typically requires field-based data collection and surveys. Mobile technology is ideally suited to support these types of data collection efforts either through the use of enumerators or through self-reporting. Recent experience indicate that surveys conducted using

mobile devices are faster, cheaper, and more accurate (see the [Mobile Data Factsheet](#) for some examples). There are a range of survey applications specifically designed for smartphones and tablets. These applications enable the user to easily create project specific instruments and include collection and tabulation features. Unless there is a compelling reason, USAID should encourage the use of mobile-based data collection tools.



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Even lack of mobile network coverage is no longer a compelling reason to not use mobile devices. In Myanmar, Pact used mobile devices to collect data offline and then upload it using office WiFi instead of the mobile networks.

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Greentree Consensus: Principles for Technology in Development

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Foreword

This past spring USAID launched the U.S. Global Development Lab, an entity that builds upon the Agency's growing use of science, technology, innovation and partnerships to achieve development goals. Reflecting the proven impact of science and innovation, USAID has increased its investments not only in research, but innovation and applied solutions in science and technology. Evidence from this work across our Missions' portfolios demonstrates the transformative power of science and technology to deliver more effective, cost-efficient results.

We believe that a new digital economy is emerging which affords new opportunities to promote broad-based growth, empower citizens and improve service delivery in developing countries. Technologies like the mobile phone are exciting because they place an incredible channel for information and service delivery in the hands of the poor at a never before seen scale. Today's phones are more powerful than the first computers and, therefore, are tools for two-way communication that can support rich content and a diverse array of applications.

The opportunities to harness mobile technology to solve development challenges are immense. I am delighted that Regional Development Mission for Asia (RDMA) has seized the initiative in developing this first USAID handbook and associated course on Integrating Mobile Solutions into Development Projects. This handbook draws on the extensive work and expertise of our Digital Development (formerly Mobile Solutions) Team in Washington. The Digital Development Team, as well as the growing Science & Technology Team at the regional mission, is available to help Missions fully use digital and mobile solutions, and other emerging technology, to accelerate development results. I urge you to reach out to them to further explore these opportunities.

Here are a few examples of the powerful use of mobile and information communication technology (ICT) solutions that have inspired me:

- In Uganda, Grameen's Community Knowledge Workers provide information to farmers by mobile phones through a trained mediator. A recent IFPRI study found that farmers receiving information this way had a 22% increase in improved practices and price gains than the control group.
- Catholic Relief Services in the Central African Republic achieved huge efficiency improvements by switching to mobile-enabled data collection methods. They went from a process that required 20 staff over two weeks to one that now only needs five staff and three days to collect data on the performance of their programs.
- Research by the K4Health project in Malawi found that using SMS and voice calls to improve information sharing and communication between community health workers and district-level teams were four times cheaper and 134 times more efficient for receiving feedback than the typical method of traveling to meet with district-level supervisors directly. In fact, worldwide we see that simple text message reminders to mothers have doubled vaccination rates of children.
- The Afghan Institute for Learning halved the time required for adult learners to reach basic literacy simply by adding text messaging to the curriculum.

- A 2011 MIT study found that families that do not use M-Pesa in Kenya—the largest mobile money service in the world—suffer a seven percent drop in consumption when hit with a negative income shock, while consumption of families who use M-Pesa remains unaffected.
- Mobile phones are enabling services such as off-grid electricity to reach the poor both by enabling new financing models and tightening maintenance and operations through automated feedback loops.

This handbook is intended as a practical and actionable guide to help USAID staff consider the challenges that can impede the realization of a more sustainable and equitable future powered by mobile technology and other digital solutions, and to think critically about when and how to deploy mobile solutions. Across the world, I have observed countless examples of exciting mobile programs that have failed to scale beyond donor funding. The execution of mobile solutions can often be more challenging than anticipated. Many remain underpowered because the policy/regulatory environment hampers the expansion of affordable Internet or mobile services, business models are not aligned to meet the commercial interests of the private sector at a price point that works for low-income communities, and, too often, mobile services are not designed with the end-user in mind. Finally, the often siloed nature of our development programs mean that mHealth, mAgriculture, mFinance and other “m-“ efforts are not built to support each other and, in some cases, are working at cross-purposes.

This is where the expertise of USAID staff can make an important difference. It is not enough to expect our implementing partners to solve these problems. All of us must work together in applying our insights, talents, and energy in helping to identify and capitalize on opportunities for science and technology to build a better future. You have a critical role to play in engaging directly with policy makers and regulators to address the barriers that can limit the potential of technology to deliver impact. You are best positioned to ensure our technology programs are mutually reinforcing across portfolios. And it is your job to ensure good design principles are built-in from the beginning.

Technology will not solve all our problems. There are no silver bullets in development. But I am confident that thoughtfully integrating technology and science in all that we do is at the heart of becoming a more modern and high-impact development agency. I hope this handbook will inspire you and your colleagues to do just that.



Andrew Sisson

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Dr. Teresa Leonardo, Senior Regional Science & Technology Advisor at USAID RDMA, was the USAID activity manager for the handbook and provided technical input and guidance throughout its development. Christine Martin contributed to some of the research and content, including the **Glossary of Terms**. Erica Buckingham from FHI 360 copyedited the handbook and developed the **M4D Inventory** and **USAID Projects** list found at the end of the handbook. Shannon Dyson and Michelle Ghiotti from FHI 360's Design Lab designed the handbook.

It was also created with the input and suggestions of a number of different people within USAID all of whose contributions helped to make this handbook more relevant to USAID staff. Particular acknowledgement goes to each of the following individuals: Jayce Newton (formerly with Governance & Vulnerable Populations at USAID RDMA), Teresa Trusty (formerly with USAID's Mobile Solutions team), Brooke Patterson (USAID's Digital Development Asia Regional Representative), and Joshua Haynes (Senior Development Technologist & Media Advisor from USAID), for their foundational input during the inception of the first handbook outline; participants at the Mobiles for Development course held in Bangkok in January 2014 for their helpful input on some of the tools included in the handbook, which were piloted during this course; and the entire USAID Digital Development team for their suggestions and contributions to the outline and draft handbook, particularly Charley Johnson, Chris Burns, Jonathan Dolan, Paul Nelson, Nandini Harihareswara and Priya Jaisinghami.

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About the Regional Development Mission for Asia

USAID's Regional Development Mission for Asia (RDMA) serves as a major regional center providing program, technical, and support services to South, Southeast, and East Asia, and the South Pacific. USAID RDMA manages regional programs throughout Asia as well as substantial bilateral programs in countries without bilateral USAID missions, including China and Laos. The USAID Asia Bureau has charged USAID RDMA with serving as a forward operating base to support implementation of USAID Forward reforms in the region, including Science, Technology, Innovation and Partnerships (STIP). USAID RDMA is additionally one of USAID's twenty STIP priority Missions. USAID RDMA's role as a regional platform includes strengthening the identification and sharing of STIP successes and best practices, assisting Missions in integrating STIP into their activities and processes, and developing trainings and tools—such as this handbook—to strengthen USAID capacities. To learn more about USAID RDMA's related activities please contact Teresa Leonardo, Senior Regional Science & Technology Advisor (tleonardo@usaid.gov).

About mSTAR

The Mobile Solutions Technical Assistance and Research (mSTAR) program is a strategic investment by USAID to advance mobile solutions and close the gaps that hold back access and uptake. mSTAR supports broad-based coordinated action by a range of market stakeholders including governments, donors, mobile service providers and their customers. mSTAR works closely with the USAID Digital Development team and USAID Missions abroad to identify opportunities to leverage the power of mobile technology to improve development outcomes. Activities are carried out by FHI 360 and a group of highly qualified partner organizations. mSTAR's period of performance is from 2012 through 2017.

To learn more about how you can work with mSTAR, contact Nandini Harihareswara (AOR) at nandini@usaid.gov and/or Shailee Adinolfi (mSTAR Project Director) at sadinolfi@fhi360.org.



We want to hear from you. If you have questions or comments regarding anything in this handbook, or want to share your experience with using it, please email Josh Woodard at jwoodard@fhi360.org.

Acronyms

API	Application Program Interface	MMS	Multimedia Messaging Service
ASEAN	Association of Southeast Asian Nations	MNO	Mobile Network Operator
ATL	Above-the-Line	MSTAR	Mobile Solutions Technical Assistance and Research
BTL	Below-the-Line	OTC	Over-the-Counter
CDMA	Code-Division Multiple Access	P2P	Person-to-Person
DFS	Digital Financial Services	PMP	Performance Management Plan
G2P	Government-to-Person	POS	Point-of-Sale
GDA	Global Development Alliance	RDMA	Regional Development Mission for Asia
GPL	General Public License	SMART	Specific, Measurable, Attainable, Relevant, and Time-bound
GPS	Global Positioning Systems	SMS	Short Message Service
GSM	Global System for Mobile Communications	STIP	Science, Technology, Innovation and Partnerships
ICT	Information and Communications Technology	TOT	Train-the-Trainers
ICT4D	Information and Communications Technology for Development	TVWS	TV White Space
IP	Implementing Partner	USSD	Unstructured Supplementary Service Data
IPR	Interim Project Review	WAP	Wireless Application Protocol
IVR	Interactive Voice Response		
LTE	Long Term Evolution		
M4D	Mobiles for Development		

Introduction

How is this handbook intended to be used?

The primary audience of this handbook is USAID staff, although much of the content is relevant to anyone interested in integrating mobiles into development projects more effectively. Most of the examples highlighted are from Southeast Asia, although the relevance of the content is global. Since the mobiles for development space is evolving rapidly, the handbook is intended to equip readers with a set of questions to ask when using or considering mobiles, rather than providing a prescription for how to use mobiles in a given country or sector.

The handbook is divided into two sections. The first section is entitled Understand, and is meant to be an in-depth guide of everything you might need to know about mobiles. The second section is entitled Implement. It provides practical tips and information related to integrating mobiles into a project in practice. The components in the Implement section mirror the different phases associated with USAID programming to situate you in a familiar framework when introducing new concepts and topics.

The two sections and each component within them are designed to be complementary, although they do not need to be read sequentially. Call-out boxes and tips are placed throughout the handbook to allow you to quickly scan and rapidly identify specific issues of interest. Worksheets and other relevant resources are included in the Resources section towards the end of the handbook. Several of the resources are editable forms that you can type directly into. The resources section also includes a Glossary of Terms and an M4D Inventory and list of USAID Projects using mobiles, which provide an overview of the many different mobile services and applications being used in development programs in Southeast Asia.

KEY RESOURCES

- [Guiding Questions for Meeting with Key Partners](#)
- [Principles for Technology in Development](#)
- [Mobiles for Development Checklist](#)
- [M4D Evaluation Template](#)



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Below is an overview of the handbook's five components within its two sections:

UNDERSTAND

- **Understanding Mobiles for Development** provides an overview of almost everything that you would need to know about using mobiles for development (M4D). It includes an explanation of the different mobile devices and delivery models that currently exist, the different functional uses of mobiles, the difference between open source and proprietary software, and much more. Last, it includes some examples of how mobiles are being used for development in Southeast Asia to give you an idea of what is already being done.
- **Understanding the Mobile Ecosystem** provides a breakdown of the different elements that make up the mobile ecosystem and an overview of the basic building blocks for any M4D intervention. In other words, it covers everything you need to know about the elements that need to be in place before it is possible to effectively use mobiles for development. It also includes some ideas about the role that USAID can play in helping to strengthen the mobile ecosystem.

IMPLEMENT

- **Project Design** focuses on techniques for integrating mobiles into project design. It starts by providing lessons learned for good M4D design, followed by a six-step process for integrating mobiles into concept design. It introduces both sectoral and context-specific considerations that should be kept in mind when designing a concept, as well as providing an introduction to user-centered design and resources for employing this approach into one's own work.
- **Procurement** deals with the nuts and bolts of incorporating mobiles into solicitations. Building upon the project design component, it further explores how to determine the pre-requisites and requirements for using mobiles in a development project. It also covers techniques for calculating associated costs and comparing the costs and benefits of mobiles over other methods. Finally, it includes suggestions for critically evaluating solicitation responses with mobile device components.
- **Monitoring Implementation and Program Evaluation** is written with a focus on enabling you to effectively monitor and evaluate the implementation of M4D activities. It includes an introduction to some of the commonly used indicators for determining the impact of mobile-based activities, as well as tips for critically assessing project outputs. Finally, it includes suggestions for how to evaluate the impact that mobiles are having on a project.

UNDERSTAND



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COMPONENT

1

Understanding Mobiles for Development (M4D)

By the time you have finished this component you will:

- Understand functional uses of mobiles, as well as specific examples of how they are being used for development
- Understand the different devices, delivery types, software access models, and other introductory information needed to know how to apply mobiles to development.

This component is intended to help you understand exactly what people mean when they talk about mobiles for development (M4D). It includes an explanation of functional use types, as well as the mobile devices and delivery models that currently exist, the difference between open source and proprietary software, and much more. Lastly, it includes some examples of how mobiles are being used for development in Southeast Asia.

What are some of the different functional uses for mobiles in development?

There are a number of different ways that the functional uses of mobiles in development can be catalogued. For the purposes of this handbook, they have been divided into the following types of functions:

- **Push:** Push refers to any type of service that allows the central user (i.e. a development organization) to send information or content to other individuals using a mobile device. Push services can be used on any device, although the delivery method available will depend on the device type. An example of a push service is an SMS sent to people's phones encouraging people to wash their hands before eating in order to avoid the spread of cholera.
- **Pull:** Pull refers to any type of service that allows the central user to request information or content from other individuals using a mobile device or for an individual to request information directly from the central user. In some cases this is done remotely by sending a request to the individual by mobile phone, although it can also be collected by an intermediary, such as a data enumerator, to gather information directly from individuals. Like push services, pull services can be used on any device, although the delivery method available will depend on the device type. An example of a pull service is a market price information service where farmers can send an SMS to in order to request price information for a specific product.



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- Storage:** Storage refers to any type of service that uses the memory on a mobile device to store information or content, either directly onto a SIM card or onto an SD or microSD memory card. The storage function can be used on any mobile device, although the extent of storage available will depend on the device. SIM cards generally have fairly limited storage capacity, ranging from 32KB to 128KB, meaning that they cannot store much more than text. SD cards, on the other hand, can hold several gigabytes of data. An example of storage is pre-loading content onto SIM cards that can be disseminated to local communities, such as the Smart TXTBKS initiative in the Philippines, which has loaded grade school text books onto refurbished SIM cards.
- Transaction:** Transactions are any service that allow a user to make a financial transaction with another user; which can be another individual, a merchant, service provider (such as a utility company), or other third parties (such as the government or NGO). This can be done through using mobile money, which is cash that is converted into digital currency and held in a mobile wallet, or through airtime top up. Often, transactions rely on USSD, which is generally available on all mobile phone devices. An example of transactions are mobile money services, such as Wing in Cambodia, or mobile voucher services that allow for the transfer of voucher numbers that can be redeemed for payment at participating vendors.
- Interactive:** Interactive refers to any service that allows for simultaneous communication, such as chat platforms like WhatsApp, Facebook Messenger, or Google Talk. These tend to be primarily available only on feature phones and smartphones.



For a helpful introduction to mobile money, watch this [self-paced course](#) by USAID, QED and TechChange.

In some cases, a mobile service includes more than one of these functions. For example, a service may include both push and pull, where the central user sends messages out to users and also collects information from those users. These functions can also be applied using one or more of the delivery models mentioned earlier. A service may have both an SMS and voice message push service, and an interactive voice response (IVR) pull service. It is generally beneficial to integrate both push and pull, in order to ensure that targeted individuals have a chance to provide input, thereby creating opportunities for a robust feedback loop, rather than only receiving information.

There are also overlays that are used to enhance the way that functions can be delivered. Increasingly common among these is geo-location, which uses GPS (global positioning systems) to tell the mobile service the location of the user at a point in time (such as at registration) or in real-time. Using geo-location, a service can be customized to the specific location of the user. For instance, a mobile weather information service will provide registered users with weather updates closest to their location, as opposed to general weather information for the country. Or, a mobile data collection service that has a pull function may record the location of individuals reporting data so that this data can be visually displayed on a map.

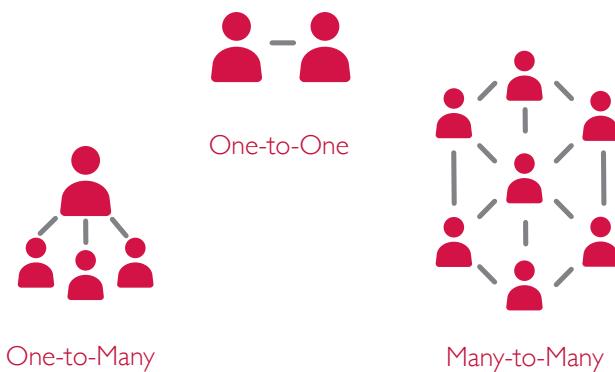


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Overviews of [mobile data](#), [digital finance](#), and [digital inclusion](#) developed by USAID's Digital Development team are provided in the [Resources](#) section, which give a more detailed sense of how mobiles can be used within each of those areas.

Within each functional use, there are also several ways that the communication can be conducted. For instance, services can be one-to-one, one-to-many, or many-to-many. One-to-one refers to interactions that are between two individuals, generally the development organization and one of the target users. This is more commonly seen in pull services or transactions where an individual is requesting information or making a transaction with another user. In the development context, most push services and some transaction and pull services tend to be one-to-many, meaning the development organization interacts with many people at the same time (i.e. sending out the same SMS or mobile transactions to hundreds of users). Many-to-many almost always exists with interactive services, and in some cases may exist within push and pull services that facilitate collective sharing.

Finally, there is the issue of complexity, which can vary depending on factors such as how robust the service is, and what delivery models and device types are used. For the sake of this handbook, complexity is divided into three categories: basic, intermediate, and advanced. While these classifications are somewhat arbitrary, they do help to give a sense of how the same type of service can vary depending on complexity.





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Let's take a look at a mobile push service to explore what it might look like within each category:

- **Basic:** The service sends generic SMS messages to all registered users on health information. Users cannot respond back to the service to pull additional information.
-
- **Intermediate:** The service sends generic SMS and voice messages to registered users. Users can also call the system back directly via an IVR interface that they can interact with to pull additional information.
-
- **Advanced:** The service uses geo-location to identify the location of registered users in order to send customized SMS and voice messages. Users can also call the system back directly via an IVR interface that they can interact with to pull additional and customized information.

While each of these services use mobile phones to provide information to a group of individuals, the complexity of the service alters how that information is delivered. Generally, the more complex the service, the more expensive it will be to set up and implement. As a rule of thumb, it is best to not be more complex than necessary in order to achieve program objectives in a way that is appropriate to the context.



What devices and delivery models exist?

Although people often refer to mobile devices as if they are all the same, there is actually a lot of variety that exists both in terms of mobile devices and the different delivery models that can be used to communicate via mobile phones. Understanding the differences between each device and delivery model will enable you to understand how mobile services might be appropriate to specific context and needs. For example, while a basic SMS poll can be sent to individuals on pretty much any device type, mobile data collection apps that make use of multimedia, geo-location, and more complex survey questions require features that do not exist on basic phones and even some feature phones.



DEVICES

Let's start with the devices themselves. Generally speaking, mobile phones are divided into three different categories: basic, feature, and smartphone. You have likely seen and even used each of these types of phones, although you might not have known what sets one apart from the other.

Here is each explained:

► **Basic phones**, sometimes also disparagingly referred to as 'dumb' phones, are no-frills mobile phones that can use voice and text-based services, as well as basic embedded applications (such as calculators, calendars, etc.). Chances are that basic phones are the majority in most rural communities. They tend to be durable and low-energy consumers, so that they can last for days—or even weeks—without a charge. An example is the Nokia 1100, which is the world's top selling mobile phone of all-time at 250 million units.¹

► **Feature phones** are exactly what the name implies, phones with additional features beyond voice and text. They are internet-enabled, allowing users to connect to the internet through a mobile browser. They can also run Java-based applications (often associated with games, but more than that as well), download audio, send multimedia content such as images and short video clips through MMS (multimedia messaging service), and typically tend to come with an on-board camera. An example is the Nokia 5130, which has sold 65 million units worldwide.²

► **Smartphones** are the next step up from feature phones and are currently the most sophisticated mobile phones on the market. The features that generally set them apart are their touch-screen capability, larger screens and more graphical interfaces, and integrated WiFi and GPS. They also tend to have higher quality cameras than feature phones. In many ways, they function like pocket computers, with powerful operating systems and full-featured apps. Apps are a great example of how features that exist on feature phones (such as GPS) can be applied in countless directions. Unlike feature phones, which have only basic GPS functionality, smartphone apps can use GPS to provide users with location-specific information for whatever someone has dreamed up and developed.

1. <http://tech.ca.msn.com/the-world's-best-selling-cell-phones?page=8>

2. <http://www.telegraph.co.uk/technology/picture-galleries/9818080/The-20-bestselling-mobile-phones-of-all-time.html?frame=2458985>



INTERESTING FACTOID

Smartphones have 100 times more computing power than the average satellite.

Source: [NASA](#)

It is worth noting that different smartphone operating systems have slightly different functionalities and not all apps are compatible with each operating system. Currently, the most popular smartphone operating system is Google's Android, followed by Apple's iOS and then Windows Phone. Examples of smartphones are the iPhone and Samsung Galaxy. Increasingly, there are also a number of Chinese-made smartphones that are finding their way into Southeast Asian markets and sell for much less than the globally known brands.³

While there has been lots of excitement around smartphones, as of 2012 they still represented less than a quarter of all mobile handsets shipped for sale—and in most of Southeast Asia those figures were likely even lower.⁴ Although smartphone penetration will continue to grow, especially as prices decline, the vast majority of the world is still connected by either a basic or feature phone. This is reflected in the fact that 80% of mobile services are still designed for basic or feature phones, compared to just a third for smartphones.⁵ In the meantime, there are also a number of firms that are designing services to enable feature phones to act more like smartphones, such as [VascoDe](#), which has products that provide access to sites like Facebook, Twitter and Gmail using USSD, or [Vuclip](#), which delivers streaming video over a feature phone similar in quality as videos viewed on a smartphone.

3. <http://blogs.wsj.com/digits/2013/09/11/china-smartphones-challenge-cheap-iphone/>

4. <http://www.gsmobileeconomy.com/GSMA%20Mobile%20Economy%202013.pdf>

5. <https://gsmainelligence.com/files/analysis/?file=130828-scaling-mobile.pdf>

6. <http://www.gfk.com/th/news-and-events/press-room/press-releases/pages/tablet-and-laptop-markets-in-southeast-asia-report-up-trend.aspx>



Although they are not phones, **tablets** are another mobile device that are increasingly becoming popular. From 2012 to 2013, tablet sales increased by 101% in Southeast Asia to over 3 million units, as prices dropped by around 27%.⁶ They are, for the most part, similar to smartphones in terms of functionality, albeit with a bigger screen. Unlike smartphones, however, tablets are available in both WiFi only and WiFi plus mobile models. The former can only be connected to the internet via a WiFi connection, where the latter can also connect via a 3G or 4G connection with a mobile data plan.



In addition, there are an increasing number of other types of devices that use mobile networks to transmit information but that most people would not immediately think of when they hear the term mobile device. These include **point-of-sale devices** for credit and debit transactions at stores, **weather stations** to collect localized weather information, and **irrigation pumps**, such as [Nano Ganesh](#) in India, that are connected to SIM cards and can be controlled remotely by calling them. There are also a growing number of **services and utilities** that use mobile money to enable people to access them on a pay-as-you-go or lease-to-own basis, such as [Kamworks](#) solar home kits in Cambodia.



For more examples on services and utilities linked to mobile money, visit [CGAP's Digital Finance Plus page](#).

DELIVERY MODELS

This leads us into the next part of this section: delivery models. Generally speaking, there are four different ways through which a mobile phone user can interact: voice, messaging, web browsing, and apps. Each of these is subdivided into service types, as follows:

Voice

There are two main categories of voice services. The first is a voice call between mobile phone users (often referred to as **native voice**), which normally occurs on a peer-to-peer basis but can also occur with multiple individuals through three-way and conference calling. The second is **interactive voice response (IVR)**, which is a computer-based system that callers can interact with using their device keypad (via touch tone) and/or voice recognition. IVR systems are generally menu-based and allow callers to navigate a series of menu options to find out specific information or to leave a message. An example of IVR is calling a bank and receiving an automated menu saying to “press 1 for...”.

Messaging

Messaging can take many forms, but for the purposes of this handbook, only those that are inherently built into mobile phones have been included—not apps that are used for messaging (such as WhatsApp).

The most widely known of these are **Short Message Service (SMS) or text messages**. As mentioned in the introduction, SMS messages usually have a limit of 160 characters in Latin-based alphabets and enable people to communicate via text between phones—or also from a computer to phones via an SMS gateway in the case of services such as FrontlineSMS, which provides an interface that allows users to send many text messages at the same time, referred to as bulk messaging.

Less known by name is **USSD (Unstructured Supplementary Service Data)**, although anyone who has ever checked their airtime balance has likely used it. USSD allows phones to communicate directly with their mobile network operator’s computers, which in some cases then link to a third-party service provider. It is accessed by dialing a number that starts with an * and ends with a # (such as *1234#). USSD generally appears as a text-based menu interface that callers can use to navigate and input information. It is often used for messaging that



requires multiple responses, as multiple interactions can take place during one USSD session, which is less costly than sending multiple SMS messages in order to accomplish the same goal. Unlike SMS, connecting via USSD is generally free to the user and any text called up during the session is not stored on the phone. This is in contrast to SMS messages, which are stored on the phone until actively deleted by the user, or until the phone's memory is full. Setting up a USSD service, however, is more complicated than SMS and requires an agreement with the mobile network operator or an aggregator, which are third-party service providers that negotiate agreements directly with the MNOs (see the [Glossary](#) for a more detailed explanation).

The last form of messaging, **MMS (multimedia messaging service)**, is a protocol accepted on most feature phones that enables users to send and receive audio images and videos. The current protocol for MMS only allows sending messages up to a maximum of 600kb, which is a relatively small file size. As a result, images and videos sent by MMS are generally of low quality.

Web Browsing

Mobile devices can be used to access and browse the web primarily in two different ways. The first is through using **WAP (Wireless Application Protocol)**, a protocol through which mostly older feature phones access the internet. The mobile phone user accesses the web through a gateway that translates information on the World Wide Web into a format recognizable by WAP—although in some cases sites have been directly designed for WAP. Web pages viewed using WAP are more basic and have less content than they would if the site was viewed using a web browser on a computer. However, to improve the user experience, many WAP-enabled feature phones also include an additional application, **Java** (more on this below), which allows software developers to build better applications that improve the user's experience when accessing the internet on lower-priced phones.⁷

The other way for browsing the web is to do so directly via an HTML-capable **mobile browser**, which are basically scaled down versions of the same browsers used on computers. All smartphones, and most newer feature phones, are capable of connecting to the web directly without the need to convert the site using the WAP protocol. The site appears just as it would on a computer, albeit on a much smaller screen. For that reason, many websites create mobile optimized versions of their sites that are designed to be viewed on a mobile phone or tablet. When the site notices that a user is accessing it on a mobile browser, it will automatically redirect to its mobile optimized version.

7. For more details, see "WAP vs. J2ME: Which is best for mobile?" <http://www.itworld.com/IW001127tcp>



For a helpful comparison of the major differences between Android apps and Java ME, check out this [side-by-side overview](#)

Apps

The commonly used term **app** refers to a wide range of products with vastly different levels of functionality. While the term app originally referred to software applications designed specifically for mobile phones, it is now also used to describe software applications for tablets and increasingly for computers as well. Mobile phone apps provide a way for a user to directly access a service rather than accessing through a web browser, often providing a much more user-friendly experience.

When people use the term 'app,' they tend to be referring to those applications that have been designed specifically to function on one of the leading smartphone operating systems, such as Android, iOS, or Windows Phone. In most cases the app needs to be downloaded directly onto the phone from a menu on the user's phone, generally referred to as an app store. There are literally smartphone apps for almost anything—from games to information to data collection and everything else in between. In fact, in 2013 the number of apps on the Google Play store, which houses all of the apps compatible with Android phones, surpassed the 1 million mark.⁸

While the sheer number of smartphone apps is staggering, as previously mentioned, the majority of the world is not yet using smartphones. The vast majority of the world's app experience is through Java-enabled feature phones (running on Java ME, formerly known as J2ME), which currently represent over 3 billion phones globally.⁹ These apps are much less robust in terms of features as compared to smartphone apps and are often referred to as 'lite' versions of applications. Even so, they enable people to interact with their phones in much broader ways than they could do through voice, messaging and WAP-enabled browsing alone.

In some cases, apps may also come pre-installed or embedded on the phone, such as Nokia Life Tools, which is on select Nokia phone models (see the [M4D Directory](#) for more information). SIM cards can also come embedded with series of commands that are programmed directly onto the card to tell it how to interact and initiate applications with the mobile network, thereby enabling it to offer menu-based functions, similar to USSD.¹⁰ Although still fairly uncommon, there are also SIM overlays, which are thin, plastic sheets embedded with contact points and a chip that can be stuck on top of a SIM card enabling it to run additional services or features. The

8. <http://mashable.com/2013/07/24/google-play-1-million/>

9. <http://www.oracle.com/technetwork/java/javame/javamobile/overview/about/index.html>

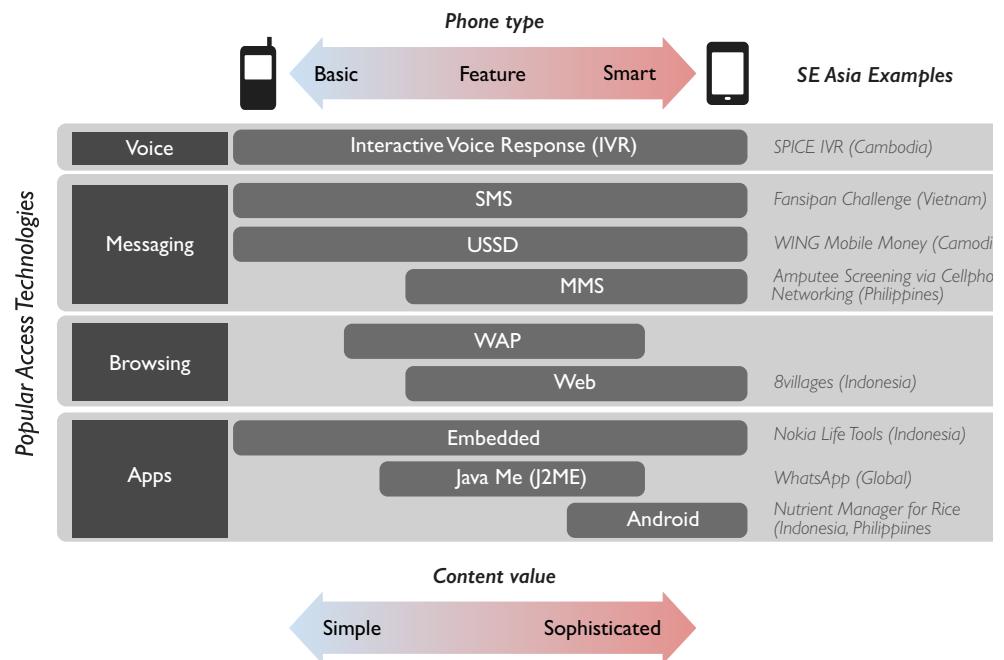
10. The standard that enables SIM cards to be embedded is known as SIM Application Toolkit (STK)



© 2011 Johns Hopkins University Global mHealth Initiative, Courtesy of Photoshare

technology was originally developed in China and has been primarily used to offer cheap roaming services. In Kenya, Equity Bank is rolling out a mobile banking service in the second half of 2014 using this technology in partnership with a mobile virtual network operator (see [Glossary](#) for more on MNOs). This will enable them to offer their services to individuals on any mobile network, which is currently not possible in Kenya.¹¹

The GSMA Mobile For Development Intelligence has developed a helpful illustration to show the intersection of device type and delivery model, which has been adapted slightly with their permission to include examples from Southeast Asia. More information on many of the examples highlighted below can be found throughout the handbook and in the [M4D Inventory](#) at the end of the handbook.



© www.mobileddevelopmentintelligence.com [Scaling Mobile for Development: A developing world opportunity, August 2013]

11. <http://mondato.com/blog/skin-sim-safari/>

What else should I know about M4D?

OFF-THE-SHELF VS. CUSTOM-BUILT

Mobile services can generally be placed into three classifications of readiness: off-the-shelf (they already exist and are ready to use), custom-built (they do not exist and need to be built), or customized (something close exists, but it needs to be adapted).

As the M4D space becomes increasingly more saturated with different mobile services, the need for completely custom-built services is on the decline. In many cases, off-the-shelf mobile services already exist to meet the needs of a development project. This is not to say that there is an off-the-shelf service that exactly addresses each need, but rather that with some customization most of the development needs that involve mobile can already be addressed by what is available on the market. **Therefore, as a general rule, it is advisable that you encourage partners to use existing services, where possible, over custom-built ones.** Of course, there will always be some instances where an idea is so unique and nothing quite like it already exists on the market, or where a service is not open source and it is not possible or cost-effective to work with the current provider. In these cases, it may be necessary to custom-build the mobile service, but these should be treated as the exception rather than the rule (see text box for more details). In addition, when custom-built services are used, open source services should be invested in by default so that the code can be publicly shared and improved upon.

OPEN SOURCE VS. PROPRIETARY

One of the most important considerations related to any mobile service or app—or software in general—from a sustainability perspective, is whether it is open source or proprietary. The term “open source” implies that the software, including its core design, code, and blueprints are universally free and wholly available to any user that wants access to it. This allows the broader technology community to build from, modify, and reuse the original. This in turn drives innovation, provides a better return on USAID’s investment, and fosters transparency and interoperability. When software is proprietary or “closed source”, the ability to use it effectively is tied to the implementer who had the software developed. Using open source tools provides the greatest potential for continuity of a tool by the host country after project completion.

When to use custom-built

There are no hard and fast rules, but here are some things to consider before using a custom-built service:

- Are there any mobile services that can fulfill your needs or does something similar? GSMA’s Mobile for Development Intelligence is a good place to start to see what already exists.
- If something similar exists, what would it cost to customize? How does this price compare with the cost to custom-build?
- Is there any additional value to customizing an existing service (i.e. broadening service options for users)?

Note, however, that simply because open source software is free, it does not mean that using open source software is cost-free. It may be necessary to pay for things like customization, training, and/or technical support in order to use the software appropriately. Whichever software model is used, the good news is that generally both open source and proprietary software are of similarly high quality. Analysis by Coverity, Inc. of more than 450 million lines of software code found defects at roughly the same level for both open source and proprietary.¹²

12. <http://www.coverity.com/company/press-releases/read/annual-coverity-scan-report-finds-open-source-and-proprietary-software-quality-better-than-industry-average-for-second-consecutive-year>

DID YOU KNOW?

An excellent example of the benefits of open source software is the eXeLearning software platform. This was originally funded by the New Zealand Ministry of Education in 2004 to provide teachers who lacked programming skills a tool with which they would be able to develop point and click courseware. By 2009, numerous eLearning applications from all around the world had built on and modified the eXe platform. Applications for mobile phones have also been developed that allow eXe-based content to be downloaded and used on feature phones, providing eLearning tools for populations without access to computers. The key aspect of the Ministry's project design was that the eXe platform was developed under a GPL (General Public License), allowing anyone to use, modify, and build from the original software at zero additional cost to the Ministry.

VERTICAL VS. HORIZONTAL PERSPECTIVES

GSMA's Mobile for Development team has divided M4D into vertical and horizontal perspectives. The vertical perspective is sector focused. This is what most mobile services for development are designed for, which is why many mHealth or mAgri services define themselves singularly by their sector. The horizontal perspective is technology focused. It applies a technology service that can be used across a range of sectors, such as the SPICE IVR system that is discussed in more detail later in this component. Given their lack of sector-specific focus, they tend to be more generic and require customization to meet specific user needs. Mobile data collection services are a common example of services that have been designed from the horizontal perspective.

GSMA suggests that development practitioners begin to look at using mobiles from a systematic perspective that combines both the vertical and horizontal perspectives. This requires that practitioners start viewing the mobiles for development landscape as a whole and target users more holistically where this makes sense. For example, a mobile health service being used with community health workers may have the same functionality needed for an agriculture service used with extension agents. Having one mobile service that can meet the specific and identical needs of both audiences is preferable to promoting the development of two different mobile services, in some cases by two different developers. Of course, it may not always be possible to do this. In some instances there are very unique functionalities that are required that may not fit within a more holistic approach. **The key takeaway is that if you are planning on using mobiles in a project, consider both the specific sector need as well as existing technologies that can be built upon, which may accelerate uptake of the new service.**



To learn more about these two perspectives to M4D, you can read the [six-part series](#).

For more detailed guidance on the use of mobiles along the vertical perspective, check out the following resources:



FOOD SECURITY

- [Mobile Market Information for Agri VAS Operators: A Quick Start Guide](#)
- [Mobile Learning Toolkit](#)



HEALTH

- [mHealth Planning Guide](#)
- [mHealth Basics: Introduction to Mobile Technology for Health](#)



GOVERNANCE

- [Mobile Technologies and Empowerment](#)

What lessons have we learned so far about M4D?

Before we start with incorporating mobiles into a project, let's take a moment first to step back and review what we know about what makes mobiles more likely to have positive impact.

Unfortunately, as a relatively new practice area, there is still somewhat limited formal research into impact in the mobiles for development space. To help improve understanding of the role that USAID can play in this space, in mid-2013 the USAID Digital Development team commissioned a team of information and communications technology for development (ICT4D) specialists to interview more than 40 experts from donors, implementers, vendors, academic institutions, and other commercial ventures to identify guiding principles and best practices for the use of web and mobile technologies in development. What follows is a summary of those findings from the perspective of what role USAID staff can play, along with other lessons learned from the experience of the authors.

1. USAID M4D expertise plays a role in the success of interventions.

Given the limited amount of time that mobiles have been used in development projects on any degree of scale, it should come as no surprise that many USAID staff do not yet have adequate expertise in relation to M4D throughout the project life cycle, from concept design, to procurement, to managing implementation. This is exactly why this handbook was developed. This handbook and the associated Mobiles for Development training piloted in Thailand in January 2014 are intended to build USAID staff capacity so that they can more successfully ensure the success of M4D interventions they design and oversee.

2. Policy and enabling environment can impact success.

The policies, regulations, and business operating environment of a country can positively or negatively impact the ability to implement, scale, and sustain M4D services. As an example, mobile money in Kenya has grown extremely rapidly due to an accommodating and permissive regulatory environment, which contrasts with countries like India that have had somewhat more restrictive policies and in turn have seen slower growth.¹³ USAID has a strong history of supporting improved policy and enabling environments in other sectors, and this is a role that is just as important in the M4D space.

3. Good project design principles are essential.

Starting with a mobile service in mind and then trying to force it to fit into a project's design is generally a recipe for failure. Instead, you should start with the objective you are trying to meet or the problem you are trying to solve, and then determine the most appropriate service—whether mobile or other—that is best suited to enhance the ability to achieve that objective given the context that you are working in. By identifying when good project design principles are not being used, Mission staff can stop implementing partners from failing before they have begun.

4. Collaboration, not isolation.

A couple of years ago in Uganda, there were so many organizations implementing their own mHealth initiatives across the country that the Ministry of Health had to issue a letter ordering a halt of new initiatives until a framework was put in place to coordinate these efforts.¹⁴ Unfortunately, it is not uncommon for development organizations to work in isolation on their M4D initiatives. In the case of USAID-funded projects, Mission staff can help to prevent this by taking the same proactive steps towards enabling collaboration as the government of Uganda.

13. <http://www.cgap.org/blog/mobile-payment-systemswhat-can-india-adopt-kenya-E2-80-99s-success>

14. <http://www.ictworks.org/2012/02/22/ugandan-mhealth-moratorium-good-thing/>

5. Consider the long-term business case for M4D initiatives. As stressed in Component 2, it is important to think about the sustainability of a mobile service before its development or deployment. If an implementing partner proposes to use a mobile service that is going to have lasting value, they should be able to make the case for how that service will be sustained after the project ends. If a business case does not exist from the start, proceed with caution. Poorly considered business plans are one of the main reasons behind the long list of pilots that fail to scale in the M4D space. Identifying which ideas are unlikely to succeed early on and not funding them can help to avoid the continuation of poorly conceived and unsustainable pilots.

6. Avoid recreating the wheel. There has been a proliferation of mobile services that are either explicitly targeting development projects or have a development use case. Although not completely up-to-date, [GSMA's Mobile for Development Intelligence site](#) lists almost 1,600 mobile-enabled products and services in the developing world. That's a lot. If an implementing partner is proposing creating a new mobile service from scratch, make them defend exactly why a new service is necessary and why their needs cannot be met by an existing service or modification to an existing service.

7. Mobile can be part of the solution, but is rarely the solution. Mobile, like any other technology, is simply a tool for performing a task that can also be performed in other ways. In some cases it can be used to replace inefficient manual processes, while in others its value comes from its ability to complement and enhance existing services (for example, to improve the outcomes from radio programs).¹⁵ In both instances, however, mobiles are still being used as part of a broader approach. Mobile services that are part of an integrated approach to development are more likely to generate benefits than those that are stand alone.



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This research prompted USAID to work with a number of donors and bilateral institutions, including DFID, World Bank, Bill & Melinda Gates Foundation, Omidyar Network, UNICEF, and SIDA to develop a list of best practice principles, dubbed The Greentree Consensus, to inform the design of technology-enabled development programs. The [full list](#) is included in the [Resources](#) section at the end of this handbook.

Keep each of these in mind as you read through the rest of the handbook. While each of these do not guarantee the success of any mobile service for development, they can be important contributors, and are therefore worth considering throughout all phases of the project life cycle.



For another perspective on lessons learned in M4D, read Karl Brown from the Rockefeller Foundation's [10 Theses on Power and Efficacy of ICT4D Indulgences](#).

15. If you are interested in learning more about how mobile phones can enhance radio, check out USAID and FHI 360's Interactive Radio for Agricultural Development Projects: A Toolkit for Practitioners, available online at <http://ictforag.org/radio/>



What is the current mobile landscape in Southeast Asia?¹⁶

The significant global growth of mobile phone access over the past few years has brought about much excitement among the development community. While figures such as 6.5 billion mobile phone connections, representing more than 90% of the world population, make it sound like mobile phones are truly ubiquitous, they actually only reveal a part of the story. Access to mobile phones has grown rapidly across the world, with the desire for individuals to be connected, declining costs, and willingness for people to pay serving as the main drivers for this growth. That said, not everyone's access to and experience with mobile phones is the same. Aggregate data does not apply consistently to everyone across age group, gender, and socioeconomic status. Understanding

the mobile landscape beyond the aggregate figures of connectivity, therefore, is crucial to being able to effectively design and implement any sort of mobile for development project. This is, in part, because infrastructure alone does not guarantee people can use mobile products and services at equal levels. Specifically, this section provides an overview of connectivity, literacy, and user habits within the developing countries in ASEAN (Association of Southeast Asian Nations), a priority region for

USAID's Regional Development Mission for Asia (RDMA) which funded this handbook. This includes Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Thailand, and Vietnam.



Check out this [Introduction to mAccess video](#) for a helpful overview of perceived versus actual mobile ubiquity.

¹⁶. For the purposes of this handbook, Southeast Asia is defined as the ASEAN region. This section of the handbook is focused on the developing countries in ASEAN countries. All data is the most recently available as of 2013.

CONNECTIVITY

Connectivity is often defined in two different ways. The most common is the **penetration of SIM cards** in a country. The table shows that SIM card penetration in most of the countries listed exceeds 100% of the total population of the country. While that may seem impressive, it is important to keep in mind that in each of these countries it is not uncommon for one person to own multiple SIM cards in order to take advantage of preferential rates offered by mobile network operators (MNOs) for calls made within their network. In fact, chances are that you or someone you know keeps more than one SIM for exactly this purpose.

The more useful measurement of connectivity is the **market penetration rate of subscribers**. This figure is calculated based on the number of unique mobile subscribers divided by the total population. The market penetration rate gives a better sense of how many people in a country actually own a mobile phone, which as indicated in the table, is between 40% and 55% of the population in every country with the exception of Myanmar. These figures are growing across every country in the region, as are mobile phone purchases, which totaled more than 118 million units in FY12 alone.¹⁷



GSMA INTELLIGENCE'S RESEARCH NOTE

'Measuring mobile penetration' provides some interesting additional insight into this question of measurement.

17. http://www.gfk.com/Documents/Press-Releases/2012/20120917_Telco-Asia-efin.pdf



Country	SIM penetration/ (growth past year)	Market penetration (growth past year)	% of 2G, 3G, 4G connections (growth past year)	Number of mobile network operators
Cambodia	138% (+6.31%)	50.83% (+3.33%)	84.25% (+3.02%) 15.75% (+48.53%) 0%	6
Indonesia	125% (+11.52%)	41.24% (+12.34%)	71.16% (+3.75%) 28.84% (+44.01%) 0.01% (N/A)	6
Laos	93% (+13.39%)	45.06% (+13.30%)	84.46% (+9.18%) 15.54% (+68.84%) 0%	4
Malaysia	141% (+1.23%)	54.04% (+2.27%)	47.29% (-11.09%) 48.02% (+15.97%) 4.69% (+78.57%)	7
Myanmar	14% (+38.79%)	11.68% (+33.09%)	79.37% (+25.11%) 20.63% (+134.57%) 0%	1*
Philippines	110% (+3.51%)	49.38% (+4.60%)	64.24% (-3.70%) 35.11% (+24.95%) 0.64% (+355.25%)	6
Thailand	138% (+10.39%)	54.48% (+6.06%)	63.37% (-20.09%) 36.47% (+231.94%) 0.15% (N/A)	6
Vietnam	134% (-8.98%)	55.58% (+1.08%)	79.90% (-13.95%) 20.10% (+25.77%) 0%	5

* Myanmar awarded licenses to three additional mobile network operators in January 2014. They should be operational by the end of 2014.
Data accurate as of Q4 2013, source: <https://gsmaintelligence.com>

The other thing that this table shows is the growth of more advanced mobile network systems (such as 3G and 4G) across the region. The percentage of subscribers who have 3G connectivity is growing at an even faster pace than SIM penetration—from 16% growth rate in Malaysia to a whopping 134% in Myanmar and 231% in Thailand—meaning that more people are gaining access to all of the benefits that come along with 3G connectivity. While overall access to 3G in these countries is still fairly limited at less than 35% in the majority of Southeast Asia, the rapid growth of 3G means that over the next few years it is likely that some of the individuals and communities that USAID works with will gain access to these faster connections (see text box for more details on 2G/3G/4G). To give you a sense of how fast that growth has been, in 2012 global mobile data traffic was roughly twelve times more than the entire global internet traffic (not just on mobiles) in 2000. By 2017, we will use 11 exabytes of data per month (that's 1 billion gigabytes!).¹⁸ Within Southeast Asia, it is estimated that by 2017 about 52% of mobile connections will be on either a 3G or 4G connection,¹⁹ and will account for 9% of total 4G



For a more detailed, though slightly dated, analysis of the mobile landscape in Southeast Asia, read MobileMonday's [Mobile Southeast Asia Report 2012](#).

18. http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/white_paper_c11-520862.html

19. <https://gsmaintelligence.com> [subscription required] <http://www.gsmamobileeconomy.com/GSMA%20Mobile%20Economy%202013.pdf>

What is 2G, 3G, and 4G?

The 'G' stands for the generation of the mobile system (for example, 3G is third generation technology). The main difference between each of these is data speed. Phones on a 2G network can generally only get speeds of 9.6 kbit/s to 28.8 kbit/s, roughly equivalent to old modem speeds from dial-up days. Phones operating on a 3G network, however, need to have a minimum stationary speed of 2mbit/s and 348 kbit/s when moving. 4G networks (the most common 4G standard is called Long Term Evolution or LTE) can provide peak speeds of up to 100mbit/s (and potentially as high as 1gbit/s with newer, advanced 4G technologies). The difference in bandwidth makes accessing multimedia content, using sophisticated apps, and location-based services possible. At peak speed, a 4G phone could download a 30 minute TV show in 7 seconds, whereas it would take almost 6 minutes on 3G, and just under 7 hours on 2G!

GRAPHIC: JUNIPER NETWORKS, INC.

DATA AS OF JULY 31, 2013

Mobile Advancement Heat Map

While many markets are embracing LTE, some are looking to jump directly from older GSM service directly to the fast lane — LTE is 100x faster than GSM data service.



connections in Asia, up from only 0.5% now.²⁰ And although for the near future the majority of mobile phone users in Southeast Asia will be using feature phones, smartphone growth is expanding rapidly, with sales "expected to grow in Vietnam, Indonesia, and Thailand at compound annual growth rates of 37%, 31%, and 27%, respectively, from 2011 through 2016."²¹

Knowing whether end users have 2G, 3G, or 4G access—or no access at all—and what types of phones they are using will play a significant role in shaping what type of mobile intervention is going to be most relevant. This process is discussed in more detail in the [project design component](#) later in the handbook.

20. <https://gsmintelligence.com> [subscription required]

21. <http://www.accenture.com/SiteCollectionDocuments/PDF/Accenture-Surfing-ASEAN-Digital-Wave-Survey.pdf>

Another factor related to mobile connectivity is access to electricity. If a community does not have affordable and convenient access to electricity to keep their devices charged, this can drastically impact how they are able to benefit from having mobile network coverage. However, lack of electricity does not necessarily mean that mobile phones cannot be used by people in those communities. Even in communities that are completely off-the-grid without access to electricity, there are some people who value their phones so much that they are willing to walk significant distances and pay money to charge their phone. What this tells us is that while locally-available electricity is not absolutely required for mobile connectivity, it does play a role in how people make use of their mobile phone.

LITERACY

Often overlooked, but equally as important in understanding the mobile landscape of any country, is literacy rate. While there are plenty of anecdotal stories about illiterate or low literate individuals using mobile phones, the reality is that literacy does have an impact on the ways in which an individual can use a mobile device. The good news is that within Southeast Asia, basic literacy rates—defined by the World Bank as anyone “who can, with understanding, read and write a short, simple statement on their everyday life”—tend to be fairly high, exceeding 90% of the adult population in most countries.

Of course, all of these literacy rates are based on the individual’s native tongue. Unfortunately, in some countries in the region, such as Laos and Myanmar, there is often limited availability of phones that can display their languages’ scripts. This is much less of an issue in countries that use Latin scripts or in countries with a large enough market to incentivize the investments required for displaying local scripts (such as Thailand). That said, even when local scripts do exist it is not uncommon for mobile services to not support those local languages. For example, many of the mobile money platforms that are developed by international firms use English. In addition, not all scripts are treated equally for SMS messages. While mobile phones can send SMSs up to 160 characters long for Latin-based scripts, that number can be as little as 70 characters for non-Latin-based scripts, such as Thai or Khmer. This, plus the fact that the average number of characters per word varies by language, means that the amount of information that can be included in one SMS can vary greatly by country.



INTERESTING FACTOID

The former chairman of the nonvoice services committee at the Global System for Mobile Communications (GSM) came up with the 160 character limit for a single text message by, among other things, counting the average character length of postcard messages.

Source: [LA Times](#)

Country	Adult literacy rate (% of people ages 15 and above)
Cambodia	74% (2009)
Indonesia	93% (2009)
Laos	73% (2005)
Malaysia	93% (2010)
Myanmar	92% (2010)
Philippines	95% (2008)
Thailand	94% (2005)
Vietnam	93% (2010)

Source: <http://data.worldbank.org/indicator/SE.ADT.LITR.ZS>



Related to literacy, there is also the issue of digital literacy. Even when people are able to read languages supported by mobile phones, they may not have sufficient experience with mobile devices to enable them to utilize a particular mobile app or service. While this may seem strange to digital natives to whom using a mobile phone is second nature, not everyone has the same level of comfort with device use. Researchers, such as Susan Wyche at Michigan State University, have come across what they refer to as 'green button, red button' users who only know how to answer and place calls, and not much else. And this is not just among the least educated of the population. Research by CA Technologies of nine Asian markets found that a majority of Chief Information Officers surveyed felt that "a lack of digital literacy amongst senior executives could be hampering business growth", a figure that reached as high as 93% among Malaysian CIOs.²² Digital literacy can also vary among other demographical differences, such as age, urban/rural, gender, and socioeconomic status. Understanding demographic differences in target countries and communities should inform how interventions are designed.

USER HABITS

Somewhat related to digital literacy are user habits, which can vary significantly by country, and can be influenced by both financial and cultural reasons. Knowing how people are using their phones is an important part of understanding the mobile landscape in a given country or community. In Thailand, for example, the average mobile phone user speaks on the phone for 322 minutes per month, compared to only 228 minutes per month in Malaysia.²³ In this case, the difference appears to be due to culture and not a reflection of income or cost of usage; Malaysia has a higher per capita GDP than Thailand, and calling rates are around US\$0.06 per minute in both countries. The Philippines provides an example of how user habits can

22. <http://www.ca.com.sg/news/press-releases/apac/2012/low-digital-literacy-may-hamper-business-growth.aspx>

23. <https://gsmaintelligence.com/files/analysis/?file=130828-scaling-mobile.pdf>



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change quickly as the result of access to new applications and services. Once referred to as the texting capital of the world, it saw SMS usage drop from an average of 660 per month in 2010 to 400 in 2011, primarily due to increased use of mobile messaging and chat services.²⁴ Unlike SMS, mobile messaging and chat services (such as WhatsApp) are not subject to character limits. In addition, users can share multimedia content via these services. It is important to point out here that while sending each message may technically be free within the messaging or chat service, users need to have a 3G or 4G data connection to use them. Unless users have an unlimited data plan, this use of data will cost extra.

More so than elsewhere, though, Southeast Asians also appear to be extremely open to using their mobile phones to get online. Research by Accenture found that a portion of the region's population expressed an interest in doing their internet surfing exclusively on mobile devices: 65% of Indonesians, 61% of Filipinos, 60% of Thais and 55% of Vietnamese, compared to the global average of only 31%.²⁵

24. http://www.phonearena.com/news/Report-SMS-messaging-on-the-decline-replaced-by-messages-sent-via-Facebook_id30124

25. <http://www.accenture.com/SiteCollectionDocuments/PDF/Accenture-Surfing-ASEAN-Digital-Wave-Survey.pdf>

How are mobiles being used in development projects in Southeast Asia?

Although previous mobiles for development studies have tended to focus on what is happening in Africa and South Asia, there are a number of interesting applications of mobiles to development challenges in Southeast Asia. In October 2013, USAID, together with the mSTAR project, held a contest to help identify promising examples in the region. After receiving a total of 16 applications, five finalists were selected based on the following criteria: design, impact, creativity, and organizational capacity.

Each of those finalists is highlighted below. Some of the examples are targeting individuals directly, while others require an intermediary (such as a community health worker). There is also a mix of custom-built services and apps that were built for a specific purpose, as well as those that are off-the-shelf services. In addition, some of them are open source, while others are proprietary.

A more detailed list of all of the mobile services and apps uncovered during desk research conducted as part of the development of this handbook can be found in the [M4D Inventory](#) at the end of the handbook.



Individual Access



Custom



Open source



Proprietary



USAID Funded



Off-the-shelf



Intermediary Access

NOTE: Grayed out items apply to some elements of the service.



SPICE IVR (Contest winner)

Website: <http://www.open.org.kh/spice>

Through the USAID Structuring Partnerships for an Innovative Communications Environment (SPICE) program, Open Institute developed an interactive voice response (IVR) platform for civil society organizations in the human rights, governance and health sectors. The IVR platform is connected to all mobile network operators in Cambodia and is accessible to most callers in the country. An example of their services is the Election Hotline that contains information on how, when and where to vote; over 600,000 calls were made to the platform in one election cycle. With the award received from the contest, they are planning to record 50 articles of Cambodian Land Law into Phnong, one of the country's minority languages. Phnong speakers will be able to call into the IVR platform to listen to those articles upon demand, thus helping them to understand their legal rights related to land ownership.



8villages (Runner up)

Website: <http://www.8villages.com/>

8villages offers a rural social networking platform that allows smallholder farmers and other agricultural value chain players to join local crop communities and receive user-generated content, such as seed offers, harvest offers, and get advice through peer questions and answers. The application generates revenue through advertising, by providing market analytics to the private sector; and through a "freemium" model in which farmers receive basic functions but can opt to pay for additional features. 8villages currently has 4,000 users in Indonesia with a weekly SMS traffic of 300,000. They plan to use the award funds to strengthen their telecommunication servers in order to expand into the Philippines and elsewhere.





Individual Access



Custom



Open source



Proprietary



USAID Funded



Off-the-shelf



Intermediary

NOTE: Grayed out items apply to some elements of the service.

CommCare (*Finalist*)

Website: <http://www.commcarehq.org/home/>

CommCare is an open source mobile application that was designed as a job aid for frontline health workers. Designed to be used on both Java-enabled phones and smartphones, it can be used to collect data and share multimedia content. All of this is linked to a cloud-based database, enabling supervisors to monitor the progress of their team in near real-time. To date it has been used by 50 organizations in more than 30 countries. In Thailand, the firm that created CommCare, Dimagi, is planning on using it with community health workers for early detection of dengue fever and to increase knowledge about the disease.



Fansipan Challenge (*Finalist*)

Website: N/A

Fansipan Challenge is an SMS-based service developed by USAID's Sustainable Management of the HIV/AIDS Response and Transition to Technical Assistance (SMARTTA) project. It uses gaming concepts to encourage people who inject drugs and their partners to get tested for HIV. Peer volunteers sign up people to their expedition team with the goal of accumulating 3,143 points—the height of Fansipan mountain, the tallest mountain in Vietnam—over a discrete programming period. Teams receive points for each person reached, each person who tests for HIV, and each HIV positive person registered in HIV care. The data is also made accessible in real-time to provincial AIDS committees. During the trial period 68% of people participating in the challenge got tested, compared to 18% in conventional outreach.



A-Eye (*Finalist*)

Website: <https://www.facebook.com/VanaThailand>

A-Eye is a smartphone app developed by King Mongkut's University of Technology Thonburi in Thailand. It is currently being piloted at Doi Suthep national park in northern Thailand. It is both a tourist guide and a park management tool. It is loaded with information on sites and attractions geo-tagged on a GPS-enabled map that tourists can use to navigate the park. Additionally, tourists can use the app to take photos and report incidents, such as fires, damaged facilities, or other issues, which can be monitored and responded to in real-time by park staff.





COMPONENT

2

Understanding the Mobile Ecosystem

By the time you have finished this component you will:

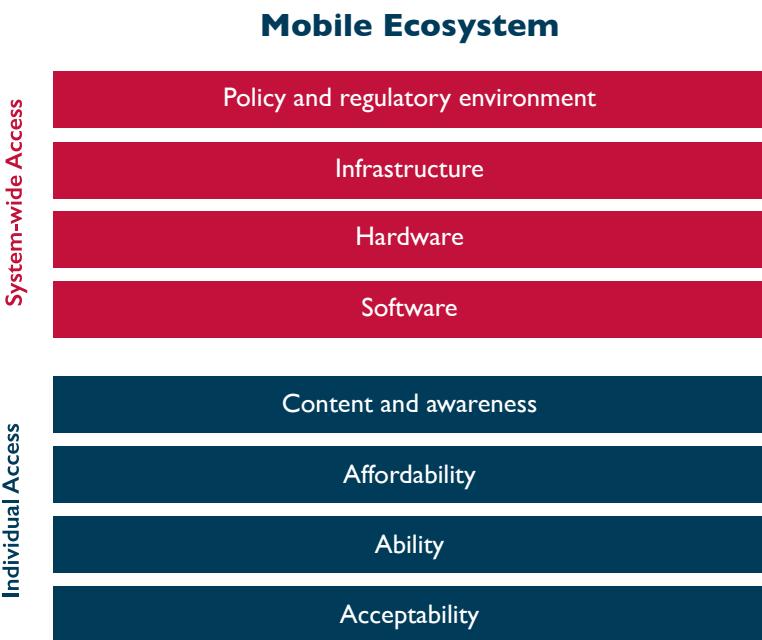
- Understand the basics of the mobile ecosystem
- Understand some of the roles USAID can play in the mobile ecosystem

The mobile ecosystem is complex and multi-faceted, including different structural elements and building blocks. This component is designed to provide you with an overview of each of those different elements and their interrelations, so that you can better understand the broader environment that M4D operates within, as well identify roles that USAID can potentially play in supporting the mobile ecosystem.

What are the different elements of the mobile ecosystem?

For many people, mobile phones have become so commonplace that they never even stop to think about all of the elements that need to be in place before the device in hand functions in the way they have come to expect. This is a sign of success, as often people only realize the specific elements if they do not function effectively. In the case of the mobile ecosystem, the critical elements are the policy and regulatory environment, infrastructure, hardware, and software. Understanding each of these elements, how they interact with each other, and how they enable access to mobile services, will help you identify the weaknesses within the ecosystem and may present opportunities to strengthen the mobile ecosystem through development activities.

At the highest level, there is the **policy and regulatory environment**. Without an enabling policy and regulatory environment in place, mobile growth can be stifled, impacting affordability, network coverage and speed, competition, and freedom of expression. Myanmar is a good example of the issues that can arise





A NOTE ON DATA SECURITY AND PRIVACY

In many countries, the regulations related to mobile data security and privacy were not written with development services in mind. Mobile services for health and governance, in particular, may be used to collect sensitive personal data. If this is the case, it is important to ask how the service provider or implementing partner is protecting that data. Do the government or other third party actors have access to the data without receiving prior and explicit approval from the individual? Who owns the data? Where is the data stored? While organizations may already have privacy policies for their data, it is important that they are updated to include the specific sensitivities that may arise from transmitting that data via mobile phone.

Operational processes must also support proper information security to make sure staff are aware of how to safeguard data and that only those who need information have access to it. The method of sending and receiving information should also be taken into account. It is possible for information that is sent by the internet or over mobile networks to be intercepted. Internet or telecommunication companies may also keep records of text messages or other data sent over their networks. Mobile services should therefore take into account potential vulnerabilities and employ security measures appropriate for the sensitivity of the data being collected.

without a strong enabling environment. Over the past couple of years, regulators in Myanmar have sought to liberalize the telecommunications industry, which was historically controlled entirely by a government-owned provider. This has resulted in an extremely low mobile penetration rate, exceeding only that of North Korea. In June 2013, the Government of Myanmar announced that they would be providing mobile network licenses to two foreign operators, Telenor and Ooredoo, and one other local operator.²⁶ The government's aggressive goals of expanding access to 50% of the population by 2015 will only be accomplished if regulations are put in place that encourage private companies to make the large infrastructure investments that are necessary, including the need for at least 15,000 network towers, which will cost an estimated US\$4 million. For Myanmar's population to realize the same benefits that the mobile revolution has brought to Africa, for example, the government will have to create a transparent and flexible enabling environment for the telecommunications sector. Similar reforms in most African

countries over the past ten years have resulted in the rapid expansion of voice, messaging, internet, and mobile payments, and transformed the lives of a large portion of African citizens.²⁷

However, even countries with a more developed mobile policy and regulatory environment are not immune from challenges. In Thailand, the issuance of 3G licenses, which allow MNOs to provide high-speed internet to mobile devices, was delayed for 7 years due to a legal dispute in which the state telecommunications firm challenged the authority of the National Telecommunications Commission to sell licenses. The issue was only resolved with the creation of a new regulatory body. As a result, mobile users in Thailand started receiving 3G access in 2013, making the country the second to last in the region (behind Myanmar) to open up 3G.²⁸

26. Unfortunately, the issuance of these licenses was put on hold until a new Telecommunications Law could be passed to clarify the regulatory environment. While this law was passed on October 12th, 2013 it apparently provides only a framework, and may not be sufficient to release the licenses.

27. "Myanmar: The next Asian telecommunication greenfield?" Deloitte, 2013. Access: <http://www.deloitte.com/assets/Dcom-Guam/Local%20Assets/Documents/Technology,%20Media%20and%20Telecommunications/TMT%20Myanmar.pdf>

28. <http://siliconangle.com/blog/2012/10/18/thailand-sells-off-3g-licenses-at-last-but-implementation-could-still-be-years-off/>



After policy and regulatory environment, the next piece of the mobile ecosystem is **infrastructure**. Mobile network operators (MNOs) need to build cell towers in the areas they want to provide service, along with all of the back-end systems needed to support the network of cell towers. In addition, they need to build out their agent and distribution networks so that people are able to buy their SIM cards and airtime top up. This is particularly important in developing countries, including in Southeast Asia, where more than 90% of mobile phone users are pre-paid customers, who purchase airtime in small amounts from an airtime distributor (the alternative is post-paid, through which customers sign a contract and then pay a pre-determined fee each month for a set amount of time available for voice and internet at no extra cost).

There is also infrastructure that MNOs are not responsible for, but rely on to provide mobile services. For example, no one can use a mobile phone without access to electricity. Although off-the-grid charging services exist, they generally have low penetration (in the case of solar) and/or are expensive to the end user (in the case of diesel-powered generators). Without convenient and affordable



A good example of how USAID has supported infrastructure development in this space is the [Global Broadband and Innovations \(GBI\)](#) program, which is helping to extend the reach of enhanced mobile networks into remote rural areas.

access to electricity, people tend to use their phones less or even keep them off except when they want to place an outgoing call to conserve battery life.

Another somewhat more recent development related to infrastructure development is the movement in some countries to repurpose unused television spectrum, known as TV white space (TVWS), for other communications purposes. The availability of TVWS tends to be higher in countries that have already made the switch from analog television signals to digital television. This white space can be repurposed into WiFi networks that can provide mobile broadband access without the need for 3G or 4G networks. In countries where mobile data demand is already quite high, such as the US, MNOs are using TVWS to offload some of their mobile data traffic onto the TVWS spectrum at a significantly lower cost than it would be to further build out their 3G/4G mobile networks. One example of how this is being used is in the Philippines, where USAID's Ecosystems Improved for Sustainable Fisheries (ECOFISH) Project is using TVWS to connect remote fishing communities to the internet (see more on this project in the [USAID Projects](#) table towards the end of the handbook).

After infrastructure, **hardware** (or mobile devices) is the next element of the mobile ecosystem. Without access to mobile devices, it does not matter if the policy and regulatory environment is strong and infrastructure is well developed. Thankfully, due to a global glut of mobile devices, the number of people with access to mobile devices is growing at a rapid pace—although disparities continue to exist in terms of device type. There is a significant difference between the cost



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and functionality of a 10-year old basic phone that has been resold many times, and a brand new smartphone. The \$20 smartphone is just around the corner, though, and smartphone sales should continue to eclipse sales of feature phones moving forward.²⁹ SIM card access has also been a constraint in some places in the past, although this is becoming much less of an issue in most countries, including in SE Asia. This is particularly the case after Myanmar, the most restrictive market, recently reduced SIM card prices to a more consumer friendly amount; although, at around US\$2 each they are still expensive for many locals.

The final element of the mobile ecosystem is the **software** used on the device itself. In their recent report on [Scaling Mobile for Development](#), the GSMA Mobile for Development Intelligence unit suggested further subdividing this element into three different parts for clarity: platform, framework, and application. The platform is the

operating system of the phone, the overarching software environment within which other software operates. Frameworks are software tools that are built with the intention of enabling multiple uses and customization. An example is the [Mobile Technology for Community Health \(MOTECH\)](#) system, which brings together a suite of mHealth applications. Finally, applications (apps) are the smallest unit and are individual programs that are designed for a specific purpose. These can either be built off of an existing framework or designed from scratch (see [M4D Inventory](#) for a list of mobile apps used for development in Southeast Asia).

In addition to these elements, there are additional factors that impact an individual's access to and ability to benefit from mobiles. These include things such as content and awareness, affordability, ability, and acceptability. **Content and awareness** includes factors such as whether the individual knows what mobile phones can do, what content or services exists, and what value those content or services can have on their lives. **Affordability** includes both the cost of the device and access to a specific mobile service, which may require standard usage fees, service fees, and costs associated with charging the device. The issue of **ability** captures an individual's skills and capacity to use a mobile phone and specific mobile service, due to a wide range of factors including language literacy, numeracy, and

29. <http://qz.com/163621/in-2014-the-next-billion-will-access-the-mobile-internet-at-20-a-handset/>

digital literacy, as well as the capability to physically use the device (i.e. adequate eyesight). Finally, **acceptability** deals with the social or cultural norms that may impact access to mobile devices or services (for example, some cultures may not find it acceptable for a woman to own her own mobile phone), and whether or not individuals have trust and confidence in the data security and privacy of the mobile networks or services.



What are the building blocks of mobile services?

The design and successful deployment of any mobile service requires a number of building blocks, including mobile service quality, sustainability of the business model, partnerships, and promotion. As we expect that the primary readers of this handbook will be funding, rather than directly developing, mobile services, we will not go into too much technical detail on each building block. Rather, we intend for this section to provide you with a high-level overview so that you are able to recognize whether implementing partners are using mobile services built on a solid foundation. The degree to which each of these building blocks exist will play a direct role in the long-term sustainability of the mobile service beyond USAID or other donor funding.

One of the foundational building blocks is the **quality of the technology behind the mobile service**, which can be further broken down into functionality and usability. By *functionality* we are referring to how well the mobile service functions within the context for which it was developed (i.e. that it functions in a rural environment on basic mobile phones, if that is the objective of the service). As such, a mobile service should always be tested in the type of environment(s) and context(s) in which it is intended to be used. This is particularly important since sometimes the technology is working exactly how it was designed, but the organization, field staff, or clients are using it in a way inconsistent with its design.

Here are a couple of examples to illustrate the point; the first related to software, the second to hardware. Let's say that an organization needs a data collection application that can work both when it is connected to the mobile network and when it is offline. Testing it from their office in a city, it might appear to work perfectly. It is only when they deploy it to an area with relatively low mobile phone coverage that they realize the application sometimes fails to transmit data once it is back on the network. This leads to data not being aggregated on the time frame they expected, or worse, being lost when staff clear out their record history before the data has been transmitted.

In the second example, an organization purchases phones for their staff to use for mobile data collection, but because of limited local availability they decide to buy them in the US. They end up purchasing CDMA phones (see text box) and shipping them to the country where the project is being implemented. When the phones arrived in country, no one can understand why they would not work until someone finally figures out that it is because in that country there are no MNOs that use CDMA. In this case, the phones work completely fine, functionally. The issue is that the user did not pick the correct technology for the context.

Along with functionality, the other major aspect of technology quality is its *usability*. If functionality is how the technology operates, then usability is what the user's experience is with that technology. It is not uncommon to think that once a technology has been fully tested and functions as it is intended to operate that it is then ready for deployment. What if the intended audience is not equipped to use the technology, though? Maybe they are mostly illiterate, but they are being sent information by SMS. Or they mostly own basic phones, and the implementer is pushing their service via a Java app for feature phones. Or maybe they need to navigate an IVR menu system, and it is structured in a way that is not intuitive to most users. Or the service is in English, and the target audience is not fully

CDMA vs. GSM

CDMA and GSM are two different radio systems used in mobile phones. GSM is by far the most common type of radio system used by MNOs in Southeast Asia, accounting for over 97% of connections in the region and about 80% globally. Phones are not interoperable, so GSM phones will not work on CDMA networks and vice versa.

functional in English. The list goes on. The next component talks more about user-centered design, why this is important, and how it can be done to help mitigate these usability issues.

A common mistake that is made in assessing mobile services is to stop at the technology. If the technology functions and is usable, then surely that is all one needs to know, right? Unfortunately, that misses an extremely important set of building blocks: those built around the **business model** of the provider. Quality technology is a necessary but insufficient element of success. Without a clear and relevant business model, the chances of long-term success go down significantly. History is littered with examples of superior technologies that failed because of poorly designed business models.

Business models refer to how the mobile service is sustained, which includes factors such as:

- **Who pays for the service?** Donor/sponsor, institutions, individuals, combination
- **How is the pricing strategy structured?** Fee per use/session, subscription, embedded value added service, freemium model with tiered packages/pricing
- **What forms of payment can be used?** Airtime, cash, purchase other forms of credits
- **How do users pay for access/use?** Direct from phone, online, through retailer/agent network

Additionally, if payment for end users is initially subsidized through a development activity, there must also be a transition plan—which includes attention to each of the above factors—for when subsidization ends.

A strong business model is important not only for helping to determine whether the provider is able to cover its costs in delivering a quality product, but also to generate additional revenue that can be invested into future research and development of new or improved products. However, it is important to keep in mind that fully operationalizing a sustainable business model may take longer than the typical development project period of performance.

Partnerships are another building block for the successful development and deployment of a mobile service and in some cases can be very important in helping to operationalize a business model. The table provides an example of some of likely partners and their typical roles in the implementation of a mobile service, such as high quality content creation, building mobile networks, or addressing telecommunications regulations.



Check out the GSMA mWomen's [Mutual Value, Mutual Gain report](#) for best practices in partnering with mobile network operators.

Type of partner	Potential roles
Mobile service provider	<ul style="list-style-type: none"> Design and maintain the mobile service
Mobile network operator (MNO)	<ul style="list-style-type: none"> Provide reduced price access to mobile short code numbers and airtime Responsible for building out mobile networks, and in some cases maintain the mobile service themselves
Implementing partners	<ul style="list-style-type: none"> Hire a technology company to design a mobile service, or pay for access to a service already developed Provide technical assistance, training, and promotional support to the mobile service provider to improve user access and usage Help to create high quality and relevant content utilized within the mobile service
Local government ministries or agencies	<p>Often responsible for setting policy or providing guidance that impacts the environment in which the mobile service can operate. Some examples and their relevant responsibilities include:</p> <ul style="list-style-type: none"> ICT strategy, infrastructure investments, Universal Service Funds, telco regulations, data security [Ministry of Communication] Health information systems, patient data, health monitoring systems [Ministry of Health] Electronic and mobile payments, Anti-Money Laundering and Combating the Financing of Terrorism (AML/CFT) [Ministry of Finance] Market information systems, agricultural extension, weather monitoring, inventory management [Ministry of Agriculture]
Donors and US interagency partners	<ul style="list-style-type: none"> Provide funding for development projects and their use of mobile services Share lessons from their experiences in M4D Coordinate with each other to reduce duplication of services and facilitate scale Facilitate conversations with regulators and MNOs
Other stakeholders (industry associations, financial institutions, etc.)	Their role can vary depending on the mobile service and its focus.



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The forthcoming ICT4D guidance being developed by USAID includes more detail on each of these potential stakeholders, as well as suggested questions that you can ask each of them during initial consultation and development of the results framework. These [questions](#) are included in the [Resources](#) section of the handbook.

Promotion, which consists of outreach and engagement, is the final building block. The chances of a mobile service going viral by word of mouth promotion cannot be assumed, and should never be the backbone of an effective promotional strategy. The mobile service provider, often times in partnership with the implementing partner, needs to develop a well thought out approach to promotion, which may include traditional advertising, grassroots awareness raising, trainings, and promotional partnerships. While providers, especially MNOs, are often great at mass marketing such as television ads and billboards (often referred to as above-the-line or ATL marketing), many mobile services benefit greatly from marketing such as more personalized and direct

SMS messaging and training (below-the-line or BTL marketing). Promotional partnerships in the development space are often particularly important for this BTL marketing. For example, a firm that has developed a mobile service for reporting government service outages may want to partner with civil society organizations to help build awareness among citizens because the firm itself lacks those direct linkages or credibility. Training is also an important element of promotion, particularly with any products that are completely new to the market, as target users may not understand fully how it works even if they are interested in using the service.

What role can USAID play to help strengthen the ecosystem?

USAID has a long history of playing a positive role in helping to strengthen ecosystems relevant to specific development sectors in the countries where it works. Examples of how USAID has helped to strengthen the mobile ecosystem include the [Scaling Innovations in Mobile Money \(SIMM\) Project](#) in the Philippines and the [Mobile Money Accelerator Program \(MMAP\)](#) in Malawi. Both of these projects focused on strengthening the mobile ecosystem as they relate to digital finance, which helped to lay the foundation upon which development actors, including other USAID projects, could take advantage of (see [USAID Projects](#) table for more information on these projects).

Examples of the facilitative role that USAID and partners can play at the macro-level to strengthen the mobile ecosystem include:

- Supporting and encouraging interoperability between existing mobile services, such as the adoption of APIs (Application Program Interfaces) that allow services to communicate with each other.
-
- Interfacing with regulators to advocate on behalf of regulatory change where appropriate.
-
- Supporting the adoption of open standards between USAID and local government agencies.
-
- Negotiating with MNOs on issues such as short code access and pricing. In India, for example, the Gates Foundation was able to coordinate with three of the main MNOs to get them to agree to use the same short code and price structure for a maternal and child health IVR service operated by BBC Media Action.
-
- Supporting MNOs to translate mobile phone menus into local languages.

What is possible will vary between countries and regions and will depend on USAID's existing role and relationships, among other things.



If you want to go a bit more in the weeds on APIs [watch this webinar](#) on HowTo.gov.



There are also existing initiatives supported by USAID that you may be able to tap into for support in improving the mobile ecosystem, such as:

- **USAID's partnership with Australian Aid, GSMA and Visa on the GSMA mWomen Program**, which has the goal of enabling 150 million underserved women to own and effectively use mobile phones in order to increase their access to vital information, networks, and services to improve their families' quality of life. The alliance helps to build the business case for mobile products and services that meet the needs of women. Stakeholders can use the [research and tools](#) created by the mWomen program, join the mWomen [working group](#), and/or apply for one of the program's [innovation grants](#) that provide seed funding for the design and launch of economically sustainable products/services that increase women's access to and use of mobile phones and value-added services.
-
- **USAID's partnership with Google.org, Omidyar Network, DFID, and 30+ other governments, technology providers, civil society groups, and academia** is empowering policy makers with the tools and resources to facilitate more open, competitive markets. This partnership, the Alliance for Affordable Internet, aims to bring broadband prices down to no more than 5% of monthly income, enabling the next two billion users to come online. A4AI has produced an outline of [policy and regulatory best practices](#), including allowing innovative allocation of spectrum, promoting infrastructure sharing, and increasing transparency and public participation in regulatory decisions. Additionally, the Alliance will be developing in-country networks to serve as learning and advocacy networks on policies to bring prices within reach—providing a source of potential partners for USAID. This Global Development Alliance (GDA) is structured to allow Missions to buy-in to commission research or access technical assistance regarding affordable mobile access.

IMPLEMENT





COMPONENT

3 Project Design

By the time you have finished this component you will:

- Be able to determine if mobiles are appropriate to help advance the development objective you are trying to achieve
- Be able to integrate mobiles into your project design using a six-step process

You may have an intuitive sense of whether mobiles would be useful to integrate into a project. If people are already using mobile devices in their everyday lives, then there may be opportunities to leverage those same mobile devices as a tool to help achieve development objectives. Of course, it is not quite that simple, as intuitions are not based on complete information. This component will help you understand what information to gather to make informed decisions about the role that mobiles could play within a project. This will inform how you shape the project design and solicitation to which prospective implementing partners respond.

Critical groundwork for assessing whether mobiles may facilitate achieving the program goal should include consideration of the elements described in **Component 2**, and mapping the technology landscape of the country or region the project is working in. You should pay particular attention to sector and context-specific considerations, as well as consideration of the potential costs and benefits of using mobile services instead of other means.

Based on this information, you can begin to think about what an integrated approach that includes mobile devices and services might conceivably look like. This assessment is not meant to pre-determine the final approach that the selected implementing partner will use, but will help you to more accurately evaluate the integration of technology into any proposals you received during the procurement phase, and if you are developing a contract, may lead to inclusion of particular tasks in a scope of work.



Where do you begin with incorporating mobiles into your project design?

These days, many people are talking about integrated approaches, and for good reason, given the complexity of most development issues. Integration is also explicitly mentioned as one of USAID's Operational Principles in the Project Design Guidance. The value of integration also extends to mobiles. Rather than seeing mobiles as capable of solving complex development issues on its own or as a project add-on, it is worth thinking about how mobile services can be incorporated at a foundational level into a development program, so that they integrate with and reinforce other implementation activities.

The table to the right provides some illustrative examples of how mobiles can be used in a variety of different ways to reinforce a development activity, in this case an agriculture project.

As with any other project design, you should start by determining the project goal and project requirements. USAID already has very thorough Project Design Guidance, which divides this process into three stages: the conceptual stage (resulting in a concept paper), the analytical stage (resulting in a Project Appraisal Document), and the approval stage (resulting in a Project Authorization). This component includes suggestions and tools that will help you collect all of the relevant information and complete the requisite analysis related to incorporating mobiles into the project.

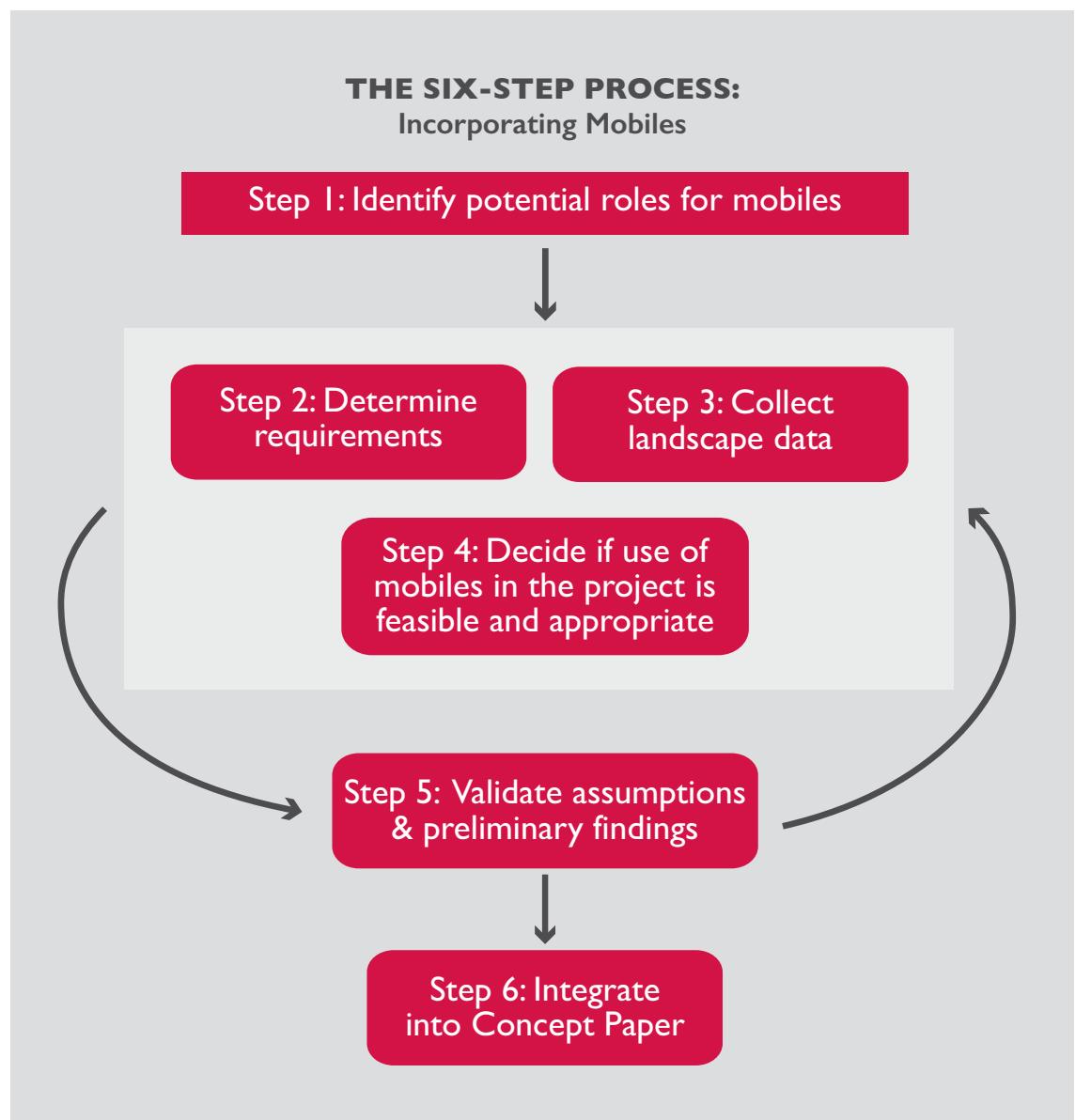
Project Element	Mobile Element
Market Research – Determine farmer needs	<ul style="list-style-type: none"> Market research team used tablets to conduct the survey. Survey results were submitted in real time.
Farm Calendar – Track individual farmer crop life cycle	<ul style="list-style-type: none"> Extension workers used the <u>Farm Force</u> application to collect data on individual farmers to create a calendar and high level business model.
Seed Voucher – Provide rice grower seed/fertilizer voucher (subsidy, not free)	<ul style="list-style-type: none"> MNO used mobile money platform to issue mobile vouchers to farmers. Farm stores used mobile money platform to redeem vouchers.
Extension Services – Ensure that proper protocols are being followed	<ul style="list-style-type: none"> Extension workers are supported by SMS messages to specific farmers at specific points in their crop life cycle.
Payment – Farmers are paid net proceeds in a timely manner	<ul style="list-style-type: none"> Rice buyer pays lead farmer/collector using bank transfer or mobile money. Lead farmer/collector pays farmers via mobile money.



What process should you use for incorporating mobiles into project design?

Although this handbook calls them steps and places them in numeric order, it is not a fully linear process. Further, they are not always required. If mobiles are going to play a large role in the project, then you might want to go through each step in more detail. If, on the other hand, you want to get a sense of whether mobiles could play a very discrete role, this can be done much more quickly. The handbook notes which steps (and sub-steps) are encouraged and optional, as well as estimated timeframes for how long each step will take as a guide.

We encourage you to use the [Mobiles for Development Checklist](#) in the [Resources](#) section to guide you through this process.





THE SIX-STEP PROCESS INCORPORATING MOBILES

STEP 1: Identify potential roles for mobiles to reinforce project goals [Highly Encouraged]

 Estimated time to complete: 45-60 minutes

You should begin by identifying project goals and brainstorming if and how mobile technology might reinforce them. Where possible, engage your Science & Technology Advisor (if you have one) or colleagues that are already using mobile technology in this brainstorming session, regardless of whether their experience is in a different sector. Do not try to force mobiles into the project. Rather, work backwards from what you are trying to achieve to determine if mobiles might have a role in helping to achieve those outcomes.

STEP 2: Determine requirements for using mobiles [Encouraged]

 Estimated time to complete: 20-45 minutes

Once you have some ideas about how mobiles might be able to enhance the project you are designing, you should determine the requirements, for instance regarding delivery mechanism and device type, to use mobiles in the way you are thinking. The table lists a number of different potential uses of mobiles within development projects, along with the requisite functions and minimum delivery model and device requirements, as well as some additional features you may need. It is meant to serve as a starting point, and should not be taken as the entirety of how mobiles can be used. Together with the landscape data that you collect ([Step 3](#)), this information will help you to determine whether the possible uses of mobile technology that you identified in Step 1 could be effectively deployed in your current context.

How are you thinking about using mobile?	Requisite functions	Minimum delivery model requirements	Minimum device requirements
Information sharing	Push (for one-way) Pull (for two-way)	BASIC: SMS, voice INTERMEDIATE: IVR	BASIC: Basic phone INTERMEDIATE: basic phone
Data collection	Push, Pull, Storage	BASIC: SMS, voice ADVANCED: App	BASIC: basic phone ADVANCED: feature phone, smartphone, tablet
Payments	Transaction	BASIC: USSD, SMS	BASIC: Basic phone
Facilitating networks (i.e. trade)	Push and Pull	BASIC: SMS, voice INTERMEDIATE: IVR ADVANCED: App	BASIC: basic phone INTERMEDIATE: basic phone ADVANCED: feature phone, smartphone, tablet
Community building	Push and Pull, and/or Interactive	BASIC: SMS, voice INTERMEDIATE: IVR ADVANCED: App, web, and/or messaging	BASIC: basic phone INTERMEDIATE: basic phone ADVANCED: smartphone, tablet
Supply chain management (health, agriculture, etc.)	Push, Pull, Storage	BASIC: SMS INTERMEDIATE: IVR ADVANCED: App, web	BASIC: basic phone INTERMEDIATE: basic phone ADVANCED: feature phone, smartphone, tablet
Other			
What other additional features do you need?		Minimum delivery model requirements	Minimum device requirements
Geo-location		GPS	Some feature phones, all smartphones and tablets
Photo sharing		MMS, web	Some feature phones, all smartphones and tablets
Video sharing		App, web	Smartphone, tablet

STEP 3: Collect data to understand the landscape [Encouraged]

 Estimated time to complete: See sub-steps for specific times

As previously stated, technology—including mobile phones—has the potential to enable development projects to reduce costs, improve efficiencies, and/or accelerate outcomes. Realization of this potential, however, depends on a number of factors, and should be informed by a high-level mapping of the technology landscape in the area where you are planning to work. This does not need to be extremely detailed, but should include enough information to help you to determine how technology may help you achieve your project goals within your specific development context. It should also be used to help you to understand the limits of the existing mobile infrastructure, and what, if any, macro-level action USAID can encourage or facilitate.

Ideally, you should be asking the following questions:

MACRO-LEVEL

- What does access to technology currently look like in the targeted area?
-
- What policies or regulations exist that may affect the use of mobile phones by your targeted beneficiaries?
-
- How are mobile services already being used in development projects in the area, country, and/or region? What local technical capacity for developing and deploying mobile services already exists in the country?

More details related to how you answer each of these four questions are outlined in the following pages.

MACRO-LEVEL

1. Technology Access [Highly Encouraged]

 Estimated time to complete: 1-2 hours

Determining what mobile access looks like on aggregate in the country that you are working in can be a helpful place to start with your technology landscape. There are many public sources of information that can help you, such as those listed in the table on the following page. While this information will not tell you exactly how mobile phones are being used in the communities you are targeting, it will give you a sense of what access is like on a whole. You will also likely find some of this information helpful for inclusion in your project description. Wherever possible, this data should be disaggregated by gender and age.

While not all of the macro-level data is available in the same place, the following table includes a list of many of the types of data sets and where you can find them.

You will notice that the last section of the table lists other types of ICTs. It is important to think about access to these other technologies as well, since they can often be complementary

STEP 3: Collect data to understand the landscape [Encouraged] (Continued)

MACRO-LEVEL (Continued)

Type	Source
General	
Population	World Bank
Adult literacy	World Bank
Mobile phone access	
SIM penetration	GSMA Intelligence ³⁰
Growth (past year)	GSMA Intelligence
Percentage of 3G access	GSMA Intelligence
Growth (past year)	GSMA Intelligence
Number of MNOs	GSMA Intelligence
Network coverage	GSMA Mobile for Development Intelligence ³¹
Mobile services inventory	GSMA Mobile for Development Intelligence
Mobile financial service access (if applicable)	
% of all adults using mobile money to pay bills in the past year	World Bank Global Findex
% of adults using mobile phones to receive money in the past year	World Bank Global Findex
% of adults using mobile phones to send money in the past year	World Bank Global Findex
Access to other ICTs	
Radio	ITU Core Indicators
Television	ITU Core Indicators
Fixed line telephone	ITU Core Indicators
Computer	ITU Core Indicators
Broadband access (fixed line and mobile)	ITU Core Indicators

to mobiles or even more effective, depending on your context and what you are trying to achieve. You can use the [ICT Option Selection Worksheet](#) in the [Resources](#) section to help you compare the pros and cons of different services. This worksheet includes a number of different ICT options by default, although you can modify it to suit your needs. In many cases you may find that more than one option is potentially appropriate. It is fine if that is the case, because, to reiterate, the purpose of this exercise is simply to give you a rough sense of what is possible.

2. Policy and Regulatory Environment

[Optional]

 Estimated time to complete: 1-2 days

Understanding the relevant policy and regulatory environment of the country you are targeting can be extremely important, particularly for mobile financial services. Finding all of this information, however, can sometimes take a bit more research than the information you compiled in the table above. In some countries this information is more readily available or has been more frequently written about than elsewhere. The first step is to

find out which government agency is responsible for developing and implementing policies and regulations related to telecommunications and broadband (and financial services in the case of mobile money). For some countries, this may be more than one agency, which can further confuse matters. A list of most of the world's telecommunications regulators with links to their websites can be found on [Wikipedia](#).³²

Next, you can begin to look into some of the contextual issues that may impact the feasibility of using mobiles in your target area for your purpose of interest. The questions below are meant to serve as a guide which you should tailor according to your own needs and context.

- Regulatory permissiveness:** What regulations exist that may encourage or inhibit the use of mobile devices within your project? For example, if you are interested in using mobile payments, does the country's Central Bank allow the use of mobile payments? If so, what restrictions or limitations exist (i.e. daily transaction limits)? What regulations exist for the protection of personally identifiable information? Are there policies that require technologies to be accessible by persons with disabilities?

30. While most of the data available on this site requires a fairly expensive subscription, these data points are all available publicly through the site. USAID has an arrangement with GSMA to provide full access to USAID staff, so if you sign up for an account using your USAID.gov email address, you will be able to receive full access to even more granular data sets.

31. GSMA's Mobile for Development Intelligence site has 2G, 3G, and 4G network coverage maps for dozens of mobile network operators from across the globe. While not completely exhaustive, it is a great place to start to get a sense of network coverage in a country. Unfortunately, you can only view one operator's map at a time.

32. http://en.wikipedia.org/wiki/List_of_telecommunications_regulatory_bodies

STEP 3: Collect data to understand the landscape [Encouraged] (Continued)

MACRO-LEVEL (Continued)

- Competition:** What is the competitive landscape like among MNOs? Is there a state-owned monopoly, one very clear market leader, or intense competition between several operators? These can all impact the degree to which it is possible—or the amount of facilitative work necessary—to incorporate mobiles in an inclusive manner. For example, if there are four operators with significant market share, can you get each of them to agree to provide access to services at the same rate?
- Mobile network capacity:** Are there regulations in place that are inhibiting or supporting the development of mobile network capacity?
- Standards and Systems:** Does the country or region you are targeting have any standards related to mobile data formats? Are there any existing data systems (such as central health databases) that any mobile service would need to be able to integrate with?

Interpreting what impact the policy and regulatory environment will have or how mobiles have the potential to accelerate development outcomes for a particular development objective is not always apparent. Given the complexity of these issues, you may need to consult with colleagues at USAID with a better understanding of the intricacies associated with policies and regulations in the context of mobiles.

3. Relevant Mobile Services and Local Technical Capacity

[Encouraged, but Optional]



Estimated time to complete: 2-6 hours

Once you have pulled together the high-level information mentioned above, you can then begin digging deeper into issues of what types of mobile services already exist in your country, region, or neighboring countries with similar requirements.

How broadly you conduct this exercise depends on your time and the relevance of other countries to your context. At a minimum, you should look at what is happening in your country, and if you do not find anything relevant, cast a deeper net to neighboring countries. This survey will help you understand how well mobile services have worked in similar sectors and with similar beneficiary profiles, and can help you to determine if using mobiles in that way is appropriate for your project. That said, you should consider whether something may have failed because of the technology potential or because of an implementation issue, such as irrelevant content or poor design.

Additionally, this survey information can help you identify potential areas of integration with other projects or other communication technologies, such as integrating SMS feedback into an educational radio show.

There are a number of different ways to figure out how mobile services are currently being used in development projects in the country you are working or in countries with similar contexts. Unfortunately, there is no one place to find all of this information for any given country. As complicated as that may sound, there are some places that provide an understanding of what is already being done:

- Ask others:** Mission colleagues, implementing partners, and other donors can tell you what mobile services they are using. The Digital Development team in USAID's Global Development Lab can also provide technical support to Missions on the use of mobile technology in support of development goals and in many cases will be able to provide information on how USAID is currently using mobile technology.

STEP 3: Collect data to understand the landscape [Encouraged] (Continued)

MACRO-LEVEL (Continued)

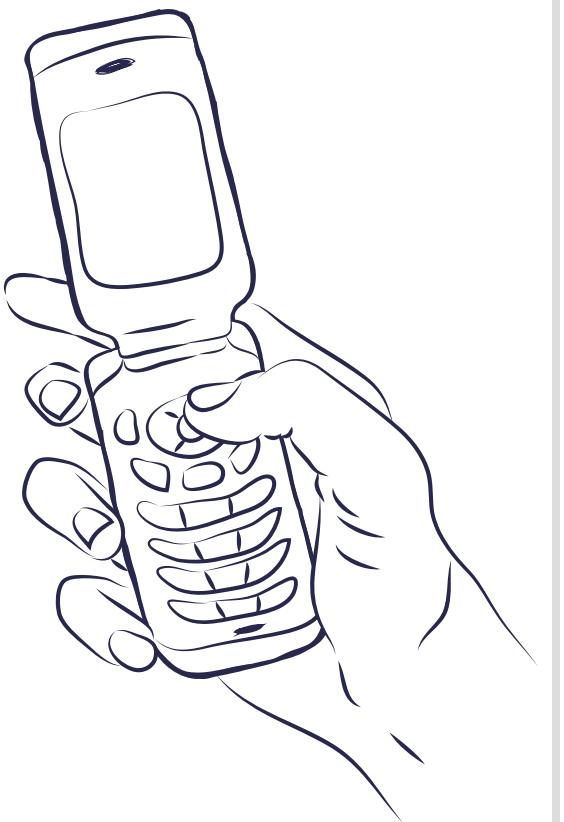
- Search the Mobile for Development Intelligence product & services page to explore what mobile services have been reported to the site.
- Refer to the end of this handbook for an inventory of mobile services being used in development within Southeast Asia.
- Find out specifically what mobile financial services exist in the country you are working with by visiting GSMA's Mobile Money for the Unbanked Deployment Tracker. (Note, however, that these figures are self-reported and not always independently verified so it should serve as a preliminary benchmark only, and will still need to be validated through in-country sources, such as the country's Central Bank.)
- Learn about which mobile data collection services might be appropriate to your context through NOMAD's helpful Online Selection Tool, which includes 24 different mobile data services.

As you start to compile this information, we recommend you put it in the [**Current Mobile Services Template**](#) found in the [**Resources**](#) section to help you keep track of everything. As you talk to other people about existing mobile services, be sure to also ask questions about what impacts those mobile services actually are having. In addition to gathering data on what mobile services exist, if you think it may be necessary

to develop or adapt a mobile service you should also collect information on the local technical capacity in the country you are working in. This can play a role in the feasibility of replicating or adapting mobile services from elsewhere (either within your country or elsewhere) and on the ultimate cost, particularly if the implementing partner will need to recruit from outside of the country.

As you talk to colleagues about the local mobile technology landscape, you should also consider questions along the lines of the following:

- How developed is the local developer/programmer community?
- Are there formal innovation hubs (iHubs) or technology incubators?
- What is the availability and quality of technical courses at local universities?
- Are there local technology service providers and consultancies?



STEP 3: Collect data to understand the landscape [Encouraged] (Continued)

MICRO-LEVEL

4. Micro-level data

[Optional, but Encouraged]

 Estimated time to complete: 2-10 days

If you have sufficient time and resources, we encourage you to speak with some of your target users to determine what access they have and how they are currently using technology. This is particularly important if you are planning to have a component of your project that is focused specifically on mobiles, as this information will guide how you frame the solicitation language (more on that in [Component 4](#)). In some cases, you may already know this information from prior experience or work with those same individuals—or research done by others may already exist. If you do not know this information, we recommend that you try to hold focus groups or speak individually with a sample (including men and women) of your target users. If your focus group includes people resistant to or on the fence about new technology try to understand the reasons for their perspectives and what barriers exist to their using a mobile service so that you can better design your intervention.

As with any qualitative research, it is useful to have guiding questions for interviews. The table to the right has eight questions that can help to guide observational field research to find out how people are already interfacing with technology.

Question	Rationale
<p><i>Do you own a mobile phone? Can you show it to me?</i></p>	This will enable you to observe whether they have a basic phone, feature phone, or a smartphone. Pay attention to the state of the phone as well. Is the key pad worn off? Is the screen damaged? These can be indicators of how someone is able to interact with their phone. For example, if the keypad is worn off and they do not know where each letter is, they will likely have trouble sending SMS. Pay particular attention to ownership (and access) trends by gender, age, and socioeconomic status.
<p><i>If you do not own a mobile phone, do you have access to one? Through who?</i></p>	Even though someone does not own a mobile phone, they may have access to one. Knowing whose phone it is and what level of access they have to it is helpful.
<p><i>How much airtime balance do you currently have on your phone? (Ask them to show you)</i></p>	Owning a phone but keeping a minimal balance is a sign that pull services that require the individual to pay to send a message or make a call may not be appropriate.
<p><i>How do you use your phone? (Ask them to demonstrate, if possible)</i></p>	See if they know how to send an SMS, place a call, access the internet (if they have a mobile data plan), and use common mobile services.
<p><i>How often do you keep your phone turned on? Where do you charge your phone and how much does it cost? How reliable is your access to electricity?</i></p>	Through experience, we know that individuals who own mobile phones sometimes keep them turned off except when they need to place a call because it is difficult and/or expensive for them to charge the battery.
<p><i>What other information and communications technologies do you commonly use?</i></p>	Do they own or have access to a radio, TV, computer (either at home or via a communal space), etc? If they have access to any of these but do not commonly use them, that information can also be telling.
<p><i>How do you typically share information or learn about new things?</i></p>	Since many of the functional usages of mobile phones involve some level of information sharing, it is helpful to know how people are already sharing information. In some cases this may include mobile phones already, which is helpful to be aware of as well.
<p><i>Can you tell me what you did today?</i></p>	Again, open-ended questions can help you to understand behavior and potential challenges in that person's life that may be addressed through mobile or through another type of service.

MICRO-LEVEL (Continued)

Once you have finished pulling together all of this information, you should have a much better sense of what might be possible. You will then use this information together with the other information you have collected in the other parts of this Step to determine if and how to incorporate mobiles into your project design and solicitation in [Step 4](#).



IDEO's [Human-Centered Design Toolkit](#) is a great resource for helping you to consider approaches for collecting micro-level data to feed into design. This does not need to be a massive undertaking. The HCD Toolkit website includes [suggested techniques](#) for how to hear, create, and deliver; the first two which are extremely relevant during the project design phase.

STEP 4: Decide if use of mobiles in a project is feasible and appropriate [Optional, but Encouraged]

Estimated time to complete: See sub-steps for specific times

Analyze data from Steps 2 and 3 to identify potential usages of mobiles that are feasible and appropriate

Estimated time to complete: 2-4 days

As with [Step 2](#), you may decide not to explore this step, particularly if you do not want to pre-confine what your implementing partners may propose. However, if you have a clear sense of what you want to achieve and want to provide some starting parameters, then it is worth completing.

For example, you may have requirements for certain features or functions that you want to make sure are addressed, such as:

- GPS functionality
- Data privacy and security
- Photo or video functionality
- Sustainable business model for service
- Rural accessibility

Whether any of these features/functions are necessary will depend on how you think mobiles

might be used and the context that you are working in. If mobile networks are not secure, for example, that can impact the type of mobile services that can be safely supported if sensitive information is being handled—or impact the price of implementation of those services if additional security systems need to be put in place.

You also need to consider the different ways in which different segments of your target population have access to and are interacting with mobile phones. You should have already uncovered this during the landscape mapping process, but this is your opportunity to frame how you will apply that information in a way that ensures more equitable access to any services that may be provided by mobile. Remember that factors such as gender, age, and socio-economic status may impact the degree to which access is available.

Based on your response to the questions listed in [Step 3](#) of the checklist, you should be able to



Although aimed primarily at MNOs, GSMA's [mWomen Marketing Handbook](#) provides insight into how to effectively market mobile services to low-income women.

STEP 4: Decide if use of mobiles in a project is feasible and appropriate [Optional, but Encouraged] (Continued)

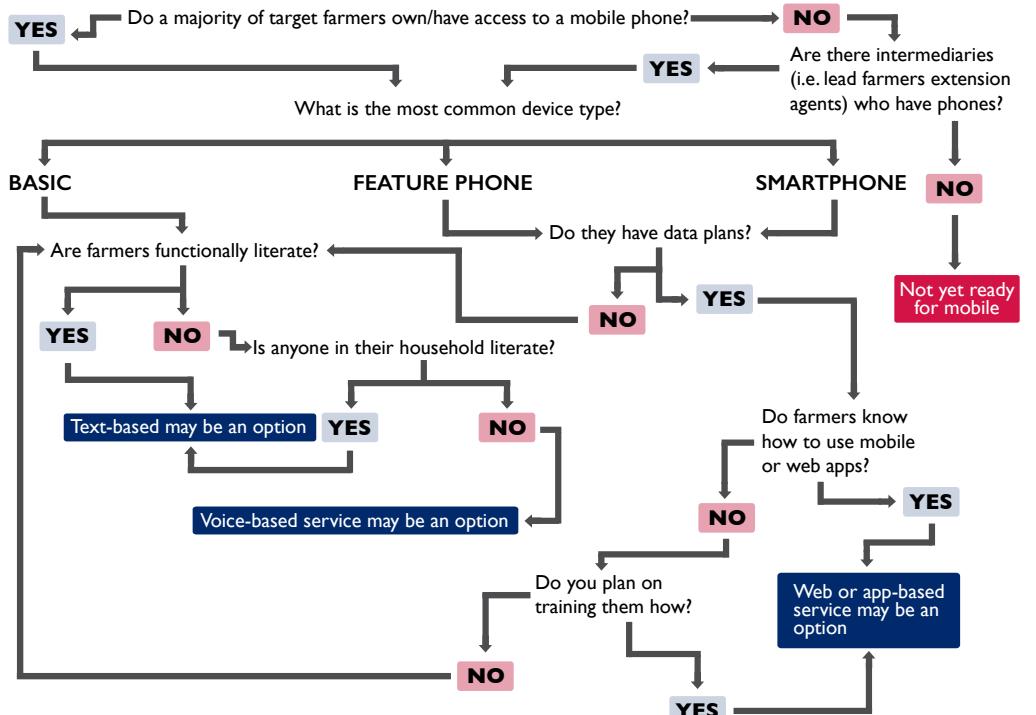
determine what types of mobile services, if any, may be appropriate for playing a role in helping to achieve your program goal. The example to the right of a decision tree illustrates how you might go about this thought process. In this case, the program goal is to increase the food security of smallholder farmers by creating increased direct linkages with the formal agricultural value chain.

Consider potential costs and benefits

 Estimated time to complete: 2-4 days

Next, you should determine how the potential costs and benefits of a mobile service compare to manual processes. While in many cases it may be more cost effective in the long term to use mobile services instead of manual processes, there are often significant upfront costs associated with procurement or training.

Do a majority of target farmers own/have access to a mobile phone?



Using Mobiles to Improve Project Monitoring

Consider how you can encourage the use of mobile phones for real-time data collection to monitor and inform management decisions. In many cases, this information can be collected as a by-product of the primary usage of mobile phones. For example, mobile service providers can sometimes provide information about how and when people are using a mobile information service without polling them directly. In these cases, it is advisable to make these data needs explicit to the mobile service provider from the offset to ensure that they are able to provide the required data. With any

data collection, however, comes risks related to data privacy and security. Do some initial analysis on what personally identifiable information is necessary for program monitoring and what data risks might be present so that you can begin to think about mitigation strategies. This will make it easier for you to incorporate appropriate measures into the award during the procurement phase. To learn more about the use of data, refer to the [mobile data factsheet](#)—and also keep your eye out for the forthcoming USAID toolkit on mobile data.

STEP 4: Decide if use of mobiles in a project is feasible and appropriate [Optional, but Encouraged] (Continued)

We have included below some of the main cost elements associated with mobile services, as well as the short term and longer term implications on the costs of using a mobile service instead of a manual process.

Procurement of necessary materials and equipment

- Short term:** While mobiles can eliminate the time and material costs associated with manual processes for data tool development and implementation, if mobile device and SIM provisioning is proposed, these will have to be procured, inventoried, and distributed. As a general rule, procuring mobile devices for beneficiaries should be avoided, as it can end up distorting expectations and future personal investment in mobile devices. Mobile device procurement for staff, data enumerators, and other intermediaries may, however, be necessary.
- Long term:** Most mobile-related procurements balance an initial one-off cost with lower recurring costs in order to create long term savings. And, if the implementer has a strong relationship with a local MNO, there are opportunities to negotiate a bulk, subsidized price for mobile devices, SIMs, and airtime. Keep in mind that mobile phone access also brings additional positive externalities (i.e. access to a convenient communication channel) that manual processes cannot generate.

Data collection, dissemination, storage, and management

- Short term:** There may be some initial setup required for the implementer to properly access the information generated by the service but these costs will likely be quite small in comparison with manual processes. Electronic data can also be collected and disseminated more easily and quickly than data collected via paper or manual processes.
- Long term:** Compared to maintaining a manual filing system, electronic data storage and management with mobiles is much cheaper, more efficient, and more easily accessed. It does, however, usually require internet connectivity—although there are also many services now that allow for offline use, which can sync with the online database once the device is connected again. Electronic databases also usually require a login/password, which can help to track who is accessing the data and when for monitoring purposes.

Training requirements

- Short term:** It is essential to train end users on how to use a particular mobile service, and this may require more time and resources than training end users on manual processes. These training costs can be defrayed by adopting a train-the-trainers (TOT) approach if working, for example, through agriculture or health extension workers.

- Long term:** Once trained on how to use the mobile service, there is the possibility for broader dissemination on how to use the service if program participants promote it more broadly within their communities ("network effect"). There are also positive externalities from teaching participants to be more comfortable with modern technology, since these skills will likely be applicable in many other aspects of their life.

Monitoring

- Short term:** Depending on the configuration of the mobile service, monitoring activities can occur on a real-time basis from any location with an internet connection. This allows more people to track program activities and progress more quickly and with greater precision than manual processes.
- Long term:** Most services have reporting features that allow implementers and other interested parties to track specific trends and activities over time, which offer a variety of benefits from increased transparency, better allocation of program or other resources, and enhanced impact assessment.

Think about these and other potential costs to estimate the total cost of using mobiles from initial investment to operation and maintenance, accounting for both human and technology resource requirements. Using these estimates, the Project Design team should consider if using mobiles would be a measurable improvement over

STEP 4: Decide if use of mobiles in a project is feasible and appropriate

[Optional, but Encouraged] (Continued)

manual alternatives. In some cases, you may find that given the uneven levels of accessibility and capacity that it may be necessary to use both mobile and manual processes in parallel to one another, at least to start.

We will go into more details on estimating costs in Component 4, but some initial questions you should be considering at this stage include:

- Can the same, or better, outcomes be achieved using manual approaches? If so, what would be required? While there will be lower upfront hardware and software costs associated with manual processes, how does the overall cost compare?
- How many additional staff will be required to complete manual processes? Are there training and material costs? What is the impact on operational efficiency, data timeliness and accuracy, and project reach?

Consider whether a broader M4D initiative is necessary



Estimated time to complete: 1-2 hours

The last question on the [checklist](#) relates to whether it may be necessary to consider initiatives or activities to facilitate the uptake of the types of mobile services more broadly, in order to also facilitate uptake of the mobile service of interest to your project. This should be based on the extent to which the mobile access environment may enable or constrain a mobile-enabled project. While there is no magic number for the scoring in [Step 3](#) on the [checklist](#), a significant number of 'low' scores might be a sign that it is necessary to address mobile access before deploying a particular mobile service within the context of a development activity. If you do identify any significant gaps in the macro-level or micro-level context that would inhibit the ability of implementing partners to deploy mobiles in a way that you believe would help achieve your project goals, it may be worth considering whether it makes sense to address these gaps directly through project activities. For some examples of how this has been done elsewhere, refer to the [Digital Inclusion Factsheet](#) in the [Resources](#) section of the handbook.

STEP 5: Validate assumptions and preliminary findings [Highly Encouraged]



Estimated time to complete: 1-4 hours

After completing the checklist, you should consider sharing it with colleagues (particularly those with prior experience working with M4D initiatives) and other stakeholders for their input on the soundness of your determinations and for any recommendations on how to improve upon your responses. While this is not a requirement, you will likely find it helpful as they may think of things that you missed or challenge your conclusions, ultimately leading to a more robust analysis and project.

As you are going through this process, ask yourself the following questions:

- Are the underlying assumptions hopeful or realistic?
- Have challenges and opportunities been accurately identified & addressed?

In addition to those two overarching questions, we've summarized some of the mobile-specific questions you may want to ask yourself as part of this process, along with considerations in response to each one. During the procurement phase, these questions may also be valuable for assessing whether a mobile service suggested by an implementing partner is feasible. It

STEP 5: Validate assumptions and preliminary findings [Highly Encouraged] (Continued)

is important to note here, though, that the requirements listed below are not black/white. There is an interplay between each of them and other considerations that will impact the potential feasibility of using mobile. You should consider each of these questions when you are completing the final section of the checklist, but use them as a guide, not as a prescription.

I. Is there mobile network coverage in the areas targeted for this program and is the signal strong enough to ensure access to the service when program participants need it?

Consideration: *Reliability of signal coverage & strength.* This is an oft-cited requirement but there are some nuances worth mentioning here. Coverage and strength are typically less strong/reliable in rural areas, which might make mobiles less appealing. However, the better question is when and where the user will need access. If he/she needs access at home at multiple points during the day, mobile in rural areas with limited coverage is less attractive/feasible. If the user can access the service periodically or at a pre-determined time without having to be at home (i.e. trading center, health clinic, post office, climbing on top a nearby hill), network coverage and signal strength are generally more reliable the closer one gets to major roads or areas with greater population density.

2. Is mobile handset ownership widespread?

Consideration: *Individual handset ownership*

or handset accessibility "as needed". Individual ownership is preferable if privacy and frequent access to the service are envisioned or desired. If the intended use of the service involves the dissemination or collection of "generic" info (i.e. pricing, weather alerts, agricultural extension services, or health alerts), shared handsets are less problematic.

3. Are mobile services used regularly (voice and SMS text) and do the target user groups have a broad understanding of the types of functions or operations available?

Consideration: *Extent to which consumers have a basic understanding of voice and text functionality.*

The targeted users should at a minimum be capable of making and receiving voice calls. If possible, they should also know how to send/receive SMS as well as load and transfer airtime, but this will be contingent on how the user is expected to interface with the service. In rural areas or among the elderly, it's not uncommon to find people who own handsets but who rely on younger family members to buy and transfer airtime to them due to a lack of funds, awareness, or ability.

4. Is there a clear utility/purpose in using this mobile service for target users?

Consideration: *Extent to which service fills an existing gap or meets a need within the target group.*

While many mobile services appear to be quite compelling on paper or in a demonstration, you want to avoid "promoting a solution in search of a problem." Mobiles make many things possible but the key question is whether users will find it useful and relevant. If not, adoption and impact will likely be low.

5. How do users physically access the mobile service?

Consideration: *Extent to which users can access the service in a simple, familiar manner.*

If the target user group is found to be much more accustomed to making/receiving voice calls, a mobile service that requires them to navigate a series of text heavy SMS menus or remember specific USSD codes to access information or expertise may not be as appropriate as one that relies more on voice (IVR, message recording with an automated or live call back feature) or that requires less navigation and/or is more pictogram based.

STEP 5: Validate assumptions and preliminary findings [Highly Encouraged] (Continued)

6. How much will it cost to access this mobile service and how are the payments made?

Consideration: *Extent to which pricing is both affordable and commercially viable and, if individual users pay, the convenience of making payments.* Some mobile services may not have a clear commercial pricing strategy and rely entirely on donor subsidies. Others may look to price their service for an institution (i.e. agrodealer) because of the direct and indirect benefits they receive (i.e. users who receive weather alerts, crop advice, and market pricing info may be more likely to be repeat customers and agrodealers can source higher quality crops). With respect to payments, if the business model is designed to charge the individual user directly, there are a number of ways to do this that require different levels of effort or awareness on the part of the individual. Users can pay on a subscription basis that can be deducted from their existing airtime balance or they can pay on a per use basis (either by being charged standard voice rates or standard or premium data rates). While subscription-based models are often preferred by the service provider, users may not make full use of it and therefore not perceive the cost worthwhile. Pay-per-use models give users greater control but may end up costing them more (especially if they are being charged premium voice or data rates).

If, after going through this process, you notice any gaps in your concept design, you can refine it before moving onto the final step. In some cases, this may include revisiting the work that you did in Steps 2 through 4 for additional detail.

STEP 6: Integrate conclusions into Concept Paper [Strongly Encouraged if positive determination]

 Estimated time to complete: 1-2 hours

Now that you've finished your analysis, you can integrate your conclusion into the Concept Paper that you are developing. Keep in mind the following principles, which are consistent with USAID's Operational Principles:

- **Design with the user:** This was already touched on earlier, but to reiterate, it is important to understand the needs, access, and capacity of all potential target users, and where possible design with them—or at least with their differences in mind.
- **Design for scale:** Avoid designing in a vacuum. Look at what else is being done by USAID projects and other development projects in the country and the region to determine if there might be opportunities for collaboration.
- **Build for sustainability:** Think about the end game. How will mobile be used to continue benefiting users after the project ends? Understand the underlying costs of any potential use of mobile you are encouraging, as well as how that service will sustain itself beyond USAID's investment. If the implementing partner is going to play a significant role in the implementation of this service (i.e. through subsidizing the cost of the service or providing technical support), think about what a continuity plan would look like beyond the life of project. Who is going to operate and pay for the service after the project ends? How does it fit into local government strategies and initiatives?
- **Be data driven:** Think about how you will be able to measure the effectiveness of the mobile services being deployed.
- **Use open standards, open data, open source, and open innovation:** USAID, the USG, and host-countries may have standards or regulations that govern a mobile application or the information it collects. It is important that the project design team and, ultimately, the implementer be aware of relevant requirements and consider how those requirements may inform mobile tool selection and overall project design.
- **Address privacy and security:** As increasing amounts of information is electronically collected, USAID must take steps to safeguard the data that it and its partners collect. Individuals' HIV status, political views, sexual orientation, income levels, religion or ethnicity could be motivation for reprisals within the communities we work. Mobile services should be designed to protect the information they collect and store.



CRITICAL SUCCESS FACTORS

- Take time to identify your potential requirements, the contextual data, and what that means for your concept design.
- Think broader than your concept—examine how mobile fits into what else is already being done across portfolios and donors.



COMPONENT

4 Procurement

By the time you have finished this component you will:

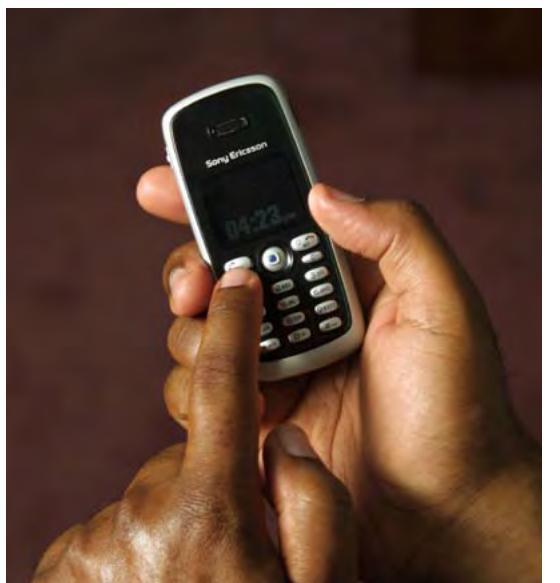
- Understand how to use an iterative internal process designed to assist you in drafting effective M4D procurement language
- Understand the key components of an M4D integrated solicitation
- Understand M4D-oriented evaluation criteria and how to score M4D elements of proposals based on best practices

Once preliminary approval for the project has been obtained, the next step is to design and issue a solicitation that captures the core elements of the desired project and solicits solutions that take full advantage of available mobile services and the attributes of mobile technology. The proposed project for which the solicitation is being issued could have mobiles as a core element (i.e. promoting financial inclusion among rural farmers using mobile financial services) or mobiles could be a desired ancillary element that enhances the impact of core program elements (i.e. providing farmers with more up to date pricing and logistical information). In either case, developing a strong solicitation that properly incorporates mobiles will greatly increase the likelihood of program success.

What core elements specific to M4D should be included in solicitations?

When incorporating M4D-specific language into your solicitation, it is important to define your requirements and not specify specific solutions or approaches (i.e. we require a service that can efficiently pay 10,000 families \$15.00 per month rather than we require mobile wallets for 10,000 families). By stating requirements rather than defining solutions, you maintain flexibility and allow for greater creativity and innovation. This is particularly important as what can be accomplished through mobile technology is advancing rapidly. Consider the following questions, which should help you to develop good M4D-related procurement language:

- **Strategic Vision:** Does your procurement language proactively frame the role and purpose of mobiles and situate it within a broader development objective?
- **Knowledgeable of Specific Landscape:** Does additional information and data provided in the solicitation help identify important factors or trends at a macro, sector, or end-user level?
- **Operationally Descriptive:** What activities or outcomes have been articulated that would help inform a technical approach, management plan, staffing, or budget proposal without prescribing a specific service, vendor, etc.?



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Below, we identify several sections within a solicitation where specific M4D language should be integrated and recommendations regarding what type of content you might include:

BACKGROUND

- Present high-level information on mobile trends and specific examples of similar mobile service deployments in other markets
- Provide summary information in the solicitation that highlights specific elements of the mobiles market in the target country or region (i.e. number of mobile subscribers, number of MNOs)
- Request that the bidder's present their understanding of the mobiles landscape and the impact its current status could have on the project

PROJECT DESCRIPTION/STATEMENT OF WORK

- Provide an overview of the entire project highlighting objectives, target segments, and geography, if applicable
- Where mobile is a tool to be used within a component of a larger project, you may decide to include a dedicated section highlighting how its use will enhance broader project objectives
- If mobiles represent a core component of the project, such as deploying a mobile health information system, include a dedicated section that articulates the role mobiles will play and the Mission's underlying assumptions as to why its use will help achieve specific project objectives
- Provide an overview of the target user segment for the mobile service (i.e. rice farmers, expectant mothers, loan recipients), its size, geographic location, and any other relevant demographic information

The following is an example of how some of these elements can be integrated into a solicitation:

C.13 MOBILE TECHNOLOGY

Use of mobile technology could address needs of women professionals and help close the gender gap. Over the past decade, COUNTRY has established an extensive mobile telecommunications infrastructure from scratch, which now reaches 85% of the population...

- Mobile phone penetration: 61% of the population in 2010 (USAID)
- Number of mobile phone lines: 18.1 million (2010 Groupe Spéciale Mobile Association)
- Mobile network coverage: 85% of the population in 2010 (USAID)
- Internet subscribers: 6.0% of the population in 2010 (BBC World Service)
- Ranking in UN Human Development Index 2010: 155 (out of 182)
- Ranking in Reporters Without Borders Press Freedom Index 2010: 147 (out of 178)

Women could avail themselves of mobile value added service solutions and adoptions. The areas that mobile solutions might be particularly cost-effective and culturally relevant to COUNTRY women via the initiative could include:

- Agricultural price index information for price competitiveness of agricultural commodities
- Receipt and transmission of funds, nationally and internationally, for timely payment of salaries and services via mobile money
- Mobile office functionalities: Emailing, text message, conference calling and data attachment
- Social Service Delivery: via diagnostic information, on-the-spot guidance, voice activated instructions

USAID, through the Financial Access for Investing in the Development of COUNTRY program and other programs, has encouraged the use of electronic payments, including mobile money, to extend affordable and accessible payments to low-income populations, create cost savings, promote economic development, increase transparency, strengthen security, and broaden financial sector inclusion.

Knowledge of general landscape

Examples of possible solutions

PROPOSED TASKS/ILLUSTRATIVE ACTIVITIES

There are a number of different proposed tasks or illustrative activities that you may want to include that are related to the effective deployment and integration of mobiles into your project, such as market research, usage of specific mobile services and features, associated training, and development of sustainable business models. Each of these is described in more detail below.

- **Market research:** Identifying relevant behavior, needs, and perceptions of a particular target user segment (i.e. how and where they transact, when and from whom they collect information) will allow the implementer to make a more informed decision vis-à-vis which mobile services are most appropriate. Both qualitative and quantitative data should be collected during the market research phase as the data may impact project strategy and execution (i.e. how to configure the service, how to present it to program participants, whether to subsidize its access or charge fees).

- **Mobile services and features:** This section presents any product and service requirements that you have decided in advance must be present in any proposed use of mobiles by the implementing partner, including end user features or reporting requirements. This would also be the section where you should mention any open data or open source requirements.
- **Training:** M4D interventions typically require training in four broad areas, which can often be combined into one training.

Each of those focus areas are described in more detail below:

- » **Concept:** Basic instruction on the overall program objectives and general information on how mobiles will support program activities should be conveyed through training to key stakeholders. This type of training provides context for stakeholders and sets the stage for more products and service oriented training activities.
- » **Device:** Delivery of mobile services is ultimately dependent on a specific device in the hands of a specific user. The solicitation should include a requirement for device training if device use is not already prevalent. The training should cover the basics in operating and maintaining the core functionality of the device. This could include things such as turning the mobile on and off, accessing a service, basic device functions, and charging. Since large numbers of people in Southeast Asia are already using mobile phones, this is likely only relevant for certain segments of the population with limited prior exposure to mobiles.
- » **Service:** The bulk of the training activities should focus on providing audience appropriate training to users of the mobile service. It should include the presentation of use cases, sequencing of menus, and basic trouble shooting.

Typical Requirements for Mobile Services & Features

Mobile Money

- Able to deliver a mobile wallet with a \$100 or greater balance limit
- Able to initiate peer to peer transfers
- Able to make bulk payments

Mobile Data

- Able to deliver application to basic mobile handsets
- Able to report on the number of users using the application per week
- Able to geocode end user inputs

Mobile Access

- Able to provide end user subsidies via vouchers for mobile data plans
- Able to provide and distribute devices
- Sustainability of initiative and plan to encourage both ownership and use of newly provided access

- » **Financial Literacy/Business Concepts:** In some cases, mobile services are linked to financial inclusion and business management objectives. In these cases, it is often cost effective to include financial literacy and or business concepts training in the requirements outlined in the solicitation.



EXAMPLE

Service providers and device manufacturers typically have pre-packaged training materials that can be quickly adapted to the specific training requirement. Additional service providers and device manufacturers will often provide trainers.

Training techniques used to address M4D training needs are similar to training techniques used in other disciplines, including classroom training, train the trainer, and one-on-one sessions. The use of pictograms and demonstrations has also been found to be effective. The key objective of the training is for the end user to be comfortable with the device and the associated application. Having the end user hold a device and initiate the desired actions is critical.



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Although training techniques for M4D are similar to other disciplines, mobile is a rapidly developing field and trainings often becomes outdated quicker than trainings for more well-established sectors. Therefore, solicitations should stress the need for training programs that can adapt quickly and remain flexible. This may include things such as online training, content delivered through tablets or mobile phones, or short videos that can be replaced when content needs to be updated.

- **Sustainability:** Request information on the proposed business model for the mobile service and require a discussion on post-project sustainability. Most mobile services are a fee for service proposition operated by a commercial entity. Fees may be based on a published commercial service tariff or may be tailored and priced specifically for a particular program. Implementing partners may choose to subsidize some or all of the required end user fees. See the text box below for an examination of the pros and cons of mobile services subsidies.

Pros and Cons: M4D Subsidies

Pros

Encourages users to try the service

Does not place an initial financial burden on vulnerable segments

Eases initial resistance from beneficiaries to try a new service

Cons

Can undervalue the service

Can negatively impact sustainability once subsidy is eliminated

Hinders consumer education and understanding that mobile services are services that have a cost associated with them

DELIVERABLES

While there is a great deal of variety in the type of deliverables required for a specific program, there is a core set of M4D-related deliverables that you may want to include in your procurement. Some of the typical deliverables for M4D elements of projects include:

- Participant Enrollment Plans
- Liquidity Management Plans
- End User Training Plans
- Periodic Transaction/Usage Reports

It is important to note that mobile wallets, a common feature of mobile financial services, are typically treated by regulators as bank accounts. Transactions that occur are viewed by the provider and regulator as private and, therefore, there should not be an expectation of seeing a customer's mobile wallet transactions (i.e. items that they have purchased). If it is necessary to be certain that beneficiaries are spending disbursed funds on certain items (i.e. food, hardware for building houses, etc.) then the project should use a mobile voucher or coupon instead of a mobile wallet.

PAST PERFORMANCE

You should require that bidders address their experience in any relevant core areas of an M4D project, such as:

- Target segment understanding and registration
- Negotiating and working with mobile service providers
- Developing and delivering M4D training to a range of participants and stakeholders
- Designing and managing M4D pilots
- Developing impact assessments and M4D specific monitoring and evaluation programs



Typical Procurement Language Requesting Past Performance

For activities for which mobiles are a major program component (such as a mobile money or mobile access project), bidders should provide at least three recent examples of projects of similar size and complexity. Project descriptions should include a summary of the overall objectives of the program, highlighting the role of mobiles.

The past performance summary should also include the specific activities performed by their organization. Other areas to highlight include:

- Experience in the target geography
- Experience with the target participant segment
- Experience in designing, executing, and scaling M4D pilots
- Experience in developing partnerships with service providers



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DIGITAL FINANCIAL SERVICE SPECIFIC LANGUAGE

USAID is including language in solicitations to encourage implementing partners to incorporate digital financial services (DFS)—such as mobile money payments to staff—into their operations and programming where feasible. USAID first began encouraging such incorporation when it issued Procurement Executive Bulletin No. 2012-05. In 2013, on the first anniversary of the Better Than Cash Alliance, Administrator Rajiv Shah strengthened USAID's commitment to using its significant financial footprint to increase the use of DFS in developing countries. **USAID expects to issue an Acquisition & Assistance Policy Directive by September 2014 requiring all implementing partners (IPs) to use DFS to the extent that their market and program footprints allow** (IPs will be permitted to request a waiver under certain circumstances). Until then, the following text is illustrative of how to foster the use of DFS in solicitations:

SECTION C

(Description/Specifications/Statement of Objectives)

USAID, through its commitment to the Better Than Cash Alliance, encourages the use of inclusive electronic payment and collection methods (including mobile money) to extend affordable and accessible payments to low-income populations, create cost-savings, promote economic development, increase transparency, strengthen security, and broaden financial inclusion. The implementing partner and its sub-awardees must utilize these services to the greatest extent feasible. Program operations, including personnel salary payments, must also be paid through electronic and/or mobile channels when viable.

SECTION L

(Instructions for the Preparation of the Technical Proposal)

Program Design sub-factor: USAID encourages overall creative and innovative approaches that harness technology (like digital financial services) to improve progress toward achieving program objectives.

What are some techniques for developing cost estimates for integrating mobiles into projects?

While every project is different and local conditions can greatly impact project costs, there are specific guidelines and benchmark information that can assist USAID staff in developing budget estimates for the cost of integrating mobiles into projects. The first step in developing a budget estimate is to deconstruct the M4D portion of the project into primary components. This is particularly important because it is easy to underestimate the potential costs of using mobiles. This can lead to situations where the amount of funding needed to use mobiles effectively within the project is actually significantly higher than what the implementer expected and can realistically allocate towards it within the total project budget.

Typical components include:

- Requirements development and presentation
- Market research
- Program design
- Participant identification and training
- Device provisioning and dissemination
- Transaction/service fees
- Monitoring and evaluation

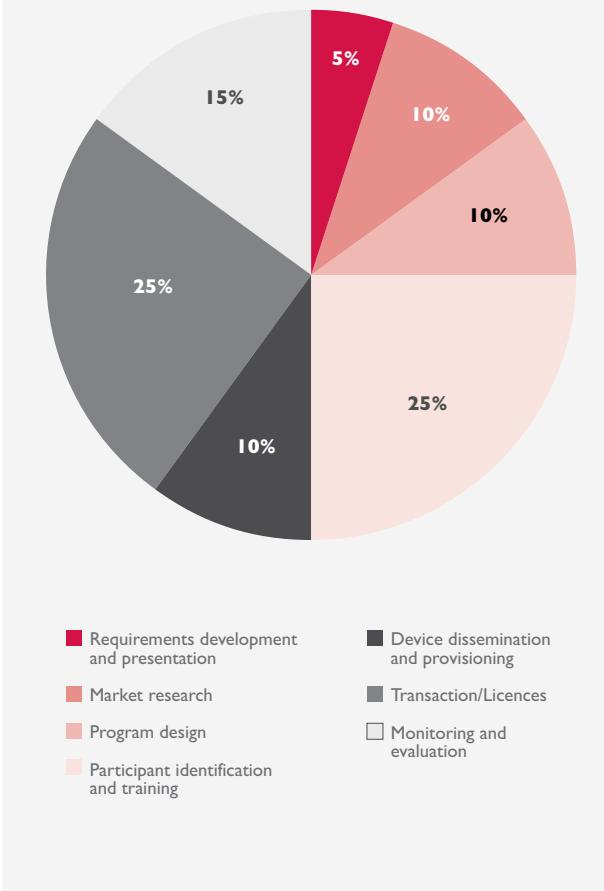


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Once the project components have been identified, the next step is to develop a top down estimate assigning a percentage of total costs to the M4D portion of the project. Figure 1 presents a typical breakdown.

The next step is to develop a bottom up cost analysis for each component. The following table provides a basis for estimate and cost ranges for key variables. In most cases these costs are the responsibility of the implementing partner. However, in some cases costs may be the responsibility of the end user or the service provider.

FIGURE 1
Illustrative Cost Breakdown for Integrating Mobiles into a Project



BOTTOM UP COST ESTIMATES

Component	Basis for Estimate	Benchmark Data
Requirements development	<ul style="list-style-type: none"> Primarily project labor hours Requires interaction with stakeholders Requires development of a concise requirements document 	<ul style="list-style-type: none"> This activity is typically conducted by senior staff and requires a relatively high labor rate A typical time frame to develop M4D technical requirements is 2-3 weeks
Market research	<ul style="list-style-type: none"> Typically outsourced to a local market research firm with local language enumeration capabilities The market research firm, as part of their survey design, will provide the number of participants needed to produce statistically valid results Surveys are typically priced on a per participant basis Costs vary based on the data collection method (paper versus electronic) Focus groups are typically priced on a per session basis 	<ul style="list-style-type: none"> Costs for a mobile device based survey range from \$5 to \$25 per participant³³ Costs for a paper based survey range from \$5 to \$20 per participant A typical time frame to develop M4D technical requirements is 2-3 weeks Costs for focus groups can range from \$1,500 to \$2,500 per session
Program design	<ul style="list-style-type: none"> Primarily project labor hours Requires interaction with stakeholders Requires development of a concise project plan 	<ul style="list-style-type: none"> This activity is typically conducted by a mix of senior and junior staff and requires a mid-level composite labor rate A typical time frame to develop a program plan is 6-12 weeks
Participant identification and training	<ul style="list-style-type: none"> This function can be done in house by the implementing partner or outsourced (i.e. service provider) Content development is labor hour based. A good rule of thumb for new content is 4 hours of content development for every hour of content Training costs can be calculated by number of sessions and number of participants 	<ul style="list-style-type: none"> Costs per participant for classroom based instruction range from \$25 to \$100 per participant for a one-day session³⁴
Device provisioning and dissemination³⁵	<ul style="list-style-type: none"> If required, distribution of devices is typically done by the service provider from a central location Certain mobile services require that each device be pre-installed with specific software 	<ul style="list-style-type: none"> Device dissemination is often done as part of training. Typical dissemination costs range between \$0.50 and \$2 per device
Transaction/ service fees	<ul style="list-style-type: none"> Typically includes an airtime cost (i.e. voice minutes, data minutes, SMS) Specific mobile services, particularly mobile money include a per transaction cost Other services may include a license fee per user 	<ul style="list-style-type: none"> Airtime charges vary by country and service provider, but are typically published and readily available Mobile money transaction costs are also readily available. Here is an example of what the fees per use case could look like: <ul style="list-style-type: none"> » Cash in = \$0 » Cash out = \$0.50 or a percentage of the value » Salary payment (charged to the employer) = \$1.00 per employee Licensing fees for mobile services vary by service
Monitoring and evaluation	<ul style="list-style-type: none"> Typically includes labor hours, survey activities and fees from service providers for reports and data Service provider data is often bundled with other items Cost of data from service providers may be minimal depending on the degree of customization 	<ul style="list-style-type: none"> Subscriptions to mobile data collection services can range in price from \$1,000 to \$10,000 per year depending on the features and required scale Impact evaluations can cost anywhere between \$80,000 and \$400,000 depending on the scale and level of detail

³³ Based on cost information from market research projects in Indonesia, Haiti, and Malawi

³⁴ Note: train the trainer models lower the cost per participant

³⁵ This component does not include an estimate for the cost of the device which may or may not be provided as part of the project and will vary greatly by device type



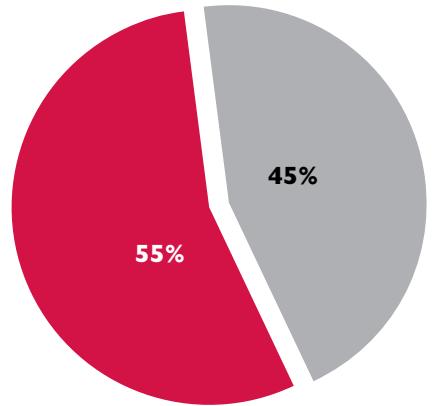
You should also consider at this point whether the estimated costs align with your overall project objectives. If mobiles are going to play a significant role in achieving the project objectives, the costs associated with the M4D elements may be a large part of the overall project budget. The following

graphic shows the estimated costs of mobiles within the overall project budget for a conditional cash transfer project where mobiles are the main mechanism for disbursing CCTs, and an agricultural value chain project where mobiles play a smaller role.

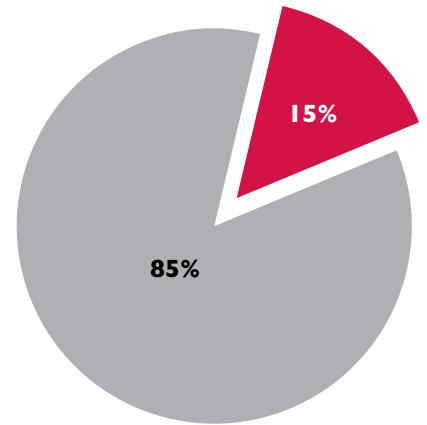
FIGURE 2

Estimated Costs of Mobiles within the Overall Project Budget

Conditional Cash Transfer Program
(Mobiles as a Percentage of Total Project Costs)



Agriculture Value Chain Improvement Program
(Mobiles as a Percentage of Total Project Costs)



- M4D Component
- Non M4D Component

Cost of Customizing an Existing Service

Customization costs depend on many factors, the most important of which is whether the existing service is free and open source or if it is proprietary. If it is proprietary, an implementer must negotiate specific terms with the provider that detail what modifications are required. Depending on the potential commercial value of the program to the provider (i.e. number of new users, new transactions, frequency, and duration of use), the provider may offer to customize at a discounted cost. If it is free and open source, the cost of customization is the cost of hiring a software developer to create your customization.

Free/Open source Customization Example: A project would like to use the Ushahidi platform, a mapping platform, to create a map of water shortages using data collected by 100 trained data collectors in one region of Country X. The project would like to have additional analysis functions built into the Ushahidi map—graphs and charts—that can be sent automatically to dispersed program managers. An experienced software developer could create this customization (called a **plugin**) for a fee of approximately \$800 USD per day for 10 days, for a total cost of \$8,000 USD. This fee will increase if training or project management is required. If the project also wants to provide the data collectors with a short code to make reporting into the Ushahidi platform easier (i.e. Text 12345 to Report a Water Shortage) this will add an additional cost, depending on the country. Short codes need to be purchased, and in some countries are issued by MNOs, while in others they are issued by the regulator. In Uganda, for example, it is necessary to pay the regulator to obtain the short code, and then the customer pays a fee to the MNO every time they use the short code.



Any additional customizations will cost extra, and, therefore, properly defining needs in the beginning is critical to developing an accurate budget estimate. Proprietary software, such as any service offered through Microsoft, or services that require satellite imagery, will require significantly more funding, but may offer more sophisticated technology and features.

While USAID technically has “unlimited” licensing for software and applications developed in whole or in part by USAID funds, this is not the same as open source, as it is not available to the broader technical community. When encouraging partners to use an open source software, it is important to clearly state requirements not only for an open source licensing (i.e. GPL), but also the expectation that the implementing partner will develop the software in a manner that is easily accessible, thoroughly documented, and fully functional. The standard should be such that any user with sufficient technical background would be able to immediately build from the platform once made available.

CUSTOMIZATION COSTS

In some program contexts, mobile services may already exist locally but certain modifications may be required to meet target user segments needs or program priorities and objectives.

If so, the implementer must be able to undertake one of the following activities:

1. Engage the service provider to determine the timing and costs associated with making these modifications
-
2. Source the technical expertise in-house to customize a service that is free/open source
-
3. Contract out open source customization capability to a 3rd party



How do you critically evaluate solicitation responses with an M4D component?

A key component of the solicitation is the presentation and use of proposal evaluation criteria. While evaluating an initiative that includes an M4D component is similar to other types of evaluations, there are some unique criteria and characteristics that should be evaluated. A particularly important element is the experience of the bidding organization (or its relevant sub-partners) and the key staff. Evaluators should look for hands-on experience with implementing a project with an M4D component in the field—this is one of the best indicators of likely future success. A [Sample M4D Evaluation Template](#) can be found in the [Resources](#) section at the end of the handbook.

In general, strong responses present an experienced staff and a corporate history of executing M4D projects either alone or through partnerships. Proposals should clearly identify the problem, and articulate how mobiles will fit into the larger project and support the broad theory of change, rather than viewing the mobile component as a stand-alone service. Of course, proposals that present a realistic timetable and identify key risk areas are also advantageous. Finally, teams that include skilled local staff and local knowledge of the operational and regulatory environment for mobiles should also be highly regarded.



In reviewing proposals with an M4D component, the following items represent potential red flags and bear further investigation:

- **Inadequate understanding of the local market.** To be successful, bidders must fully understand the local operating environment for mobiles and the true living conditions of the target segment. While this knowledge can be enhanced after award, bidders should present a coherent proposal that recognizes the uniqueness of the specific market.
-
- **Selection of an under resourced mobile service provider or partner.** Delivering mobile services to a large population requires a partner with sufficient resources to address issues in a timely manner. Small firms with a limited pool of skilled resources often cannot meet the demands of a large program.
-
- **Contingencies in the regulatory environment.** Example: We can only implement this if the Central Bank raises the mobile wallet limit. While this does not have to necessarily render a project impossible, it will make timelines unpredictable and should mean that regulatory engagement is a significant component of the work plan—and therefore that the implementing partner will need sufficient experience in facilitating regulatory changes.



Additional areas of potential risk that you may be able to identify during the evaluation process based on the submitted proposals include:

- Inadequate mobile coverage in the target area
- Insufficient resources devoted to training
- Inexperienced service provider partners
- Stringent requirements that force over customization of commercial services
- Complex approval processes from multiple organizations needed to execute program. In Malawi, for example, approval from three Ministries is required in order to deliver a teacher salary payment pilot
- Lack of leadership and/or project champion committed to mobile
- Poor alignment between mobile component and overall program objectives

As well as being important for consideration during the evaluation phase, each of these red flags and risks are issues that you should continue to look out for during project implementation. We'll discuss this in more detail in the following component.



CRITICAL SUCCESS FACTORS

- Be clear and specific, without being overly restrictive, in how you describe mobiles in the solicitation.
- Consider all of the potential costs associated with using mobiles and build those estimates into the overall project budget ceiling.
- Establish clear evaluation criteria in relation to M4D interventions.



COMPONENT

5

Monitoring Implementation and Program Evaluation

By the time you have finished this component you will:

- Understand how to quantitatively and qualitatively evaluate impacts of a mobile intervention
- Understand how to use frameworks that will help USAID and implementing partners target, collect, and analyze the most appropriate indicators based on geography, demographics, and market realities
- Understand key M4D project milestones and have access to question sets that can help determine if the program is on track

This component covers two aspects of project monitoring and evaluation. The first aspect focuses on how to effectively monitor and evaluate an M4D activity or activity component, including the identification of key performance metrics and methods for data capture. The second aspect addresses techniques for managing the performance of M4D implementers. This element includes program management techniques tailored to specific M4D-related project milestones. This component also includes a discussion of impact evaluation and techniques used to determine how well mobiles have enhanced project outcomes.

What are the key attributes of mobile that influence monitoring and evaluation?

Before you determine what should be measured and how you should manage and support the implementing partner, it is important to review the key attributes of mobile technology and their expected utility for development.





As previously noted, mobile technology provides the following benefits:

- **Speed:** Mobile technology can render interactions with program beneficiaries instantaneous, and can automate the collection of data that is vital to real-time monitoring of project or supply-chain activities.
- **Scale:** Once the technology base is established, a program can reach thousands or even millions of participants with costs per user declining as numbers increase.
- **Geographic reach:** Mobile technologies have helped usher in an era where distance no longer matters. Digital information can be generated and transmitted next door or across the globe.
- **Transparency:** By providing information directly from source to participant and vice versa, mobiles facilitate greater openness and transparency.
- **Convenience:** Mobiles are often described as available anytime, anywhere. Whether it is access to an account or access to information, mobiles bring an unprecedented level of convenience.
- **Privacy/Discretion:** Mobile devices are typically personal devices. They all have some degree of security and can be used in private. Whether accessing an account or responding to a survey, mobile technology supports the exchange of sensitive information. In Haiti, for example, beneficiaries appreciated receiving payments to a mobile money account because it was discrete. Using the old method, the whole village knew when payments were disbursed. Although as mentioned earlier in the handbook, there are unique privacy considerations to keep in mind when using mobile devices.
- **Empowerment:** Since mobile devices rapidly improve the collection and dissemination of information, they are able to provide citizens with the ability to voice their opinions and to be heard by those more powerful, often for the first time. This is often the goal of mobile services designed to impact governance, such as citizen monitoring of election campaigns via SMS, but ideally should be a long-term goal of any mobile service—since mobile technology used correctly puts the power of information, communication, finance, and social networking directly into the one device that increasingly large numbers of people use every single day.

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Monitoring of mobile-enabled projects is similar to monitoring of any development project. As outlined in [ADS 203](#), the monitoring plan should first identify indicators that track the project goal, purpose, sub-purpose, outputs, and inputs built into the logical framework. It is important to remember at this stage

to distinguish between the technology itself and the intended inputs, outputs, purposes, and project goals. For example, in a project that uses ICT-enabled educational software resources to improve secondary school reading comprehension, the hardware and software constitute an input, the distribution of the

technology to all schools and the number of students using the device constitute an output, improved reading comprehension constitute the purpose, and strengthened basic education opportunities as the goal. This is a drastically simplified example but it is intended to show that the technology itself is classified as an input, its distribution and use is often an output, and what it contributes to is the project's specific purpose.

One key difference with mobile-enabled projects is that the mobile industry is relatively new and rapidly developing. Private sector partners are often start-ups who are constantly learning and adapting their business plans. USAID should work with implementing partners and any mobile service subpartners to develop appropriate and realistic quarterly projections. Regular reviews of the PMP with all partners can be used to ensure that planned activities are still relevant, or to make any needed adjustments to keep the project on track.



EXAMPLE

For example, an NGO in Zambia wanted to help a mobile payments provider to develop educational materials. By the time the materials were complete, the payments provider had changed their product features so significantly that the materials could no longer be used.

What information do service providers commonly capture?

One of the many advantages of relying on a commercial service provider for a portion of the project implementation is that mobile service providers typically generate large amounts of useful data. This information combined with more traditional development metrics can provide an important perspective on the success and impact of a program.

Mobile service providers typically capture the following information:

- Unique ID for each program participant
- Number of users of the application
- Time of use
- Location of use
- Frequency of use
- Specific type of transaction

The automated and real-time collection of this data also facilitates the open sharing of data, in line with the US government's Open Government Initiative and the forthcoming USAID open data policy for datasets generated through USAID-funded initiatives. However, not all service providers will immediately be willing to provide this information to all partners, and therefore it is important to agree upon information sharing (both with partners and with the public) in the initial planning stages of a project.

What are some commonly used M4D indicators?

USAID is in the process of developing a standard set of performance indicators for M4D projects that can be tailored for specific programs. As the ease with which this data can be collected varies by country, you should consider whether any indicator you require implementing partners to collect data on a) can be easily collected and b) is relevant to measuring the achievement of the project's development objective or intermediate results. As you balance the ease of data collection with their perceived relevance, remember that data collection is expensive. Choose a number and range of indicators appropriate to the size, scope, and objectives of your activity.

The following table provides examples of illustrative indicators at the output, outcome, and impact level:

Output Indicators
Number of mobile devices provisioned and distributed
Number of individuals trained on the mobile service
Number of mobile money transactions
Number of individuals with mobile access.
Outcome Indicators
Percentage increase in crop yields due to use of mobile farm extension applications
Increase in the availability of credit due to individuals developing a financial history through mobile money transactions
Increase in the value of crops due to an ability to conduct transactions higher up the value chain
Impact Indicators
Increase in the number of small businesses due to availability and affordability of mobile communications services
Increase in broad-based economic growth
Positive improvement in corruption perception index score

On the following pages we include a more detailed preliminary set of indicators for both mobile money and mobile access projects.

Mobile Money: Core mobile money indicator data are generated through the mobile money service provider's platform and focus on adoption and usage. This information, combined with more traditional development metrics, can provide an important perspective on the success and impact of a program, specifically by helping to understand access, uptake, and usage of a particular service. The following list of indicators are generally used to evaluate a mobile money service overall. However, some or all may be applicable to a project's use of mobile money, especially if that project is designed to promote the mobile money industry in a country or region.



Indicator	Definition	Significance	Further Disaggregation (where possible) ³⁶
Total number of all registered accounts	Total number of all registered accounts	Indicates access to and availability of services	Gender; Geographic distribution, Age
Active mobile money subscribers	Typically defined as subscribers making at least 1 transaction in the past 30 days	Indicates actual uptake of the service, which is often significantly lower than access	Gender; Geographic distribution, Age
Transaction frequency	Number of transactions in a given period	Indicates the level of usage of the product	Transaction type (P2P, deposit, withdrawal, etc.), Gender; Geographic distribution, Age
Transaction location	Number of agent-assisted transactions, often referred to as over-the-counter or OTC transaction versus non-agent assisted transactions, which are those that the user conducts directly through their own mobile phone	Indicates whether users are using their mobile wallet to store money on and to make multiple transactions, an indication of the level of ecosystem development. May also indicate level of customer education of product benefits.	Agent type (kiosk, retail store, etc.), Agent Gender; Geographic Location, Age
Transaction volume	The average amount of funds involved per transaction	Indicates the type of usage to whether customers are using the product for small transactions or large transactions, which combined with other indicators can suggest if the service is priced appropriately for the targeted transaction types	Transaction type (P2P, deposit, withdrawal, etc.), Length of time a customer has been active (are behaviors changing over time?), Gender; Geographic distribution, Age
Number of active agents	The number of mobile money agents that have completed at least one transaction in the past 30 days	Indicates access. The total number of agents is mostly irrelevant since inactive agents are unable to provide services.	Transaction type (P2P, deposit, withdrawal, etc.), Gender; Geographic distribution
Agent liquidity	The amount of cash vs. electronic value that agents have on average per day	Indicates access, since agents cannot provide service if they do not have cash and e-value ³⁷	Geographic distribution

36. Age and gender are rarely collected by service providers and will likely require additional data collection by the IP or M&E team.

37. Many service providers do not collect this information systematically. However, it is increasingly available and often a mobile money provider is willing to provide it for a certain targeted area within a project (rating their high, medium, and low volume agents in a certain town or neighborhood).

To reiterate, access to this data in the aggregate depends on the service providers' policies and interests. If, for example, your project has a financial inclusion component you may want to know what types of mobile transactions are occurring across the country. While providers will almost always provide data specific to your own organization's transactions on their platform, they are sometimes hesitant to share aggregate data on subscribers, volumes, and agents, as this data can be seen as proprietary—and not something that they want their competitors to know. Therefore, it may not always be possible to receive this data from the providers directly. If this is the case, you may be able to find out combined aggregate data from all mobile money service providers in the

country through the country's Central Bank or through the [GSMA Mobiles for Development Index \(MDI\)](#).

Mobile Access: Metrics capturing improvement in mobile access are also primarily service provider driven. The variables by which you disaggregate will again be dependent on the specific goals of your project.

Some examples of indicators used to measure changes in mobile access include:

Indicator	Definition	Significance	Further Disaggregation (where possible) ³⁶
SIM penetration	Total number of all SIM cards issued – this should not be equated with mobile access, since many people have more than one SIM	Indicates access to and availability of basic services	Gender; Geographic distribution, Age
Unique subscriber rates	Total number of unique mobile phone subscribers in a market	Indicates access to and availability of basic services	Gender; Geographic distribution, Age
Mobile network coverage	The availability of network required for voice calls and SMS messages	Indicates access to and availability of basic services	Geographic distribution, 2G, 3G, 4G
Smartphone penetration	Total number of smartphones among target population	Indicates access to sophisticated services, which impacts project design, business model, and sustainability of a service	Gender; Geographic distribution, Age, Operating system (iOS, Android, etc.)
Available data rates	The price of basic data	Indicates affordability, which impacts the business model and sustainability of a service	Pricing plans available (pre-paid vs. post-paid) ³⁸ and types of data (3G, 4G)
3G/4G coverage	The availability of high-speed mobile internet	Indicates access to and availability of more sophisticated services	Geographic distribution
Number of users subscribing to data plans	The number of target clients accessing mobile internet	Indicates uptake of more sophisticated services	Gender; Geographic distribution, Age
Trends in data plan pricing	The change in the average price of data to mobile subscribers over time	Indicates whether data is becoming more or less accessible	Pricing plans available (pre-paid vs. post-paid) and types of data (3G, 4G)

38. It may be relevant to consider that some data services are offered for free by the MNO in order to encourage usage, such as Facebook Zero.



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One helpful mnemonic device related to establishing performance metrics is SMART. You should strive for indicators that are:

S M A R T

Specific Measurable Attainable Relevant Time-bound

Other metrics may include those that capture the availability of local content. This could include number of sites, publications, or pages available based on language and delivery model.

As mentioned earlier, you can collect data on many of these indicators through an agreement with your service provider. However, many of these indicators may not be accessible, especially information on demographics such as age or gender. As a result, it may also be necessary or beneficial for implementing partners to collect data systematically on their own—this is where mobile data collection tools can be extremely useful. Mobile data usually involves equipping enumerators or field staff with mobile devices to fill in survey questions as research is conducted.

The data can then be uploaded directly to an online user interface, which allows for real-time, instant analysis of data. Other mobile data collection allows for the collection of data directly from beneficiaries, rather going through an enumerator or other intermediary. These tools can significantly increase the efficiency of monitoring the implementation of M4D interventions themselves or any other aspect of a project. Unlike mobile money or mobile access, projects using mobile data can address a wide variety of objectives and goals. Consequently, there are no standard indicators, and tailored indicators will need to be developed accordingly.

How should you determine which performance metrics are most appropriate?

An important question to answer when establishing performance metrics is whether the metrics actually support the overall objectives of the project. Establishing the performance metrics and developing the projects performance management plan (PMP) should be a collaborative process between USAID and the selected implementing partner. In most cases, performance metrics that

are specific to mobiles will be used when the project has a core component that is focused on some element of the mobile ecosystem. In cases where mobiles are integrated into a project, then mobiles are more likely to contribute to attaining standard project indicators (such as improved access to sanitation), rather than being specific to mobiles.

The following criteria should be used when determining the specific project performance metrics:

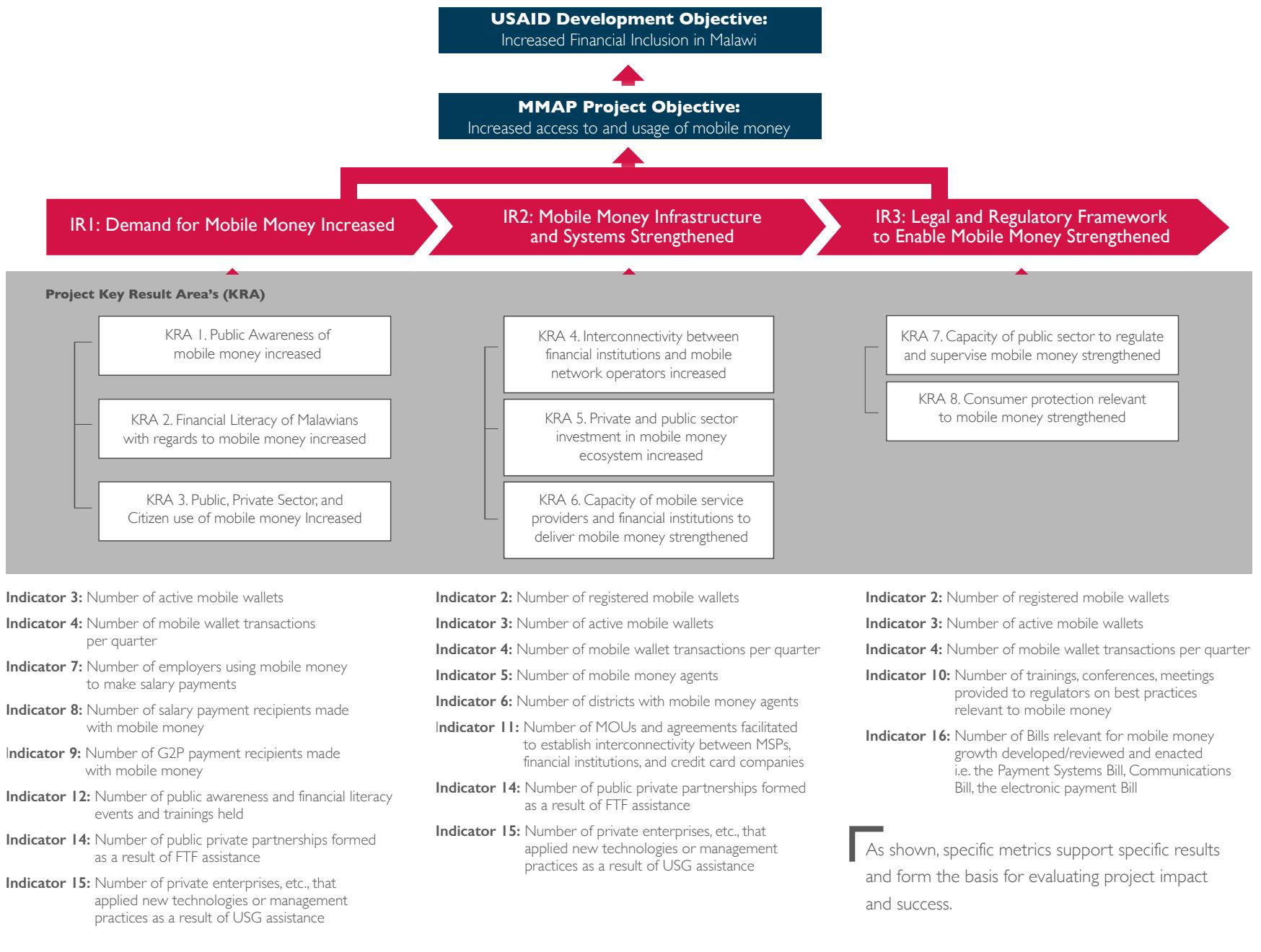
- Does the metric contribute to an understanding of overall program success? This is the fundamental question and requires analysis and establishing linkages between quantitative factors and broad program objectives.
- Is the data accurate and available at a reasonable cost to the project? Monitoring and evaluation costs can consume a significant percentage of a project budget. USAID and implementing partners must evaluate the cost of obtaining accurate data against the benefits derived from that data. As previously discussed, M4D platforms can facilitate the collection of accurate information. Customizing the data to meet specific project needs, however, can often be difficult and expensive. Advance work with the service provider can reduce costs and deliver better results.
- Does the data focus on your target segment? Collecting information, for example, on overall mobile money usage may not be relevant to a rural agricultural loan program.
- Do these metrics encourage a holistic approach to program design, execution, and evaluation? Implementers know that these metrics comprise the “bottom line” by which you will evaluate their performance, the impact of their activities, and the viability of additional similar mobile-related programs or activities. While there is an obvious need and impulse to “check the box” in any program, in projects involving mobiles there is a considerable behavioral change component involved that is not always easily captured in program metrics. Understanding, adoption, and habitual usage is as much about intangibles such as trust, confidence, and a willingness to experiment as it is about device ownership, network coverage, and market appropriate content/services. As a result, any approved metrics should demonstrate an understanding of the need to build toward both the tangible and intangible results that will lead to the greatest likelihood for broad, sustained usage of the proposed use of mobiles.



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One approach for linking performance metrics to project impact is to use a results framework. A results framework identifies results areas which are further aligned with overall project objectives. Specific metrics are linked to results areas and provide the supporting information necessary to evaluate project impact. The following example presents a sample results framework for a mobile money project along with the specific supporting metrics.

MALAWI MOBILE MONEY ACCELERATOR PROGRAM (MMAP) RESULTS FRAMEWORK



How should the implementing partner capture and validate data?

A key element of a PMP is a discussion of how an implementing partner will capture and validate data. USAID should carefully review the draft PMP and hold multiple discussions with the implementing partner on how data will be collected and validated. Where practical, USAID should also hold meetings with the mobile service provider and develop an understanding of their standard reporting capabilities and the ease to which reports can be customized. This is a particularly important role for USAID Missions to play in countries where multiple implementing partners might be using mobile services from the same provider. Whereas individual projects might not have the influence to convince the service provider to share some types of data, USAID can use its convening power to represent all of its implementing partners in these discussions. For your reference, a [Sample M4D-oriented Performance Indicator Reference Sheet](#) can be found in the [Resources](#) section.

Certain performance metrics dealing with the attitudes of beneficiaries typically requires field-based data collection and surveys. Mobile technology is ideally suited to support these types of data collection efforts either through the use of enumerators or through self-reporting. Recent experience indicate that surveys conducted using

mobile devices are faster, cheaper, and more accurate (see the [Mobile Data Factsheet](#) for some examples). There are a range of survey applications specifically designed for smartphones and tablets. These applications enable the user to easily create project specific instruments and include collection and tabulation features. Unless there is a compelling reason, USAID should encourage the use of mobile-based data collection tools.



Even lack of mobile network coverage is no longer a compelling reason to not use mobile devices. In Myanmar, [Pact](#) used mobile devices to collect data offline and then upload it using office WiFi instead of the mobile networks.



How should you critically assess project milestones at key junctures along the project life cycle?

In addition to developing strong performance indicators, USAID staff also need to take an active role in monitoring the implementation of M4D projects. Depending on how central the use of mobiles will be, project milestones may need to incorporate some systems development lifecycle milestones including device testing and end-to-end system testing into the overall project work plan. Activities such as device provisioning and deployment take time and sufficient resources must be devoted to these types of activities. Training elements also must be thoughtfully scheduled and allow for contingencies such as repeat training as required. The best way to accomplish this is to critically review work plan submissions and to hold frequent interim project reviews (IPRs).



Some critical milestone activities for M4D projects include:

- **Partnering strategy:** These strategies typically involve a direct relationship with an MNO but sometimes the partner is an ICT service provider who has relationships with one or more MNOs. The strategy should demonstrate an accurate understanding of which entity is directly responsible for managing the mobile service. You will also want to validate whether the implementer's strategy is to engage mobile service providers simply as a consumer of a service, in which case interaction can be limited and restricted to specified topics. Alternatively, if the strategy is to partner with a given provider(s) to expand or deepen their service, expectations for engagement and interaction will much higher.
- **Service provider MOU and contract:** After a partnering strategy is developed, the next step is to enter into the formal partnerships. The MOU should clearly articulate the objectives for this particular partnership as well as the anticipated roles for the service provider. You will want to verify that these roles are both necessary and realistic given the market/operating environment. The contract should focus on service delivery elements (i.e. required functionality, system availability, and geographic coverage), pricing, and data collection/management (i.e. what kind of data, in what format, accessible how, and at what frequency).
- **Pilot plan:** You will want to ensure that the implementer has sufficiently focused on pre-pilot launch activities such as: network availability assessment and service testing, hardware/equipment procurement and distribution, participant mobilization and training (live simulations and pictogram-based content built around a localized narrative can be particularly effective), as well as verification of data collection/management and reporting capabilities (content, format, and access type). Programs with a mandate to reach scale also need to demonstrate a phased approach to reach established projections post-pilot launch (i.e. begin with core group of "high performers" from trainings, staged roll-out based on geography and signal strength/reliability)



USAID staff can use the following questions to help manage projects against these critical milestones:

- Does the implementing partner have a backup plan if the service provider cannot deliver?
- Does the pilot plan provide sufficient time to correct deficiencies if issues are identified?
- Is there sufficient time and resources to deploy and test devices?
Primarily related to staff devices or if the project is supporting device purchases
- Are there mechanisms in place to repair and/or replace devices?
Primarily related to staff devices or if the project is supporting device purchases
- Does the system test plan accurately reflect actual conditions?
- Is the training program properly timed and properly resourced?
- Does the launch strategy align with target segment behavior?
- Do the reports provide useful and accurate data?

By actively managing the implementing partner and critically evaluating project progress, USAID can help ensure the program stays on track and meets the desired objectives.

How can you evaluate the impact that mobiles are having on a project?

USAID differentiates between impact evaluations and performance evaluations in its Evaluation Policy. Impact evaluations measure the change in a development outcome that is attributable to a specific intervention, whereas performance evaluations focus on what a particular project has achieved. For purposes of this handbook, we have focused primarily on impact evaluations. There is not one methodology that is best suited to evaluate the impact that mobiles are having on a project. However, it is important to consider the following two factors:

1. Whether you want to determine the impact of the mobile service itself, and how it compares to manual processes; and
2. Whether you want to capture spillover effects of the project created by the dissemination and use of a particular mobile service.

With regard to the first consideration, it is not uncommon to want to tease out the impact of the technology itself—this may include both improving operational efficiencies as well as other benefits. For example, let's consider a project that is providing information to farmers via mobile phones instead of through extension workers. In this case, the mobile phone is simply a channel for disseminating



information. Therefore you should include output indicators related to operational efficiency gains from using mobile phones, such as the speed, cost and accuracy of information flow.

If you want to identify the impact of the technology in comparison to the manual process, rather than simply assess performance, your implementing partner must build in a control group that does not benefit from the technology early in the project

design. The strategic use of a control group might also make sense if one wants to test the impact of different technologies or delivery models (i.e. SMS vs. IVR).

Keep in mind that projects that integrate mobiles are likely to produce indirect spillover effects in terms of how they contribute to project objectives and goal. For example, an application meant to drive a specific outcome in one sector may have

considerable spillover effects in another sector; the adoption and dissemination of devices may help develop a more skilled workforce; exposure to new technology may spur a local entrepreneurial movement; or increased internet access may have a variety of impacts on education, transparency, and human rights issues. It is important to be especially mindful of spillover effects in the context of projects that integrate mobiles, and, if interested in capturing the spillover, make sure that the implementer is planning their evaluation accordingly.

Impact can also result from the service itself, or from a particular application of this service. For example, using mobile money to help smallholder farmers link to new suppliers can have a specific impact beyond the impact of mobile money on its own. However, impact is often difficult to ascertain, both because of limited funding to conduct thorough impact evaluations and a hesitance on the part of many development practitioners to talk frankly about shortcomings. This information is important, though, and can help you to determine why something did or did not work according to plans.

Here are some questions you can use to try to assess impact:

- How many registered and active users does the service have (and how do you define active users)? Knowing this will give you a sense of the value that target users place on the quality of the service. If the service has 10,000 registered users, but only 200 active users that is generally a bad sign.
- Who pays for the service and how do they pay for it? While donor-subsidized mobile services are not necessarily a bad thing, knowing who pays for the service can help you to determine the likelihood of sustainability of the service beyond the end of the project. If individuals are paying directly for use of the service, that is generally also a sign that they value the service. You will also want to know how users actually pay for the service—with airtime (cost of a call or SMS), by purchasing a dedicated SIM, etc.—and whether they pay on a “per-use” basis or through a subscription. Understanding how providers charge for the service will give you a sense as to whether they properly understand the users they expect to serve in terms of disposable income and transaction preferences. Often, if individuals are unable to pay, then an institution that values the service and works with them may cover the cost—such as a large civil society organization that covers the costs of SMS messages sent to a citizen-reporting platform.
- How do users sign up for the service? Someone may have developed a great service with real impact potential but the process for signing up becomes a barrier to adoption. Some services are embedded on a specific SIM card that needs to be purchased before it can be used, and it is then required to navigate a new menu to access it. Other services can be activated by sending an SMS text or calling a dedicated call center. The easier it is to sign up and access the service, the more likely someone will be to use it.
- How do you define success and what impact have you demonstrated to date? This can be a somewhat subjective response, but it can help to give you a sense of how serious the implementing partner is about considering impact. For example, the number of people reached is a fairly poor indicator of actual impact. Success that is defined by changes in knowledge or behavior as a result of being reached or using the service is a much stronger measurement. An even more robust measurement would be the ability to show that this behavior change has actually improved livelihoods (i.e. an increase in income or an increased ability to voice opinions to create political change), which might require conducting a full impact evaluation with a control group.



CRITICAL SUCCESS FACTORS

- Work with implementing partners to use SMART indicators when measuring the impact of mobiles on their work
- Engage with implementing partners on monitoring and evaluation early and continuously.

Conclusion

Congratulations on making it to the end of the handbook! We hope that this handbook serves as a helpful resource to you when integrating mobiles into development projects. We encourage you to use and adapt the templates provided in the [Resources](#) section, and to refer back to the handbook at various points throughout the project life cycle. And of course, do not limit yourself just to what was included in the handbook. As mentioned in the introduction, this handbook is meant to serve as a foundational basis from which to broaden your understanding of how mobiles can be more effectively and appropriately integrated into development projects.

As mobiles gain traction within development projects, there is a growing repository of expertise and resources that are available to USAID Mission staff. In addition to those [resources](#) mentioned throughout the handbook, here is a list of some other resources for further reading and consideration. Given how quickly this space is developing, it is important to reiterate that this list is by no means exhaustive.

General/Cross-Cutting:

[Scaling Mobile for Development: A Developing World Opportunity – GSMA](#)

Mobile Access:

[Access Issues in Scaling Mobile for Development – GSMA](#)

[Impact of Mobile Telephony on Economic Growth – GSMA, Deloitte, and Cisco](#)

Mobile Data:

[Mobile Data Collection Systems: A review of the Current State of the Field – NOMAD](#)

[Mobile Data Solutions Group on Learning Lab \(\[access key resources when you join\]\(#\)\)](#)

Mobile Money:

[Digital Finance for Development: A Handbook for USAID Staff – USAID/FHI 360](#)

[Making the Journey from Cash to Electronic Payments: A Toolkit of Guidance and Resources – USAID/NetHope](#)

[The Journey Toward 'Cash Lite': Addressing Poverty, Saving Money and Increasing Transparency by Accelerating the Shift to Electronic Payments – BTCA](#)

[Enabling Mobile Money Interventions: Primer, Diagnostic Checklist, and Model Scopes of Work – USAID](#)

[Innovations in Financial Services Delivery – Branchless Banking: Primer, Diagnostic Checklist, and Model Scopes of Work – USAID](#)

[Mobile Money Toolkit – IFC](#)

[Emerging Lessons of Public Funders in Branchless Banking – CGAP](#)

RESOURCES



Resources

Digital Development Factsheets	88
<i>These factsheets from USAID's Digital Development team provide additional details on some of the areas mentioned in the handbook</i>	
Digital Inclusion Factsheet: An overview of the key elements for improving mobile technology access	88
Digital Finance Factsheet: An overview of digital financial services, such as mobile money	90
Mobile Data Factsheet: An overview of using mobile for data collection	92
Guiding Questions for Meetings with Key Partners	94
<i>These guiding questions, developed by USAID's Digital Development team, are a useful starting point to prepare for meetings with potential partners</i>	
Greentree Consensus: Principles for Technology in Development	97
<i>Developed and endorsed by multiple donors, including USAID, these nine guidelines are important to keep in mind when developing any M4D initiative</i>	
Mobiles for Development Checklist	99
<i>Our six-step process to determining if and how mobiles can help you achieve your broader development objectives</i>	
ICT Option Selection Worksheet	103
<i>Use this worksheet to help figure out what types of information and communications technologies might be useful in your project</i>	
Current Mobile Services Template	104
<i>Use this template to keep track of all of the mobile services that already exist in your country that might be relevant to your project design</i>	
Sample M4D Evaluation Template	105
<i>A handy template for evaluating M4D-related elements of proposals</i>	
Sample Performance Indicator Reference Sheet (PIRS)	108
<i>This is a sample of a PIRS from a USAID project in Malawi focused on mobile money</i>	

Resources

M4D Inventory

A selection of mobile services being used in development in Southeast Asia to give you an idea of what is possible

110

USAID Projects in Southeast Asia Using Mobiles

A selection of USAID projects in Southeast Asia that are already using mobiles in their work

127

Glossary of Terms

Your guide to all of those words you have heard related to mobiles in one convenient place

133

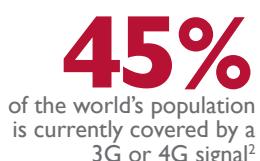
DIGITAL INCLUSION

Access to mobile technology is the foundation upon which transformational mobile products and services are built

Digital inclusion means more than an available mobile connection. It also means an individual's ability to afford the services provided, value them, and have the ability to use them. Only then will mobile applications and platforms, like mobile money and mobile data, reach their full potential. Ensuring universal access is going to take a combined effort of companies, governments, NGOs, and the international development community to create an enabling policy and regulatory environment, build new business models, and cultivate relevant local content.

MAXIMIZING THE MOBILE OPPORTUNITY

While the reach and rate of adoption of mobile technologies has been unprecedented, there is still a massive growth opportunity in most markets, particularly among underserved populations.



¹ <https://gsmintelligence.com/analysis/2012/10/global-mobile-penetration-subscribers-versus-connections/354/>

² <http://www.itu.int/ITU-D/ict/facts/2011/material/ICTFactsFigures2011.pdf>

³ http://www.infodev.org/infodev-files/final_kenya_bop_study_web_jan_02_2013_0.pdf

⁴ <http://www.undpegov.org/ngov-primer.html>

⁵ <http://www.youtube.com/watch?v=ex4OsIBptOc>

⁶ http://www.nsn.com/system/files/document/Information_changes_lives.pdf

⁷ <http://www.oi.ox.ac.uk/vis/?id=4e3c02dd>

DID YOU KNOW?

While the number of mobile handheld devices around the world surpassed the global population in 2013, the story of access is much more complicated.



CONSUMER AWARENESS

- Despite the tremendous value of agricultural information, only 5 percent of base of the pyramid users in Kenya are aware of commodity pricing services and applications³



AFFORDABILITY

- In the least developed countries, basic mobile services can cost nearly 16 percent of average monthly income⁴
- In some African countries, broadband costs are 1,000+ percent of average monthly income⁵



LOCALLY RELEVANT CONTENT

- 78 percent of all available Internet sites originate in the U.S. or EU⁶
- There are more Wikipedia articles written about Antarctica than any country in Africa or South America⁷



ATTAINABILITY

- 548 million mobile users do not have access to the power grid⁸



CONNECTIVITY

- 90+ percent of the people in the world's 49 least developed countries lack internet access⁹



CLOSING THE GENDER GAP

A woman is 21 percent less likely than a man to own a phone in low and middle-income countries. Globally, this equates to a mobile phone gender gap of roughly 300 million women. USAID's partnership with GSMA, AusAID, and Visa, the **GSMA mWomen Program**, aims to enable 150 million underserved women to own and effectively use mobile phones to access vital information, networks, and services.

 **300 MILLION**
the mobile phone gender gap

BRINGING INTERNET PRICES WITHIN REACH

Today, in many developing countries, more than half of Internet users access it exclusively through mobile devices. This is set to grow as smartphones and tablets become more available. Access to the Internet drives economic growth, but mobile broadband costs are prohibitively high for most people in developing countries. USAID's partnership with Google.org, Omidyar Network, DFID, and a host of other governments, technology providers, civil society groups, and academia is empowering policy makers with the tools and resources to facilitate more open, competitive markets. This partnership, the **Alliance for Affordable Internet**, aims to bring broadband prices down to no more than 5 percent of monthly income, enabling the next two billion users to come online.


“The Alliance’s innovative efforts to bring Internet prices within reach will not only expand opportunities for students and entrepreneurs around the world, but spur economic growth and development.”

DR. RAJIV SHAH
USAID Administrator

REACHING TWO MILLION IRAQI WOMEN

In 2011, only 20 percent of Iraqi mobile operator Asiacell's subscribers were women. Research produced that year through the **GSMA mWomen Program** sparked Asiacell to design a new product catering to women called the Almas Line, which includes features like rate reductions during off-peak hours and a “bye-bye” option to block potential harassers. In two years, more than two million women have enrolled, doubling the proportion of Asiacell's female customers.



STEP CHARGING
discounts after 3rd minute of usage address women's purchasing power constraints and cater to women's longer average call time



CHOOSING OFF-PEAK HOURS
flexible accounts for different daily call patterns than men



DISCOUNTED OFF-NETWORK CALLS
lower rates maintain brand loyalty as women are less likely to have SIMs from various operators



FREE: “BYE-BYE” SERVICE
ability to block numbers helps prevent harassment



VALUE ADDED SERVICES
discounts on female-focused content increase utility and personalization

CONTACT US

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DIGITAL FINANCE

Inclusive electronic payments such as mobile money not only have the potential to lift millions out of poverty, but can also improve governance by reducing costs and increasing transparency

With the push of a button, and often through a basic mobile phone, inclusive electronic payments can eliminate the corruption, inefficiencies, and security risks of cash payments. New “branchless” banking models, enabled by the broad reach of mobile phone infrastructure, are reinventing financial services—once the exclusive domain of the rich—and offer the 2.5 billion unbanked people worldwide the opportunity to take control of their finances. Mobile phones can supply families with access to products like savings accounts, insurance, and credit—indispensable tools for lifting families out of poverty and connecting them to the formal economy.

BENEFITS



SPEED & SECURITY

Following the 2010 Haiti earthquake, replacing cash with mobile transfers halved theft and slashed the time it took to get aid to victims.¹



FINANCIAL INCLUSION & RESILIENCE

Research suggests Kenyan families who do not use M-Pesa—the largest mobile money system in the world—suffer a 7 percent drop in consumption when hit with a negative income shock, while consumption of families who use M-Pesa remains unaffected.²



TRANSPARENCY & ACCOUNTABILITY

Afghan police officers saw a 30 percent increase in take-home pay when mobile payments replaced cash—simply by reducing opportunities for skimming and eliminating the cost of handling cash.³



COST SAVINGS

Research estimates connecting every Indian household to a digital payment system and automating government flows could save the government \$22 billion per year.⁴



PLATFORMS FOR INNOVATION

New businesses are emerging across the developing world that use mobile payments to provide solutions to the poor in energy, water, sanitation, health, agriculture, and other sectors.

DEVELOPING A ROBUST ECOSYSTEM

REGULATORS

balance inclusion against risk; safeguard consumers' interests



INTEGRATED SYSTEMS

facilitate efficient transactions

CUSTOMERS

find electronic money a compelling and affordable alternative to cash

SERVICE PROVIDERS

design relevant products and manage new distribution networks

Crafting regulations and business models that align these interests is complex, yet offers a historic opportunity to enable broad-based economic growth. USAID is accelerating the growth of inclusive electronic payments through high-level advocacy, action-oriented research, demand aggregation, and targeted supply-side investments.

1 http://betterthancash.org/wp-content/uploads/2012/09/HMMI_-_Plugging_Into_Mobile_Money_Platforms_FINAL.pdf

2 http://www.mit.edu/~tavneet/Jack_Suri.pdf

3 <http://blog.usaid.gov/2012/02/we-must-do-better-than-cash/>

4 <http://mckinseyonsociety.com/inclusive-growth-and-financial-security/>



30%
perceived increase in
income by police by
cutting out graft



BUILDING TRANSPARENCY IN AFGHANISTAN

Corruption weakens institutions, disempowers citizens, and undermines stability. To instill transparency in public sector spending, governments can use mobile money to automate payment delivery and produce a complete transaction record. In 2010, Afghanistan's government began paying police officers through mobile money. Officers thought they had received a 30 percent raise, when in fact they were finally receiving their full salary. The government is now in the process of adopting mobile technology to replace cash payments and collections for civil servant salaries and electricity bills.

TRANSFORMING GOVERNMENT AND EXPANDING FINANCIAL INCLUSION IN THE PHILIPPINES

The Philippines has more than 7,100 islands, making it challenging to access a brick and mortar bank or government office in certain parts of the country. USAID works with banks, the government, and mobile network operators to expand mobile financial services to these hard-to-reach areas. To date, more than 10 million Filipinos have gained access to more efficient financial services. The Government of the Philippines is also encouraging agencies to adopt electronic payment systems as a way to increase efficiency and introduce greater transparency in government financial transactions. With the support of USAID/Philippines' Scaling Innovations in Mobile Money Project, one municipality has already adopted electronic payments for its payroll disbursements, and three other cities are poised to launch mobile-enabled payment and collection systems for taxes, utilities, and social transfers.

 10+ MILLION

Filipinos have gained access to more efficient financial services



"I save almost \$17 each payday since I do not need to go through that long and tiring trip to get my money from the bank."

LOLITA SINGAHAN
A 52-year-old school teacher
on Olutanga Island



"Tools like the mobile phone or the debit card—and new partnerships like Better Than Cash—represent very real opportunities to generate results on a dramatic scale."

DR. RAJIV SHAH, USAID Administrator

BETTER THAN CASH ALLIANCE (BTCA)

USAID and the diverse set of BTCA members—including governments, companies, and NGOs—are developing and sharing tools to promote the shift from cash to electronic payments. Achievements by BTCA members include:

- ◆ Colombia's Familias en Accion disperse bimonthly benefits to 2.4 million households. Within two years, 91 percent of recipients had a card-linked bank account.
- ◆ Mercy Corps cut theft of social transfers by 50 percent in Haiti using e-payments.
- ◆ In response to a devastating drought, the World Food Programme quickly sent money via mobile phones to 100,000+ hungry farmers in Malawi.

CONTACT US

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WATCH OUR VIDEO



MOBILE DATA



Mobile data flips traditional models of development on their head

Mobile data enables an adaptive, iterative approach to program delivery that is sensitive to real-time performance metrics and citizen feedback. It empowers decision makers to constantly adjust their programs based on what is and isn't working, turning donor beneficiaries into clients and turning recipients of goods and services into producers and co-collaborators. Not only can programs see results in real-time, mobile tools can rapidly clean, aggregate, and share information, eliminate errors associated with collecting and transcribing paper forms, and perform powerful analysis and visualization. This empowers donors, governments, and civil society to make decisions based on real-time information and gives voice to citizens who for years have been cut from the conversation that shapes their future.

THE TECHNOLOGIES

BASIC AND FEATURE PHONE



Even the simplest phone can gather data via SMS messaging and interactive voice response (IVR), while older-model feature phones can collect data via electronic forms.

SMART PHONE AND TABLET



These more sophisticated devices enable greater functionality like capturing GPS locations and better usability with large touch screens, while still serving as portable tools for conducting surveys, taking photos and videos, and playing and recording audio.

SENSORS



Commercially available sensors can record environmental conditions and performance of applications like water pumps, latrines, and cook stoves. This data can be relayed over cell phone networks and analyzed online to remotely monitor applications and adjust programs.

DATA AROUND THE WORLD

DRAMATICALLY IMPROVES COLLECTION



Mobile-enabled surveys cut collection costs by **71%**¹

TRANSFORMS FEEDBACK



In Kenya, the USAID Transition Initiative used SMS surveys to poll youth leaders in advance of recent elections and display the results in real-time

SIMPLIFIES AND STRENGTHENS MANAGEMENT



SMS surveys saved a week of work in Somalia²

ENABLES REAL-TIME ANALYSIS AND VISUALIZATION



In Uganda, UNICEF and the World Bank helped track, map and prevent the spread of banana bacterial wilt in **24 HOURS** by engaging **220,000 U-REPORTERS** in a series of simple SMS polls³

¹ http://siteresources.worldbank.org/INTLAC/Resources/257803-1269390034020/EnBreve_166_Web.pdf

² http://www.ssireview.org/blog/entry/mobile_measurement_lowering_costs_and_engaging_beneficiaries

³ <http://thenextweb.com/insider/2013/07/09/the-world-banks-chief-innovation-officer-on-technology-open-development-and-reducing-world-poverty/>

RESULTS FROM THE FIELD



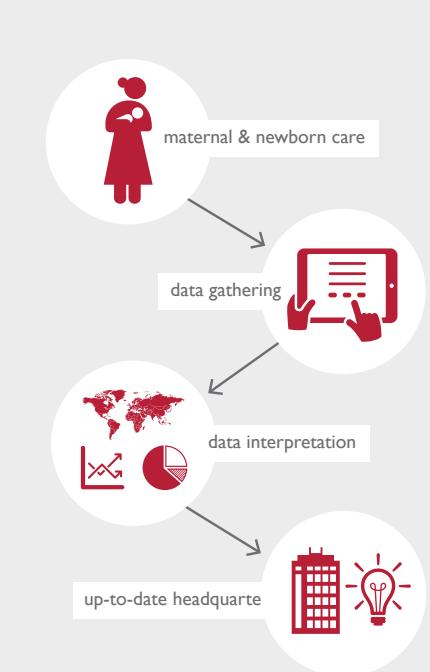
3000+

registered teachers are interested in being paid via mobile money



SAFETY AND REACH IN AFGHANISTAN

Across countries where USAID works, sending staff to the field is difficult, expensive, and can raise safety concerns. This challenge requires USAID to deploy a variety of tools including new uses of mobile devices. To reach Afghan teachers, USAID is working with the Afghan Ministry of Education to survey teachers using their mobile phones. In less than six months, the initiative has already registered 6,000+ teachers in five provinces. The data is helping to quickly assess the viability of mobile money salary payments. It is also creating an avenue by which USAID can monitor the success of the intervention and receive feedback from citizens directly.



"Poverty used to be a reflection of scarcity. Now it is a problem of identification, targeting and distribution."

— *The Economist, 2013*

REAL-TIME RESULTS IN UGANDA

Uganda is a hotbed for innovation due in large part to UNICEF's strong partnership with the Government of Uganda. Together they launched mTrac, which enables health facility workers to send government reports via SMS and map important data like stocks of essential medicines. Recently, the Ugandan Ministry of Health used mTrac to survey 10,000 health workers to see if their health unit had a cold-chain fridge to store vaccines before a national distribution campaign. At the cost of \$150¹, and over the course of two days, the Ministry of Health received information from 1,862 health facilities, learned that only 73.1 percent of facilities had working cold chain fridges, and identified which clinics had mechanical problems and which districts were experiencing consistent failure.

¹ \$150 represents the cost of the refrigeration survey only

INFORMING HEALTH CARE IMPROVEMENTS

Getting mothers and children better medical care requires adaptive programming that identifies problems at hospitals and reacts with targeted solutions. The USAID Maternal and Child Health Integrated Program is using mobile data collection tools to observe the quality of maternal and newborn care in seven countries. Staff collect data on tablets that automatically feed into tables, charts, and maps on the quality of healthcare delivered. This means staff at headquarters are always up-to-date on conditions in the field and can make informed decisions about how to strategically invest in addressing the most pressing issues.

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GUIDING QUESTIONS FOR MEETINGS WITH KEY PARTNERS

When meeting with government representatives from various ministries, Missions should consider drawing on the list of questions below:

Is there visible political leadership for the use of ICTs in programs and service delivery?

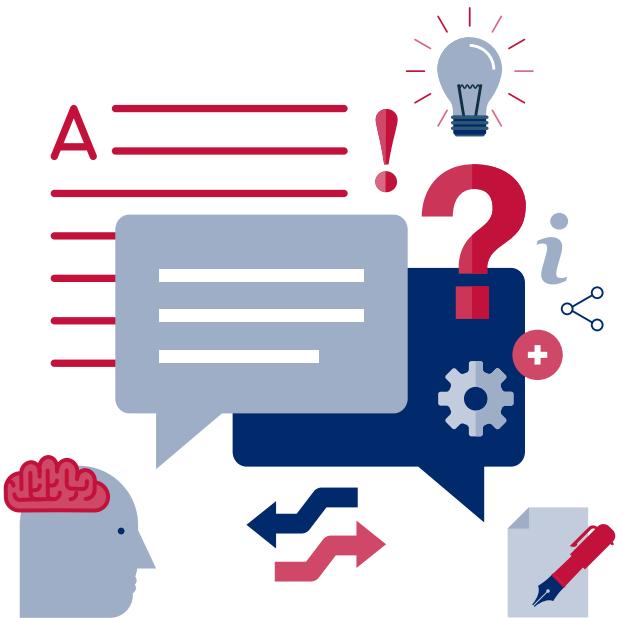
- Is PM or president aware and supportive?
- Which Minister (if not the PM himself) would be able to lead an ICT initiative?
- Does this Ministry have the mandate, project management experience and technical skills to manage this kind of a program?
- Has this entity managed any ICT projects before?
- Is the government interested in integrating and scaling this ICT enabled program? What conditions internal to the government must be met for this program to be successful?
- Are there any identified champions for ICTs at the political level?

How strong is the government's overall ICT skill base among senior government leaders and civil servants?

- Do leaders know the basics of ICT? Are they digitally literate?
- Do any government officials receive training on ICT, data standards or data analytics?
- Does government use any assessment (i.e. ICT competency framework) to determine or track ICT skill levels among civil servants?
- Does your government have formal criteria for deciding civil service grades and promotions? Are ICT skills used as criteria for this?

Is there an established political structure for policy and implementation of cross-government initiatives?

- What is the model for cross-government initiatives? Does the Ministry of ICT work with sector specific ministries to coordinate on ICT enabled initiatives?



• What Ministry should serve as the point for this initiative?

• What is the technical capacity of the point Ministry?

• What hardware and software are you most comfortable using?

Are there any existing activities or plans relevant to ICT use?

- Has any socialization about ICTs been done at a political level? Have there been any awareness-raising events/activities about ICTs for agencies or the general public?

GUIDING QUESTIONS CONT.

- Any ICT enabled activities at the city/regional level? How are the initiatives there, and the politicians leading them, perceived at a national level?
- What are the government's current ICT initiatives?

Does the wider political context of the country help or hinder ICT enabled initiatives?

- To what extent do current political priorities support the different potential drivers of ICTs: transparency and accountability; economic growth; inclusion and empowerment; improving public services; and government efficiency?
- Are there individual Parliamentarians or legislative committees who can provide supportive leadership of ICT initiatives linked to one or more of these drivers?
- Where is the country in the political cycle? Is there scope for sustained momentum to pursue ICT enabled initiatives before the next election?
- Are there political priorities whose implementation could be significantly assisted by ICTs given experience elsewhere?

What are the policies/laws governing the use of ICT and data?

- Does government (or any agency or local authority) use any license with respect to release/use of its data?
- Is there any policy on Open Data or re(use) or public sector information?
- How are concerns around privacy handled? What privacy safeguards exist for data about citizens?
- What is the policy (if any) on charging for government information? Who is responsible for setting this policy? Does this policy allow for commercial use of data? Do any agencies sell their data?
- Is there a "right to data" or "open by default" legislation? If so, how is this enforced?
- Who has a role in setting policy on the release of information?

When meeting with the private sector and non-governmental organizations in the ICT4D community, Missions should consider drawing on the questions below:

How strong are the IT industry, developer community and overall digital literacy in your country/locality?

- Any statistics on size of local ICT industry (i.e. in terms of employment, revenues or percentage of GDP)?
- Does your government outsource any IT functions or services to the private sector?
- What does software development/web design industry look like in your country/locality? Are there any organized communities of developers? Any estimate of its size?
- What technology vendors can support projects at scale?
- What is the start-up scene in your country/locality? Are there any incubators/accelerators for entrepreneurs or startups, any venture capital or early stage investment funds?

GUIDING QUESTIONS CONT.

- Are there any industry associations or groups for IT companies?
- What is the overall level of Internet use skills in your country/locality?
- What is the overall level of data skills among non-government organizations?

In addition, questions specific to MNOs may include:

- Have you partnered with a donor organization on an ICT enabled development program?
- Have you tried to rollout a product toward a CSR/development goal?
- Are you willing to work in partnership with other MNOs on an ICT for development project?
- What factors influence your rollout?
- What is your process for distributing short codes?
- Where do you have coverage?

When meeting with development partners and donors, you should try to understand the ICT market maturity, the potential for partnership, and leveraging existing systems. Missions should consider drawing on the questions below:

- What are your views on the government's capacity to execute and oversee ICT projects?
- What are your views on the key challenges in ICT?
- Are you interested in partnering on this project or contributing funds?

THE GREENTREE CONSENSUS: Principles for Digital Development

In order to establish best practices in information and communications technology for development (ICT4D), USAID has co-created a set of principles with other donors called the Greentree Consensus. To date, they have been endorsed by USAID, the Bill and Melinda Gates Foundation, UNICEF, SIDA, WFP, UNHCR, UNDP and Global Pulse. This consensus has evolved from earlier sets of implementer principles that have been endorsed by over 300 organizations. The principles are not intended as hard and fast rules but meant as best-practice guidelines to inform the design of technology-enabled development programs.

I. Design with the User

- Develop context-appropriate solutions informed by user needs.
- Include all user groups in planning, development, implementation, and assessment.
- Develop projects in an incremental and iterative manner.
- Design solutions that learn from and enhance existing workflows, and plan for organizational adaptation.
- Ensure solutions are sensitive to, and useful for, the most marginalized populations: women, children, those with disabilities, and those affected by conflict and disaster.

2. Understand the Existing Ecosystem

- Participate in networks and communities of like-minded practitioners.
- Align to existing technological, legal, and regulatory policies.

3. Design for Scale

- Design for scale from the start, and assess and mitigate dependencies that might limit ability to scale.
- Employ a “systems” approach to design, considering implications of design beyond an immediate project.
- Be replicable and customizable in other countries and contexts.
- Demonstrate impact before scaling a solution.
- Analyze all technology choices through the lens of national and regional scale.
- Factor in partnerships from the beginning, and start early negotiations

GREENTREE CONSENSUS CONT.

4. Build for Sustainability

- Plan for sustainability from the start, including planning for long-term financial health, e.g., assessing total cost of ownership.
- Utilize and invest in local communities and developers by default, and help catalyze their growth.
- Engage with local governments to ensure integration into national strategy, and identify high-level government advocates.

5. Be Data Driven

- Design projects so that impact can be measured at discreet milestones with a focus on outcomes rather than outputs.
- Evaluate innovative solutions and areas where there are gaps in data and evidence.
- Use real-time information to monitor and inform management decisions at all levels.
- When possible, leverage data as a by-product of user actions and transactions for assessments.

6. Use Open Standards, Open Data, Open Source, and Open Innovation

- Adopt and expand existing open standards.
- Open data and functionalities and expose them in documented APIs (Application Programming Interfaces) where use by a larger community is possible.
- Invest in software as a public good. Develop software to be open source by default with the code made available in public repositories and supported through developer communities.

7. Reuse and Improve

- Use, modify, and extend existing tools, platforms, and frameworks when possible.
- Develop in modular ways, favoring approaches that are interoperable over those that are monolithic by design.

8. Address Privacy & Security

- Assess and mitigate risks to the security of users and their data.
- Consider the context and needs for privacy of personally identifiable information when designing solutions and mitigate accordingly.
- Ensure equity and fairness in co-creation, and protect the best interests of the end-users.

9. Be Collaborative

- Engage diverse expertise across disciplines and industries at all stages.
- Work across sector silos to create coordinated and more holistic approaches.
- Document work, results, processes, and best practices and share them widely.
- Publish materials under a Creative Commons license by default, with strong rationale if another licensing approach is taken.



To learn more about the Greentree Consensus visit
<http://ict4dprinciples.org/>

MOBILES FOR DEVELOPMENT CHECKLIST

Step 1: Identify potential roles for mobiles to reinforce project goals (input your initial assumptions on how mobiles might fit within your project)

Step 2: Determine requirements for using mobiles (*circle or highlight all that apply*)

How are you thinking about using mobile?	Requisite functions	Minimum delivery model requirements	Minimum device requirements
Information sharing	Push (for one-way) Pull (for two-way)	BASIC: SMS, voice INTERMEDIATE: IVR	BASIC: Basic phone INTERMEDIATE: basic phone
Data collection	Push, Pull, Storage	BASIC: SMS, voice ADVANCED: App	BASIC: basic phone ADVANCED: feature phone, smartphone, tablet
Payments	Transaction	BASIC: USSD, SMS	BASIC: Basic phone
Facilitating networks (i.e. trade)	Push and Pull	BASIC: SMS, voice INTERMEDIATE: IVR ADVANCED: App	BASIC: basic phone INTERMEDIATE: basic phone ADVANCED: feature phone, smartphone, tablet
Community building	Push and Pull, and/or Interactive	BASIC: SMS, voice INTERMEDIATE: IVR ADVANCED: App, web, and/or messaging	BASIC: basic phone INTERMEDIATE: basic phone ADVANCED: smartphone, tablet
Supply chain management (health, agriculture, etc.)	Push, Pull, Storage	BASIC: SMS INTERMEDIATE: IVR ADVANCED: App, web	BASIC: basic phone INTERMEDIATE: basic phone ADVANCED: feature phone, smartphone, tablet
Other			
What other additional features do you need?		Minimum delivery model requirements	Minimum device requirements
Geo-location		GPS	Some feature phones, all smartphones and tablets
Photo sharing		MMS, web	Some feature phones, all smartphones and tablets
Video sharing		App, web	Smartphone, tablet

MOBILE DEVELOPMENT CHECKLIST CONT.

Based on all of the above, what are your minimum requirements? (select all that apply)

Function	<input type="checkbox"/> Push <input type="checkbox"/> Pull <input type="checkbox"/> Storage <input type="checkbox"/> Transaction <input type="checkbox"/> Interactive
Delivery model	<input type="checkbox"/> SMS <input type="checkbox"/> Voice <input type="checkbox"/> IVR <input type="checkbox"/> Web <input type="checkbox"/> App <input type="checkbox"/> MMS <input type="checkbox"/> Embedded <input type="checkbox"/> Messaging <input type="checkbox"/> GPS
Device	<input type="checkbox"/> Basic <input type="checkbox"/> Feature phone <input type="checkbox"/> Smartphone <input type="checkbox"/> Tablet
Network type	<input type="checkbox"/> 2G (good for only voice/IVR/SMS) <input type="checkbox"/> 3G (good for all delivery models, slower data rates limit data rich content) <input type="checkbox"/> 4G (good for all delivery models, faster data rates good for most purposes) <input type="checkbox"/> No network (offline data collection/storage)

Step 3: Collect data to understand the landscape

Macro-level data	Data (insert your findings here)	Assessment (High, Medium, Low)
SIM penetration		<input type="checkbox"/> High (over 80%) <input type="checkbox"/> Medium (50-80%) <input type="checkbox"/> Low (less than 50%)
Network coverage (list by 2G, 3G, and/or 4G)		<input type="checkbox"/> High (over 80%) <input type="checkbox"/> Medium (50-80%) <input type="checkbox"/> Low (less than 50%)
Teleco sector competition (list MNOs, launch date, market share)		<input type="checkbox"/> High (over 5) <input type="checkbox"/> Medium (3-5) <input type="checkbox"/> Low (1-2)
Current mobile service availability		<input type="checkbox"/> High (5 or more relevant services) <input type="checkbox"/> Medium (2-4 relevant services) <input type="checkbox"/> Low (0-1 relevant services)
Current local technical capacity		<input type="checkbox"/> High (significant capacity) <input type="checkbox"/> Medium (existent capacity) <input type="checkbox"/> Low (extremely limited capacity)
Adult literacy		<input type="checkbox"/> High (over 80%) <input type="checkbox"/> Medium (50-80%) <input type="checkbox"/> Low (less than 50%)
Policy and regulatory environment (i.e. mobile money regulations, data/voice price ceilings, SIM ownership, etc.)		<input type="checkbox"/> High (supportive) <input type="checkbox"/> Medium (permissive) <input type="checkbox"/> Low (restrictive)

MOBILE DEVELOPMENT CHECKLIST CONT.

Step 3: Collect data to understand the landscape

<i>Macro-level data</i>	<i>Data (insert your findings here)</i>	<i>Assessment (High, Medium, Low)</i>
Handset ownership (based on your minimum device requirements)		<input type="checkbox"/> High (over 80%) <input type="checkbox"/> Medium (50-80%) <input type="checkbox"/> Low (less than 50%)
Access to mobile phones (includes those who do not own but can use someone else's)		<input type="checkbox"/> High (over 80%) <input type="checkbox"/> Medium (50-80%) <input type="checkbox"/> Low (less than 50%)
Target user literacy (including digital literacy)		<input type="checkbox"/> High (over 80%) <input type="checkbox"/> Medium (50-80%) <input type="checkbox"/> Low (less than 50%)
Frequency of mobile usage (typical target user)		<input type="checkbox"/> High (every day) <input type="checkbox"/> Medium (a few times a week) <input type="checkbox"/> Low (less than once a week)
Access to other ICTs (radio, TV, fixed line telephone, computer)		<input type="checkbox"/> High (over 80%) <input type="checkbox"/> Medium (50-80%) <input type="checkbox"/> Low (less than 50%)
Disposable income		<input type="checkbox"/> High (significant) <input type="checkbox"/> Medium (modest) <input type="checkbox"/> Low (none)
Mobile money usage (if applicable)		<input type="checkbox"/> High (over 80%) <input type="checkbox"/> Medium (50-80%) <input type="checkbox"/> Low (less than 50%)

MOBILE DEVELOPMENT CHECKLIST CONT.

Step 4: Decide if use of mobiles in the project is feasible and appropriate (based on the above)

Based on all of the information you have inputted above, which of the potential usages of mobiles do you think are possible within the proposed project? Why?

What cost impact would using mobiles potentially have if they were integrated into the proposed project?

What types of initiatives or activities might be necessary to further facilitate the uptake of the types of mobile services you are interested in?
While there is no magic number for the scoring in Step 3, a significant number of 'low' scores might be a sign that more proactive measures are necessary.

ICT OPTION SELECTION WORKSHEET

Assessment Criteria	ICT OPTION						
	Mobile phones	Television	Fixed line phone	Radio	Low-cost video	Web	Other
Strengths of each option							
Weaknesses of each option							
Is this an appropriate option? Why?							
Can it be used together with another ICT option? If so, how?							

Adapted from a table originally developed by Mark Bell and Judith Payne for the USAID-funded MEAS project (2011), which can be found online at: <http://measict.weebly.com/extension-and-ict-options.html>

CURRENT MOBILE SERVICES TEMPLATE

<i>Mobile service name</i>	<i>Implementer (if different)</i>	<i>Sector</i>	<i>Brief description</i>	<i>Delivery models used</i>	<i>Compatible device types</i>	<i>Relevance to overall concept design</i>

SAMPLE M4D EVALUATION TEMPLATE

An evaluation form for technical proposals are found on the following pages. The obtainable number of points specified for each evaluation criterion indicates the relative significance or weight of the item in the overall evaluation process. The Technical Proposal Evaluation parts are:

PART 1: Expertise of Firm / Organization submitting Proposal

PART 2: Methodology, approach and understanding of the use of M4D

PART 3: Personnel

<i>Technical Proposal Evaluation Part I</i>	<i>Points Obtainable</i>	<i>Company/Other entity</i>			
		A	B	C	D
<i>Expertise of Firm / Organization submitting Proposal</i>					
Overall reputation of organization (competence/reliability, resources, and experience in M4D [mobile money, mobile data, mobile access])					
Organizational proven capacity of the Offeror to deliver a field-based mobile service program					
Quality assurance procedures and mechanism, guarantee provided by the firm					
Knowledge of M4D technologies (i.e. services, applications, devices)					
Knowledge of agent networks and customer support					
Experience on similar programs/projects					
Understanding of mobile solution trends					
Training development and delivery expertise					
Experience working in the target region					
Total Part I					

SAMPLE M4D EVALUATION TEMPLATE CONT.

Technical Proposal Evaluation Part 2	Points Obtainable	Company/Other entity			
		A	B	C	D
<i>Methodology, approach and understanding of mandate</i>					
Does the proposal address the program needs as described in the TOR?					
Has the bidder acknowledged and addressed the key challenges to deploying a mobile service?					
Has the bidder proposed a viable training program?					
Does the bidder propose a viable business model that addresses near-term and long-term service payment requirements?					
Is the presentation clear and cohesive, and does it augur sufficiently well for the proper provision of support and advice?					
Total Part 2					

SAMPLE M4D EVALUATION TEMPLATE CONT.

Technical Proposal Evaluation Part 3	Points Obtainable	Company/Other entity			
		A	B	C	D
<i>Personnel</i>					
Qualifications of Senior Specialists					
Professional experience in M4D (i.e. mobile money, mobile applications, mobile access)					
Relevance of experience to TOR					
Direct experience in implementation of M4D projects					
Proven ability to engage with senior level stakeholders					
Proven ability on strategy development and planning					
Training experience					
Knowledge of the region					
Qualifications of Specialists					
Professional experience in the area of specialization					
Relevance of experience to TOR					
Direct experience in implementation of mobile services					
Evidence of development of reports, tools, manuals, models					
Training experience					
Knowledge of the region					
Qualifications of Junior Specialists					
Professional experience in the area of specialization					
Evidence of research capability					
Evidence of development of reports, tools, manuals					
Diversity of relevant skills and expertise in the firm					
Total Part 3					

SAMPLE PERFORMANCE INDICATOR REFERENCE SHEET (PIRS)

Strategic Objective: Increase the access and usage of mobile money in Malawi

Intermediate Result: IR.1 – Demand for Mobile Money Increased, IR.2 – Mobile Money Infrastructure and Systems Strengthening

Key Result Area: KRA-1 – Public Awareness of mobile money increased, KRA-5 – Private and Public Sector Investment in Mobile Money Ecosystem Increased, KRA-6 – Capacity of Mobile Service Provider and Financial Institution to Deliver Mobile Money Strengthened

Indicator: Indicator 13 – Number of farmers and others who have applied new technologies or management practices as a result of USG assistance

Description

Precise Definition(s): Number of farmers participating in mobile-enabled payment programs to include eVouchers, agricultural value chain payments, mobile enable loan programs, and training

Unit of Measure: Number of farmers impacted by mobile money initiatives

Disaggregated by: Geography and gender

Justification & Management Utility: Feed the Future metric designed to measure the beneficial impact of technology on farmers

Plan For Data Acquisition By The Project

Data Collection Method: MMAF will aggregate previous metrics and segment by farmer participant (i.e. G2P payments, ag value chain payments, total number of mobile wallets, public awareness events, and financial literacy training)

Data Source: MMAF sector scan, MNO platform data, NGO program data

Frequency and Timing of Data Acquisition: Number of farmer participants will be provided quarterly

Estimated Cost of Data Acquisition: Approximately 40 hours of MMAF staff time per quarter will be required to collect and validate data

Responsible Individual at the Project: COP and Knowledge Management Officer

SAMPLE PERFORMANCE INDICATOR REFERENCE SHEET

Data Quality Issues

Date of Initial Data Quality Assessment: April 30, 2013

Known Data Limitations and Significance (if any): Not all activities will segment totals by farmer

Actions Taken or Planned to Address Data Limitations: Incorporate farmer designation in all MMAPI program activities

Date of Future Data Quality Assessments: October 30, 2013

Procedures for Future Data Quality Assessments: MMAPI team will aggregate a range of data elements and extract farmer participation content

Plan For Data Analysis, Review, & Reporting

Data Analysis: MMAPI Knowledge Management Officer will analyze number of farmers impacted by mobile money technology

Presentation of Data: Data will be presented in tables and charts

Review of Data: Data will be reviewed and analyzed semi-annually within two weeks after submission

Reporting of Data: Results will be presented in MMAPI semi-annual reports as well as periodic process reviews conducted with USAID Mission Malawi and the USAID IDEA Lab

Other Notes

Notes on Baselines/Targets: Baselines are based on number of farmers impacted by mobile money at project inception (September 2012)

Other Notes: None

Performance Indicator Values

Year	Target	Actual	Notes
2012	Enter target value	Enter actual value	Enter any explanation here
2013			

To avoid version control problems, enter the date of most recent revision to the reference sheet.

M4D INVENTORY

NOTE: This is not an exhaustive list of mobile applications or services currently deployed in Southeast Asia. This list was generated by desk research conducted in Washington DC in 2013-2014, and focuses only on mobile applications addressing food security, health, biodiversity, governance, and climate change in Southeast Asia. Inclusion in this inventory is not an endorsement, but rather meant to be illustrative of what is possible. Within Southeast Asia, there are also a number of firms and incubators that are developing customized mobile services for social good, including ChangeFusion, Opendream, mLab, Launchgarage, and others.



Food security



Health



Biodiversity



Climate Change



Governance

Sector	Name	Description	How and Where it's Being Used	Technical Details
	*1677 Farmer Information Super-highway	<p>Provides daily information to farmers on rice, fruits & vegetables, or livestock & fishery.</p> <p>A subscription-based service, *1677 Farmer Information Superhighway sends farmers a daily SMS containing updated agricultural information on market trends, commercial crops, new farming techniques, farming tips, important news, and warnings on weather conditions.</p> <p>For more information, visit: http://www.telenor.com/corporate-responsibility/initiatives-worldwide/using-mobile-to-improve-farming-skills/</p>	<p>The SMS service was introduced in Thailand in 2008 and as of June 2012, there are more than 300,000 active subscribers. In 2012, the service was extended with a "Farmer Information" application available on iPhone and iPad.</p>	SMS for all device types; mobile application for smartphone (iOS only)
	8villages	<p>Business social network for smallholder farmers to exchange and receive inputs or harvest offers from local stakeholders.</p> <p>8villages provides user-generated content that is contextually relevant to local farmers as they join their local crop communities via SMS, IVR or mobile web, and exchange information among themselves, create groups and receive daily information.</p> <p>For more information, visit: http://www.8villages.com/ and http://www.lisa.co.id/</p>	<p>8villages began in 2012 in Indonesia. In 2014, 8villages plans to expand into the Philippines and Myanmar.</p> <p>Mercy Corps' Agri-Fin Mobile program and 8villages launched an information and knowledge subscription service for smallholder farmers in Indonesia called LISA (Farmers Information Service) that allows farmers to interact with other corresponding community groups based on their crops and location. Inside that group, users receive daily SMS tips from 8villages and other local user-generated content. Users are also able to ask questions and receive answers either by other farmers or by agricultural experts from 8villages' partners.</p>	SMS for all device types; web application for feature phone and/or smartphone with data plan

M4D INVENTORY

Sector	Name	Description	How and Where it's Being Used	Technical Details
	A-Eye	<p>Provides forest maps, tourist information, and history while enabling anonymous monitoring and reporting of forest incidents. A-Eye is a mobile application designed to support eco-tourism and encourage people to help protect the environment by anonymous reporting of problems. A-Eye is used for navigation, knowledge, and real-time reporting and notifications of problems.</p> <p>For more information, visit: http://www.youtube.com/watch?v=4FFn-n0lI Fw</p>	<p>King Mongkut's University of Technology Thonburi (KMUTT) developed and deployed the app in Doi Suthep in Thailand in 2012. As of 2013, there are a total of 1726 existing users. In 2014, KMUTT plans to deploy A-Eye in the Amphawa district in Thailand as a tool to support ecotourism of its waterways.</p>	Mobile application for smartphone (iOS and Windows only)
	Amputee Screening via Cellphone Networking (ASCENT)	<p>Enables doctors to evaluate cases and give advice on the use of prosthesis for amputees remotely. ASCENT is an application that allows health workers to enter patient information into a cell phone and send the data to a centralized web-based database via multimedia message, along with photos taken with the cell phone camera. This enables physicians to give real-time evaluation and advice on prosthesis use via smartphones, even in remote areas. Health professionals can also receive data, including photos of the patient, via general packet radio service/third-generation (GPRS/3G).</p> <p>For more information, visit: http://healthmarketinnovations.org/program/amputee-screening-cellphone-networking-ascent</p>	<p>Launched in 2009 in the Philippines, ASCENT has had positive results: amputees who pass the medical screening receive their artificial limbs one month later and average screening time decreased from 30 minutes for manual to 2 minutes per patient. The data is sent via Smart mobile broadband to a website that can be accessed by volunteer physicians from Physicians for Peace (PfP-Philippines) to plan medical missions together with University of the Philippines-Philippine General Hospital (UP-PGH).</p>	Mobile application for smartphone on the Smart network
	Avaaj Otalo	<p>Provides relevant and timely agricultural information to farmers over the phone. Using IVR, farmers dial a phone number to navigate through simple audio prompts in order to record, browse, and respond to agricultural questions and answers. In addition to the Q&A forum, the service includes an announcements board and a radio archive to listen to past episodes.</p> <p>For more information, visit: http://hci.stanford.edu/research/voice4all/ and http://awaaz.de/how-it-works/</p>	<p>This service was designed in 2008 in India as a collaboration between UC Berkeley School of Information, Stanford HCI Group, IBM India Research Laboratory and Development Support Center (DSC), an NGO in Gujarat, India. Avaaj Otalo led to the founding of Awaaz.De, a company in India that provides a hosted solution for deploying voice-based social media. Development Support Centre (DSC) in collaboration with Awaaz.De now provide the Avaaj Otalo service.</p>	IVR for all device types

M4D INVENTORY

Sector	Name	Description	How and Where it's Being Used	Technical Details
	Bee Connex	<p>A virtual bee community application that safely stores farm information, and provides up-to-date summary and analysis, real-time message exchanging, alert calls, and daily announcements. Bee Connex connects beekeepers, technicians and scientists online. Members can monitor and access the latest information, exchange news, and make immediate inquiries or request help from their own community and globally. It also provides beekeepers with real-time, digitally-stored bookkeeping that can monitor and optimize beekeeping activities.</p> <p>For more information, visit: http://www.youtube.com/watch?v=iBWt20qtxeU&feature=youtube</p>	<p>Bee Connex is currently under development by King Mongkut's University of Technology Thonburi (KMUTT) in Thailand.</p>	Mobile application for smartphone
	Cellscope	<p>Low-cost, clinical-quality microscopes that perform mobile-based diagnoses and send images of patient samples for remote evaluation by specialists. Cellscope is a mobile phone attachment that turns the phone into a mobile microscope, effectively combining cell phones with standard optical equipment.</p> <p>For more information, visit: http://cellscope.berkeley.edu/</p>	<p>First developed in 2007, UC Berkeley conducted a one-year study in 2013 in Vietnam to evaluate diagnosis efficacy of tuberculosis, as well as the broader context of technology readiness of clinics, at 15 point-of-care health clinics in Hanoi Province.</p>	Mobile application for smartphone (Android 2.1 and up)
	ChitChat Doctor	<p>Platform for live chat between patients and general practitioners. Available in Singapore, Malaysia, Philippines, Hong Kong, and Taiwan between 9 am to 11 pm GMT +8 in English, ChitChat Doctor is an online platform for live chat with doctors on topics related to general health, pregnancy, skin diseases, pediatrics, OBGYN, diabetes, sexual health, and other health concerns.</p> <p>For more information, visit: https://play.google.com/store/apps/details?id=com.waki.chitchatdoctor</p>	<p>Launched in January 2014 by Waki, ChitChat Doctor is available in Singapore, Malaysia, the Philippines, and China.</p>	Mobile application for smartphone (Android 2.1 and up)

M4D INVENTORY

Sector	Name	Description	How and Where it's Being Used	Technical Details
	CommCare	<p>Mobile data collection tool. CommCare allows users to create surveys, collect data, and manage cases. CommCare supports simple surveys to complex counseling forms, allows mobile workers to track and access client data over time, and supports audio, image, and video playback.</p> <p>For more information, visit: http://www.commcarehq.org/home/</p>	<p>Launched by Dimagi in 2008, CommCare is used in over 30 countries. CommCare was piloted in Thailand in 2012 with 10 community health workers (CHWs) in partnership with Sungaikolok Hospital to help CHWs follow up with pregnant women.</p> <p>In India, CommCare is used by Accredited Social Health Activists (ASHAs) for pregnancy checklists, training and home visit support, maternal and newborn health, and child malnutrition identification and counseling, with referral pathways.</p> <p>In Indonesia, CommCare is used by midwives in Mercy Corps' USAID-funded Hati Kami project. See USAID Project Table for more detail.</p>	Mobile and web application for feature phone and/or smartphone with data plan (Android only)
	DoctorMe	<p>Teaches users how to behave in the event of illness emergency. DoctorMe teaches users about the main symptoms of different illnesses and includes a database of over 1,000 searchable hospitals to find nearby hospitals with directions in case of emergency.</p> <p>For more information, visit: http://www.doctorme.in.th/ and http://www.changefusion.eu/projects/asia/845</p>	<p>Launched in 2011 in Thailand, DoctorMe is implemented by ChangeFusion. DoctorMe 3.0 was released in 2013 with new functions, including connecting to the National Institute for Emergency Medicine (NIEM), sending an ambulance instantly when users freely call 1669, and sending push notifications about health alerts.</p>	Mobile application for smartphone
	Dokter Gratis (or Doctor Gratis)	<p>A health chat app to chat instantly with a certified doctor in Indonesia. Dokter Gratis is a free live chat with certified doctors online about general health, diabetes, women's health, baby and child care, pregnancy, and men's health. It is available in English and Indonesian from Monday – Friday from 8 am-10 pm, and Saturday-Sunday from 6 pm-10 pm in GMT +7.</p> <p>For more information, visit https://play.google.com/store/apps/details?id=com.waki.doktergratis and http://waki.mobi/product.html</p>	<p>Dokter Gratis was released by Waki in Indonesia in February 2014.</p>	Mobile application for smartphone (Android 2.2 and up)

M4D INVENTORY

Sector	Name	Description	How and Where it's Being Used	Technical Details
	Fansipan Challenge	<p>Mobile game to reach people who inject drugs (PWID) population. Named after the highest mountain in Vietnam, Fansipan mobilizes unpaid peer volunteers to recruit PWID and partners to be part of expedition teams that receive points for each person reached, each person who tests for HIV, and each HIV positive person registered in HIV care, with the goal of accumulating 3143 points, the height of Fansipan mountain, over a discrete programming period. Client and service uptake data is collected via mobile telephones, shared by SMS, and stored within the Fansipan Information Communication Technology (ICT) system, housed in the PAC server. HIV testing uptake and diagnosis is verified through linkages to the National HIV testing database.</p> <p>For more information, visit: http://www.fhi360.org/projects/sustainable-management-hivaids-response-and-transition-technical-assistance-smart-ta</p>	<p>Launched in 2013 under the USAID-funded SMART TA program in Vietnam, FHI 360 is trialing the Fansipan Challenge in Ho Chi Minh City. Over 22 weeks, twenty-nine peer volunteers and 559 PWID/partners (24% female) took part of the initiative; 29 peer leaders reached 559 peers and partners, 55% of whom reported high risk behaviors, or had partners with high risk behaviors; of the individuals reached, 67% tested for HIV after a single face-to-face contact, compared to just 18% in conventional outreach approaches; the HIV positivity rate averaged 15%; and all HIV positive individuals were linked to HIV care and treatment services. See USAID Project Table for more detail.</p>	Mobile application for SMS for all device types
	Fasal	<p>Empowers rural farmers by providing current price information on agricultural products on demand through SMS text messages. The SMS software provides agricultural price information to farmers to help them determine price fairness and effectively negotiate, and where and when to sell products.</p> <p>For more information, visit: http://fasal.intuit.com/</p>	<p>Developed by Intuit in 2009 for farmers in India, as of 2014 the service is used by 1,335,894 farmers in Gujarat, 506,913 farmers in Andhra Pradesh, and 86,554 farmers in Karnataka, reaching a total of 1,929,361 farmers.</p>	SMS for all device types

M4D INVENTORY

Sector	Name	Description	How and Where it's Being Used	Technical Details
 	GeoChat	<p>A flexible open source group communications technology that allows team members to maintain shared geospatial awareness of who is doing what where. GeoChat is designed to enable group communications by allowing users to link the field, headquarters, and the local community in a real-time, interactive conversation visualized on the surface of a map based on SMS, email, and/or a web browser.</p> <p>For more information, visit: http://instedd.org/technologies/geochat/</p>	<p>Created by Innovative Support to Emergencies, Diseases, and Disasters (InSTEDD) in 2009, GeoChat can be used in any country globally. Examples of how it is being used in SE Asia include:</p> <p>In Cambodia, the Ministry of Health uses GeoChat to simplify report diseases, send staff alerts and rapidly escalate response to potential outbreaks.</p> <p>In Thailand, the Mukdahan province uses GeoChat to connect over 600 community health workers with each other and their managers to accelerate outbreak response and spread useful information to villages.</p> <p>In Thailand, more than 900 hospital facilities exchange information and get alerts to detect influenza outbreaks in real time from facilities across the country.</p> <p>In Laos, PSI uses GeoChat to promote HIV testing, STI screening & treatment, and TB case detection.</p>	SMS for all device types; web application and email for feature phone and/or smartphone with data plan
 	GeoDIVA (Geographic Data Input and Validation for All)	<p>A simple, robust data gathering tool for users with limited financial resources and/or technical knowledge. GeoDIVA is easy to use, available in local language, tailored for the specific problem the user is trying to address, useful without Internet, and designed to save data in a simple format compatible with many common desktop applications. The GeoDIVA app identifies locations or paths, enters information into a form customized for the user's problem, shows the user's current location on a map of the area of interest, and tracks the user's position as she moves.</p> <p>For more information, visit: http://www.kgeo.org/ (under development)</p>	Currently under development, the King Mongkut's University of Technology Thonburi (KMUTT) Geospatial Engineering and Innovation Center in Thailand anticipates releasing GeoDIVA in 2014. An example of how GeoDIVA may be implemented is in the health sector: the form for a disease incidence map could include patient's age, patient's gender, patient's marital status, a list of possible symptoms, and symptom onset date.	Mobile application for smartphone

M4D INVENTORY

Sector	Name	Description	How and Where it's Being Used	Technical Details
	Hapi Fis Hapi Pipol	<p>Enables the government to capture, consolidate, and analyze data on inshore fisheries to inform management decisions. Hapi Fis Hapi Pipol (Happy Fish Happy People) is a mobile platform for collecting, consolidating, and analyzing data on inshore fisheries in the Solomon Islands to inform management decisions.</p> <p>For more information, visit: http://pointnineseven.com/projects/full_story/hapi_fis_hapi_pipol</p>	<p>Hapi Fis Hapi Pipol was developed by the Solomon Islands Ministry of Fisheries and Marine Resources (MFMR) through its Makem [Making] Strong Solomon Islands Fisheries (MSSF) program. The development and initial testing of the system was fully supported by USAID's Coral Triangle Support Partnership (CTSP) through World Wildlife Fund and MFMR. The project began in 2013 to provide information to the Solomon Islands Ministry of Fisheries and Marine Resources to improve decision-making capacity, establish a baseline of information on near shore and coral reef fisheries for future comparison and identify where, if any, management measures were needed to maintain and prolong sustainable marine resource in the country. See USAID Project Table for more detail.</p>	Mobile application for smartphone (Android only)
    	IVR Platform	<p>Use of IVR to reach out to target populations with information-based services in Cambodia. The IVR platform supports CSOs' programs and is connected to all MNOs. The difficulty of reaching the 80% of Cambodians who live in rural areas, and the high illiteracy among adults make voice the only possible vehicle to reach them. Both a platform and a support system that allows CSOs' to reach their beneficiaries with information whenever they request or need it. SPICE's IVR platform was established in partnership with an ISP, and helped the ISP to develop services on the platform for their own customers, ensuring sustainability.</p> <p>For more information, visit: http://www.open.org.kh/en/spice</p>	<p>Developed under the USAID-funded SPICE program in Cambodia in 2012, Open Institute works with CSOs working in human rights, trafficking and health sectors to help them identify and develop applications of IVR to improve the impact of their programs. During the first year of operation, 12 IVR services were established or about to be deployed; examples include:</p> <ul style="list-style-type: none"> • an Election Hotline with information on how, when and where to vote received over 600,000 calls (11% of the effective voters) • an IVR service that calls new mothers to deliver crucial health information about their babies during the first month • an emergency response system calls farmers when there is an emergency in their area. <p>During the next year the program expects to launch 15 to 20 more services of partners or entrepreneurs. See USAID Project Table for more detail.</p>	IVR for all device types

M4D INVENTORY

Sector	Name	Description	How and Where it's Being Used	Technical Details
	Len-Din	<p>Connects to a sensor device to analyze soil quality.</p> <p>Len-Din allows farmers to use their smartphone and an external measuring device to track soil moisture quality to determine optimal planting periods and fertilizer levels for their crops.</p> <p>For more information, visit: http://www.usaid.gov/asia-regional/press-releases/apr-24-2014-imagine-cup-thailand</p>	Developed in Thailand by university students, Len-Din was a runner up in the 2014 Microsoft Imagine Cup Thailand.	Mobile application for smartphone
	LifeLines-Agriculture	<p>Provides advice and solutions for farmers in India related to agriculture and allied activities.</p> <p>The LifeLines-Agriculture service provides information on topics from production to consumption, including farm inputs, funding schemes, government schemes on loans and subsidies, banking and insurance, market prices, region-specific market information, agricultural news, and organic farming. Users dial the LifeLines number from a landline or mobile phone to reach an IVR system where they are assisted in registering their query, which is stored as a voice clip in the database. A knowledge worker reviews the query to determine whether the answer is available in the FAQ database. Available answers are attached to each query in the form of a voice clip that is played back to the user when he or she calls back for the answer. If an answer is not available, the knowledge worker sends the voice query on to an expert for an answer, which is then recorded and sent to the user. Users can also retrieve the answers in text format from village information centers and can send photographs with their voice queries to get an expert opinion.</p> <p>For more information, visit: http://lifelines-india.net/</p>	Launched in 2006 in India , LifeLines-Agriculture is implemented on the ground in partnership with Datamation's network of field volunteers who are the point of contact for the service and who help rural users register their queries using a mobile phone. Since 2006, it has answers to 460,000 frequently asked questions, reaches 1000 villages and over 150,000 households in India, and receives 350 queries per day from farmers.	IVR for all device types

M4D INVENTORY

Sector	Name	Description	How and Where it's Being Used	Technical Details
	Liga Inan (Mobile Moms)	<p>Connecting pregnant women and their midwives. Liga Inan enables midwives to register expectant mothers, track their progress, know when they go into labor, and make arrangements for attending the delivery through a mobile phone. Liga Inan sends automated health promotional information via SMS to all registered pregnant mothers throughout their pregnancy to help them make better decisions about their pregnancy and link them with regular prenatal care.</p> <p>For more information, visit: http://www.ligainan.org/</p>	<p>Launched in 2011 in Timor Leste, USAID-funded Liga Inan is implemented by Health Alliance International. Once registered, the Liga Inan SMS system sends pregnant women twice weekly text messages with important health information and reminders to attend regular prenatal care; enables midwives to broadcast useful health messages from their mobile phones to women and communities in Timor-Leste; and allows pregnant women to contact their midwife with questions or concerns. Six months into the program, 1234 women enrolled, 471 women received messages, 615 births took place, 109 women requested help from their midwife, and there was an increase in births with midwives in first of four program subdistricts. See USAID Project Table for more detail.</p>	SMS for all device types
	Little Seed	<p>Tree planting game to spread awareness of global warming. Little Seed is a strategic game that involves planting a seed until it grows into a tree. If the user completes all the levels, a real, physical tree will be planted.</p>	<p>Little Seed is currently under development by King Mongkut's University of Technology Thonburi (KMUTT) in Thailand.</p>	Mobile and web application for smartphone
	Mă HS	<p>Links traders directly to the Vietnam customs website and places HS code data at the fingertips of importers and exporters. Mă HS is a mobile app that provides Harmonized System (HS) codes. HS codes are internationally standardized classification codes which cover 5,300 articles or commodities organized under headings and subheadings, arranged in 99 chapters, and grouped in 21 sections. HS codes inform tariff rates; choosing the correct one is required by international law, and impact competitive pricing. Mă HS solves problems of finding and navigating the HS classification, and decreases the misclassification of HS codes.</p> <p>For more information, visit: https://itunes.apple.com/us/app/ma-hs-viet-nam/id694763980?mt=8</p>	<p>Launched in 2010, USAID's Support for Trade Acceleration Project (STAR Plus) supports Vietnam economic integration. It developed the Mă HS app in October 2013 to make it easier for traders to do business in Vietnam. The project works to implement trade agreements, modernize customs, facilitate agricultural trade, and increase legal transparency. See USAID Project Table for more detail.</p>	Mobile application for smartphone (iOS only)

M4D INVENTORY

Sector	Name	Description	How and Where it's Being Used	Technical Details
	Magpi	<p>Data collection system. Magpi (formerly EpiSurveyor) is the most widely used mobile data collection system in the international development sector, with over 25,000 users in more than 170 countries worldwide.</p> <p>For more information, visit: http://www.datadyne.org/magpi-mobile/</p>	<p>Created by DataDyne in 2008, there are numerous projects using Magpi for data collection globally.</p> <p>In Myanmar, Pact's WORTH/Swan-Yi project began using Magpi in 2012. As of December 2013, Pact used Magpi to survey over 2,000 women and 1,000 savings groups across 3 projects operating in 12 townships. All of Pact Myanmar is now using Magpi for data collection.</p>	Mobile application for all device types
	Mobile4D	<p>A bi-directional and crowd sourced disaster information, alerting, and reporting system. Students of Computer Sciences at the University of Bremen and the United Nations University in Macao have developed a vigilance system that gives warnings of natural disasters. Mobile4D is a program for sustainable development aimed at improving communications between the regional civil authorities and the population living in villages along the Mekong. Based on a smartphone system, with a server and self-developed app, data concerning all types of natural disasters like floods, animal and plant diseases, and outbreaks of malaria can be monitored, evaluated, and subsequently communicated on mobile devices.</p> <p>For more information, visit: http://mobile4d.capacitylab.org/</p>	<p>Initially developed in October 2012, Mobile4D was installed and tested in April 2013 in Luang Prabang province in Laos. Initial field tests were successful, and the Lao Ministry for Agriculture and Forestry (MAF) has agreed to further collaborate.</p>	Mobile application for smartphone (Android only)

M4D INVENTORY

Sector	Name	Description	How and Where it's Being Used	Technical Details
	Nationwide Operational Assessment of Hazards (NOAH)	<p>Up-to-date information on weather in the Philippines.</p> <p>Project NOAH's mission is to undertake disaster science research and development, advance the use of cutting edge technologies, and recommend innovative information services in government's disaster prevention and mitigation efforts. The app opens to a detailed Philippine map and updates users on rain forecast, weather outlook, and weather station summary features from data from the Department of Science and Technology (DOST) and its participating agencies.</p> <p>For more information, visit: http://noah.dost.gov.ph/</p>	<p>This mobile app was developed in 2012 in the Philippines and has more than 30,000 active users as of July 2013.</p>	Mobile application for smartphone (Android OS 2.2 and up)
	Nokia Life Tools	<p>Nokia Life Tools is a pre-installed application on select Nokia devices that offers a wide range of services in Agriculture, Education, Entertainment and Healthcare. Depending on the service, users either subscribe to it, or download content when needed. If users subscribe to a service, the service sends the user text messages to his/her Nokia Life Tools inbox.</p> <p>Provides crop tips, market prices, weather info, and news.</p> <p>Nokia Life Agriculture provides agriculture information in 18 local languages on market prices (up to 3 crops in 1-3 nearby markets per subscription), daily weather forecasts, and news and advice (including agronomy advice for select crops, best practices, location-based agriculture news, hyper-localized advice, and other information). Market prices are collected from over 9,000 local markets on a daily basis for over 400 crops and commodities, and crop advice is managed by a team of agricultural experts.</p> <p>Provides health tips and advice related to motherhood, disease, and men's health.</p> <p>Nokia Life Health provides health information and advice on pregnancy, childcare, motherhood, health and fitness, diseases, men's health, and women's health in all countries. There is also a range of health topics like respiratory, heart, diabetes, hepatitis, and digestive health which are specific to some countries.</p> <p>For more information, visit: http://www.nokia.com/in-en/support/faq?action=singleTopic&topic=FA132357</p>	<p>Launched in 2009, as of November 2012, more than 85 million people have used Nokia Life (across all of its services) in Indonesia, India, China, Nigeria.</p>	Mobile application for select Nokia devices

M4D INVENTORY

Sector	Name	Description	How and Where it's Being Used	Technical Details
	Nutrient Manager for Rice (NMRice)	<p>Provides farmers in Indonesia and the Philippines with fertilizer advice matching their particular farming conditions. NMRice is a computer- and mobile phone-based application; NMRiceMobile is targeted for farmers and extension workers without internet access. When internet access is available, Nutrient Manager for Rice web-based application is recommended. With NMRiceMobile, a farmer or extension worker in the Philippines or Indonesia calls a toll-free number to access the Nutrient Manager for Rice. A voice prompt instructs the caller to answer questions about his/her rice field by pressing the appropriate number on the phone's keypad. After all the questions are answered, NMRiceMobile sends a text message with a field-specific nutrient management guideline for rice.</p> <p>For more information, visit: https://sites.google.com/a/irri.org/nutrient-manager-2/</p>	Developed by the International Rice Research Institute (IRRI) in 2012, Indonesia and the Philippines have mobile and website applications, while there are website only applications in Bangladesh, China, India, and West Africa.	IVR and SMS for all device types; mobile application for smartphone (Android only)
	Pinoy Farmers' Text Center	<p>A helpdesk and customer support service that links experts, extensionists, and farmers by answering rice-related queries through SMS. Pinoy Farmers' Text Center (PFTC) provides regular updates on rice prices, agriculture related news, and agricultural trends to farmers. Text Centers are located in Batac, Isabela, Nueva Ecija, Los Baños, Bicol, Negros Occidental, Agusan del Norte, and Cotabato.</p> <p>For more information, visit: http://www.philrice.gov.ph/?page=resources&page2=extension</p>	Originally launched in the Philippines in 2004 as the Farmers' Text Center (FTC), the Pinoy Farmers' Text Center (PFTC) is implemented by PhilRice and receives an average of 100 texts daily. PFTC is a component of the Open Academy for Philippine Agriculture which explores text messaging in Philippine agriculture. Since the OpAPA started operations, it has registered 30,000 rice farmers through PFTC.	SMS for all device types
	Public Eye	<p>Allows citizens to report experiences with government services and to learn about the service quality at different agencies, as well as identifies the government/non-government agencies that provide services to the general public. Public Eye allows the general public to improve service quality at government agencies by providing reviews and feedback. It aims to increase transparency and accountability.</p> <p>For more information, visit: http://www2.kmutt.ac.th/en_index.aspx</p>	Public Eye is currently under development by King Mongkut's University of Technology Thonburi (KMUTT) in Thailand .	Mobile application for smartphone

M4D INVENTORY

Sector	Name	Description	How and Where it's Being Used	Technical Details
	QStream	<p>A mobile platform that engages in fun, scenario-based challenges to improve knowledge. QStream delivers scenario-based challenges to users' mobile device, produces sophisticated, real-time analytics, and provides insights into knowledge gaps. Users respond to questions on mobile devices and learn from the resulting answer page. There is a built-in game, scoring, leader boards and integrated blogs, to create positive competition and ensure strong user engagement. Daily user notifications include email and push notifications to mobile apps and RSS feed readers. Full Unicode support allows QStream to be deployed in any language. This application is based on the principle that knowledge is best retained when it is intermittently reinforced and tested over time.</p> <p>For more information, visit: http://qstream.com/</p>	<p>Developed at Harvard, QStream is used in more than 100 countries across sectors. In SE Asia, the USAID-funded CAP-TB project is using QStream in Myanmar, China, and Thailand:</p> <ul style="list-style-type: none"> To provide technical training of MDR-TB concepts and guidelines. The QStream online training hub enables FHI 360 and other CAP-TB partners to develop courses that consist of simple multiple choice or fill-in-the-blank questions accompanied by a brief explanation for the correct/incorrect answers. The questions are sent to the mobile phones of participants enrolled in the course, and their response is relayed back to the training hub to track performance. To complement a monthly MDR-TB Conference, during which key concepts for MDR-TB and TB/HIV are taught. Each monthly session has approximately 5 key concepts, which are highlighted at the end of each teaching session. These key concepts are then sent out to all of the participants as simple quiz questions, spaced about twice weekly using the QStream algorithm, to reinforce learning over time. See USAID Project Table for more detail. 	Mobile application for smartphone
	Rainmaker	<p>Assists small plot farmers to deploy drip irrigation through a network of independent retailers. Rainmaker allows local entrepreneurs to easily and quickly design and sell drip irrigation systems by producing a cost estimate, parts list, and drip irrigation system design blueprint from field parameter inputs. The blueprint enables dealers and farmers to visualize what the system will look like in their fields in real-time during the sales process.</p> <p>For more information, visit: http://www.myrainindia.com</p>	<p>Having proof of concept in India since deployment in 2010, MyRain is exploring expansion throughout the region in 2014.</p>	Mobile application for smartphone (Android only)

M4D INVENTORY

Sector	Name	Description	How and Where it's Being Used	Technical Details
	Saraphi Health	<p>Survey, collect and digitize health data. The Saraphi Health app transfers raw data collected from the sources to the central system located at Saraphi Hospital via public cellular network. The data collector enters information into the system when they visit people in Saraphi district, and because the information they collect is embedded in the location of the house, it can be plotted on a map.</p> <p>For more information, visit: http://www.prcmu.cmu.ac.th/hotnews_detail_eng.php?perin_id=525 and https://play.google.com/store/apps/details?id=com.saraphihealth.apk&hl=th</p>	Saraphi Health is part of a three-year project to create a digital archive for public healthcare policy development and management in order to improve public health services and address urgent health situations efficiently in Thailand .	Mobile application for smartphone
	Surveillance in Post Extreme Emergencies and Disasters (SPEED)	<p>Early warning disease surveillance system for post-disaster situations. SPEED is an early warning surveillance tool that monitors health conditions and trends after an emergency or disaster using SMS and web-based applications. It detects early potential disease outbreaks, monitors emerging health conditions, and provides timely information on health trends and situations in the affected communities, paying special attention to non-communicable diseases which may have public health significance.</p> <p>For more information, visit: http://healthmarketinnovations.org/program/surveillance-post-extreme-emergencies-and-disasters-speed</p>	Launched in 2010 in the Philippines by the World Health Organization and the Philippine Department of Health, an external evaluation conducted in 2012 found the SPEED program has been successfully developed, tested, refined, and deployed nationwide.	SMS for all device types; web application for feature phone and/or smartphone with data plan

M4D INVENTORY

Sector	Name	Description	How and Where it's Being Used	Technical Details
    	Verboice	<p>A free and open source tool to create and run projects that interact via voice. Verboice allows users to listen and record messages in their own language and dialect or answer questions with a phone keypad.</p> <p>For more information, visit: http://verboice.instedd.org/ and http://instedd.org/technologies/verboice/</p>	<p>Launched in 2012, Verboice can be used globally in any sector and for any community, no matter their level of literacy or technological sophistication.</p> <p>In Cambodia, Verboice is used by:</p> <ul style="list-style-type: none"> The International Labour Organization (ILO) and Better Factories Cambodia to connect directly with factory workers and educate them about their rights. Better Factories Cambodia set up a quiz in which factory workers can answer questions about salary, work safety, and personal health. Marie Stopes International Cambodia as part of the post abortion follow-up process and to educate women about safer contraception options. The Open Institute and Women's Media Center to provide an information telephone hotline for on demand health information. 	IVR for all device types
	We Heart	<p>Raises awareness and combats stigma regarding HIV/AIDS. The We Heart app encourages early testing and provides services to HIV+ individuals such as reminders to take drugs on time and an online social care network.</p> <p>For more information, visit: http://weheartcampaign.com/</p>	<p>Launched in 2014 in Thailand, the We Heart app online campaign was endorsed by several Thai celebrities and prompted over 600 people to join in the first week. We Heart won the 2014 Microsoft Imagine Cup Thailand.</p>	Mobile application for smartphone

M4D INVENTORY

Sector	Name	Description	How and Where it's Being Used	Technical Details
	Wildlife Guardian	<p>Market monitoring of illegal trade of endangered wild animals. Wildlife Guardian improves the accuracy and efficiency of law enforcement actions against illegal trading of endangered species by enabling users to quickly submit intelligence reports to the police authorities or NGOs of their choice. There is a 3-step identification process once a user determines an animal may be endangered: 1. photograph and upload, 2. transfer info to authoritative expert, and 3. receive feedback within 2 days for normal cases, within 2 hours for urgent cases. Geographic location is used to provide quick reference to the closest law enforcement and animal welfare organizations, to facilitate interventions through the submission of detailed reports, and to collect anonymous statistics for assessing the size and distribution of reported illegal wildlife trade. The database back-end provides an easy-to-use interface that allows for a collaborative management and updating of 400 and counting detailed species records.</p> <p>For more information, visit: http://goo.gl/GhULy and http://china.wcs.org/Initiatives/WildlifeTrade.aspx</p>	The Wildlife Conservation Society in China released Phase I (iOS system only) in March 2013; Phase II (Android and iOS systems) is currently under development; and Phase III is anticipated to end by 2015.	Mobile application for smartphone (iOS 5.1 and up)
	Wildlife Watch	<p>Awareness raising and protection of the wildlife throughout in Cambodia. Wildlife Watch informs users of heavily trafficked species, pinpoints trade hotspots, and teaches how to identify products and foods made from threatened animal or plant species. The Incident Report feature notifies Wildlife Alliance when a user reports illegal trade. The app provides detailed information on Southeast Asian animal and plant species courtesy of TRAFFIC, the wildlife trade monitoring network.</p> <p>For more information, visit: http://www.wildlifealliance.org/page/view/92/mobile-apps and https://itunes.apple.com/us/app/wildlife-watch/id518454388?mt=8</p>	Released in May 2012, Wildlife Watch was created out of collaboration between Wildlife Alliance, TRAFFIC, and Jeff Corwin Connect in Cambodia .	Mobile application for smartphone (iOS only)

M4D INVENTORY

Sector	Name	Description	How and Where it's Being Used	Technical Details
	Wildscan	<p>Species identification and response application.</p> <p>Wildscan is being developed to help front-line police, customs, wildlife/conversation officers and the general public correctly identify, report and handle marine and terrestrial animals caught in illegal wildlife trade. Features include a species library, first responder advice, a comprehensive contact registry, and incident report function.</p> <p>For more information, visit: http://www.usaid.gov/asia-regional/fact-sheets/lmi-asias-regional-response-endangered-species-trafficking-arrest</p>	<p>Implemented by Freeland, the USAID-funded ARREST program (Asia's Regional Response to Endangered Species Trafficking) has completed the research phase and anticipates releasing the mobile application in 2014. ARREST focuses on awareness raising, building law enforcement capacity, and strengthening networks to fight against wildlife trafficking in ASEAN and China. See USAID Project Table for more detail.</p>	Mobile application for smartphone (Android only)

USAID PROJECTS IN SOUTHEAST ASIA USING MOBILES

NOTE: This is not an exhaustive list of USAID projects currently using mobile applications in Southeast Asia. This list was generated by desk research conducted in Washington DC and through email correspondence with USAID Mission staff in Southeast Asia and a few other countries elsewhere in Asia and the Pacific in 2013-2014.

Country	Project Name and Description	How They Are Using Mobiles
Cambodia	<p>Development Innovations, formerly named Social Innovation Lab Kampuchea (SILK), is implemented by DAI and enables Cambodian-led technology products to meet CSO demands and trigger transformative changes in the ways CSO conduct programs. At the same time, investing in the domestic information and communications technology (ICT) sector will enable it to become an engine of growth in the economy. This emerging ecosystem of technology and civil society will result in CSOs' increased ability to access technology tools and increase their proficiencies in order to apply knowledge of mobile, Internet, and social media tools to amplify their programmatic results and support civic change.</p> <p>For more information, visit: http://dai.com/our-work/projects/cambodia%E2%80%94development-innovations</p>	<p>As this project is still in start-up, sample mobile-related activities include:</p> <ul style="list-style-type: none"> Establish a Social Innovation Lab as a gathering place for the community to learn, meet, hold learning events, work collaboratively, and access resources. Build capacity through group training curriculum and one-on-one guidance on human-centered design, ICT4D proposal writing, social media, and developing information security. Provide financial and technical assistance through a grant fund to support the development of content, technology, and implementation of ICT-enabled projects that support civil society objectives. Develop a sustainable market for social innovation in Cambodia by educating civil society on the potential of technology to improve scale and impact of programming, and developing the technical skills of local technology and service providers to support cutting-edge programming.
Cambodia	<p>TB CARE I and TB CARE II, implemented by multiple partners, are mechanisms to build and expand upon previous successful TB control programs, particularly the Tuberculosis Control Assistance Program (TB CAP). TB CARE is one of the main global mechanisms for implementing USAID's TB strategy as well as contributing to TB/HIV activities under the US President's Emergency Plan for AIDS Relief (PEPFAR). TB CARE collaborates with other national and international initiatives in providing global leadership and support to National TB control efforts.</p> <p>For more information, visit: http://www.tbcarei.org/</p>	<p>One of the implementing partners, FHI 360, developed a TB SMS system under TB CARE I to enable laboratory technicians to transmit TB test results immediately instead of waiting for health center staff located in more peripheral locations to come and collect it on a weekly basis.</p>

USAID PROJECTS IN SE ASIA USING MOBILES

Country	Project Name and Description	How They Are Using Mobiles
Cambodia	<p>Structuring Partnerships for an Innovative Communications Environment (SPICE), implemented by Open Institute, aims to build partnerships between technology-oriented civil society organizations (CSOs) and private sector entities to utilize mature technologies to promote and deliver a greater diversity of information to the public, improve communications in Khmer via mobile devices, and increase the capacity of CSOs to use social media for development purposes. SPICE responds to the need to disseminate information and ensure connectivity among Cambodians in Khmer; disseminate information instantaneously, and improve CSOs' capacity to respond to situations quickly and safely in order to improve effectiveness. By engaging the private sector to extend services through MNOs, SPICE promotes the concept of for-profit social innovation for democratic development.</p> <p>For more information, visit: http://www.open.org.kh/spice#.U34oEPIdVt0</p>	<p>Examples of how SPICE uses mobile technologies in programming efforts include:</p> <ul style="list-style-type: none"> • Creating partnerships with Internet Service Providers (ISPs) and Mobile Network Operators (MNOs) that give innovators easy access to platforms and business models that can be used to start creative services based either on voice or SMS messages as the means of communication. • Creating a Mobile Radio, a voice service in which users can call and select the type of information that they want to access by dialing numbers in their telephone's keyboard. • Creating an SMS distribution platform that allows innovators to develop services that use SMS as the means of communication or means of payment for services. • Developing a number of applications for Android phones, including tools to better use languages spoken in Cambodia, such as Khmer and Cham dictionaries and other Khmer language tools (spell-checkers, predictive text).
Cambodia, Myanmar, and Thailand	<p>CAP-Malaria contributes to a reduction in the incidence and mortality related to malaria in the Greater Mekong Sub-region by containing the spread of multi-drug resistant <i>P. falciparum</i> malaria. CAP-Malaria implements innovative and evidence-based interventions to reach vulnerable populations and communities while strengthening the health system for effective and sustainable malaria programming.</p> <p>For more information, visit: http://capmalaria.org/</p>	<p>In Cambodia, CAP-M has a radio program with interactive voice response (IVR) that listeners can call to access additional information and to leave questions or comments for the call-in program. The radio call-in program broadcast from three major cities encourages listeners to answer malaria questions and quiz to get free phone card. During FY 2013, 940 SMS messages were received and 80% of the answers were correct.</p>
Cambodia, Laos, Thailand, and Vietnam	<p>Asia's Regional Response to Endangered Species Trafficking (ARREST), implemented by Freeland Foundation, will fight trafficking in illegal wildlife in Asia in by reducing consumer demand, strengthening law enforcement, and strengthening regional cooperation and anti-trafficking networks.</p> <p>For more information, visit: http://www.usaid.gov/asia-regional/fact-sheets/lmi-asias-regional-response-endangered-species-trafficking-arrest</p>	<p>ARREST has developed the Wildscan app to help front-line police, customs, wildlife/conservation officers, and the general public correctly identify, report, and handle marine and terrestrial animals caught in illegal wildlife trade. Features include a species library, first responder advice, a comprehensive contact registry, and incident report function. See M4D Inventory for more information.</p>

USAID PROJECTS IN SE ASIA USING MOBILES

Country	Project Name and Description	How They Are Using Mobiles
China, Myanmar, and Thailand	<p>Control and Prevention of Tuberculosis (CAP-TB), implemented by FHI 360, aims to reduce Multi-Drug Resistant TB (MDR-TB)-related incidence and mortality in Myanmar, China, and Thailand.</p> <p>For more information, visit: http://www.cap-tb.org/</p>	CAP-TB is using QStream, a mobile platform that engages in fun, scenario-based challenges to improve knowledge, for technical training of MDR-TB concepts and guidelines. See M4D Inventory for more information.
India	<p>Scaling CommCare for Community Health Workers in India is implemented by Dimagi. CommCare allows any community health organization to quickly create and customize health applications and download them onto the phones of community health workers for free use. Dimagi's objective is to ensure that beneficiaries, CHWs, and managers all have the right information, at the right time, in the right place by scaling their CommCare technology in India.</p> <p>For more information, visit: http://www.commcarehq.org/home/</p>	USAID's contribution to Dimagi catalyzed the global deployment of CommCare, allowing the mobile technology to be refined for use in 10 countries across the globe. CommCare technologies provide mobile tools for community health workers (CHW) encouraging them to enroll all eligible clients, to conduct more timely visits to patients, and to correctly follow procedures and clinical protocols. CommCare also provides a radically new level of monitoring with an emphasis on delivering actionable data for performance improvement. See M4D Inventory for more information.
Indonesia	<p>e-MITRA, implemented by NetHope, provides technical advisory services to essential participants in Indonesia's mobile money sector; including MNOs, financial institutions, and payment platform providers—to name a few. The program is designed to assist in the development of strategies that will lead to the growth and scale of mobile money platforms in Indonesia, provide concrete tools to create mobile money strategies and, ultimately, help drive momentum for private sector offerings of economically viable mobile money products. As a component of its technical services, e-MITRA will also conduct qualitative research to be published on key issues in mobile money in Indonesia.</p> <p>For more information, visit: http://emitrainindonesia.org/</p>	<p>e-MITRA is a mobile money project that</p> <ol style="list-style-type: none"> 1. Raises awareness and interest in mobile money offerings within the private sector 2. Demonstrates and documents the business case for mobile money, i.e. by promoting deployments in payment streams that can provide scale and support for nascent mobile money systems (such as G2P payments, utility payments, and NGO programming) 3. Promotes testing different business models and industry participation in the mobile money ecosystem to allow for market evolution and creative market entry strategies. 4. Promotes partnerships and deployments that offer a variety of access points for mobile money services and test consumer attitudes, acceptance and active use of mobile money and mobile financial services more broadly.

USAID PROJECTS IN SE ASIA USING MOBILES

Country	Project Name and Description	How They Are Using Mobiles
Indonesia	<p>Hati Kami, implemented by Mercy Corps, focuses on helping new mothers among Jakarta's poorest residents. The project developed Mothers Support Groups (MSGs) to allow women to gather and share stories, ask questions and learn new skills mindful of both their and their babies' health and wellbeing.</p> <p>For more information, visit: http://www.mercycorps.org/tags/hati-kami</p>	<p>The project is conducting an Operations Research (OR) project, mPWS (short for Local Area Monitoring in Indonesia). Utilizing mobile technology, mPWS generates timely and accurate reporting and analysis of the Ministry of Health's maternal and child health Local Area Monitoring and Tracking (MCH-LAMAT) data system for local decision-making. mPWS engages the main MCH service providers and community for data collection and tracking in MCH-LAMAT. Hati Kami is investigating if using mobile phone technology can improve the quality of MCH-LAMAT data by providing a cost-effective, efficient and user-friendly mobile-based electronic health record system. The intervention package being tested in Rawa Buaya utilizes Magpi's CommCare website and cloud data system to create an overall framework for health records data collection by community volunteers, as well as 10 private midwives. This included the provision of basic mobile phones and SIM cards, as well as specific training and step-by-step pocket data collection guides, to provide easy reference for data collectors. See M4D Inventory for more information.</p>
Philippines	<p>All Children Reading Grand Challenge, implemented by EDC, works with the Philippines Department of Education to develop and test an innovative approach to using low-cost mobile phone technology to enable time efficient transmission and analysis of student performance data and technical guidance to the school for improved instruction and improved student reading.</p> <p>For more information, visit: http://www.edc.org/newsroom/press_releases/edc_receives_usaid_education_grand_challenge_award_international_literacy</p>	<p>The project promotes the use of National Achievement Test score data sent by SMS to improve the decision-making process in local school administration of early grade reading programs.</p>
Philippines	<p>Ecosystems Improved for Sustainable Fisheries (ECOFISH), implemented by Tetra Tech, seeks to build and innovate on the FISH Project by reforming the fisheries sector through an application of ecosystem-based fisheries management in the eight marine conservation areas.</p> <p>For more information, visit: http://www.usaid.gov/philippines/energy-and-environment/ecofish</p>	<p>In partnership with the Government of the Philippines and Microsoft, ECOFISH is using the new TV White Space (TVWS) broadband technology to deliver better services to fishing communities in five outlying municipalities in Bohol in the Philippines by establishing connectivity in remote areas and facilitating mobile fisherfolk registration. TV White Space refers to the vacant frequencies located between broadcast TV channels, which can be used to provide wireless data connectivity to remote communities in the country.</p>

USAID PROJECTS IN SE ASIA USING MOBILES

Country	Project Name and Description	How They Are Using Mobiles
Philippines	<p>Scaling Innovations in Mobile Money (SIMM) Project, implemented by DAI, advances three inter-connected goals: 1) to boost expansion and rapid adoption of m-money services; 2) to create an enabling environment for m-money; and 3) to increase financial inclusion for broad-based economic growth.</p> <p>For more information, visit: http://www.simmphil.org/</p>	<p>To reach these goals, SIMM targets three broad areas of strategic intervention: (i) the payment system, (ii) government services, and (iii) electronic payroll (e-Payroll) distribution. Cutting across these strategic areas, the activities of SIMM will also address both (a) supply and (b) demand constraints to broader adoption of m-money in the Philippines and (c) promote global knowledge sharing.</p>
Solomon Islands	<p>The Coral Triangle Support Partnership (CTSP), implemented by WWF, supports six nations of the Coral Triangle (Solomon Islands, Papua New Guinea, Timor Leste, Indonesia, Malaysia and the Philippines). CTSP addresses the challenges in fisheries management, live reef fish trade and climate change through international cooperation.</p> <p>For more information, visit: http://wwf.org.ph/wwf3/programs/conservation/coraltriangle</p>	<p>CTSP worked with the Solomon Islands Ministry of Fisheries and Marine Resources (MFMR) to launch Hapi Fis Hapi Pipol for inshore fisheries data management. Hapi Fis Hapi Pipol leverages mobile phone technology to gather and analyze inshore fisheries data—both socio-economic and environmental—in real time to enable effective management of these important resources. See M4D Inventory for more information.</p>
Timor-Leste	<p>Liga Inan / Mobile Moms, implemented by Health Alliance International, has three main components: 1) to promote healthy behavior for pregnant women; 2) to support midwives to improve the availability and quality of emergency obstetric and newborn care (EmOC); and 3) to connect pregnant women and midwives to increase communication and healthy behavior.</p> <p>For more information, visit: http://www.ligainan.org/</p>	<p>Liga Inan is using mobile phones to connect expectant mothers with health providers in Timor-Leste to improve the likelihood of a healthy pregnancy and birth.</p> <p>Midwives can use a mobile phone to register expectant mothers, track their progress, know when they go into labor and make arrangements for attending the delivery. Mothers continue to receive support through the first six weeks of the newborn's life.</p> <p>Liga Inan also sends automated health promotional information via SMS to all registered pregnant mothers throughout their pregnancy to help them make better decisions about their pregnancy and link them with regular prenatal care. See M4D Inventory for more information.</p>

USAID PROJECTS IN SE ASIA USING MOBILES

Country	Project Name and Description	How They Are Using Mobiles
Vietnam	<p>Sustainable Management of the HIV/AIDS Response and Transition to Technical Assistance (SMART TA), implemented by FHI 360, is building the capacity of local institutions to implement and take full ownership of evidence-based interventions designed to reverse the spread of HIV/AIDS. FHI 360's technical assistance focuses on integrated prevention, care and treatment for injecting drug users, female sex workers and their clients, and men who have sex with men.</p> <p>For more information, visit: http://www.fhi360.org/projects/sustainable-management-hiv-aids-response-and-transition-technical-assistance-smart-ta</p>	The SMART TA program designed the Fansipan Challenge, a mobile game to reach people who inject drugs (PWID) population. See M4D Inventory for more information.
Vietnam	<p>Support for Trade Acceleration Project (STAR Plus), implemented by DAI, works to implement trade agreements, modernize customs, facilitate agricultural trade, and increase legal transparency.</p> <p>For more information, visit: http://dai.com/our-work/projects/vietnam%E2%80%94support-trade-acceleration-project-star-i-ii-plus</p>	STAR Plus developed the Mă HS app in October 2013 to make it easier for traders to do business in Vietnam by linking traders directly to the Vietnam Customs website and places HS Code data at the fingertips of importers and exporters. See M4D Inventory for more information.

GLOSSARY OF TERMS

2G

2nd generation mobile internet system that provides data at the speed of 9.6 kbit/s to 28.8 kbit/s

3G

3rd generation mobile internet system that provides data at a speed up to 348 kbit/s

4G

4th generation mobile internet system that provides data at a speed up to 1 gbit/s (also known as Long Term Evolution or LTE)

ACCEPTABILITY

The social norms, cultural norms, and issues of trust that impact uptake of a mobile service or device.

AFFORDABILITY

The financial ability of a user to access a mobile service, resulting from the cost of the device, usage fees, and additional costs such as fees to charge the battery of the mobile device

AGENT [MOBILE MONEY AGENT]

A point-of-sale (POS) location that is often a small retail shop at which the teller has been trained to conduct mobile money transactions, including deposit and withdrawal

AGGREGATOR

Aggregators are companies that negotiate agreements directly with multiple mobile network operators for things such as bulk SMS, short codes, and USSD rates. Consumers can purchase these items through the aggregator across multiple mobile networks, instead of having to set up their own separate agreements with each one.

API

Application Program Interface; a technology that allows services to communicate with each other

APPS

Programs that are designed to be user-friendly and to provide a specific service to a mobile phone or tablet; apps, figuratively speaking, sit on top of operating systems since they require the operating system to run, but an end-user can access an app directly without first accessing an internet browser. Apps are specific to an operating system (i.e. Google Play apps can only be accessed on Android phones), therefore, a developer must build multiple versions if they wish for the app to be accessed by all smartphone and tablet users.

BASIC PHONE

Mobile phone that provides access to voice and text-based services; common worldwide including in rural communities

BULK MESSAGING

Sending SMS text messages to many mobile users at the same time

BUSINESS MODEL

A plan for the successful operation of a business, identifying sources of revenue, the intended customer base, products, and details of financing; in terms of a mobile service, a business model refers to the plan for sustainability

CDMA

Code-Division Multiple Access, the competing digital cellular system to GSM

CONDITIONAL CASH TRANSFER

A grant or subsidy that is sent to an individual only if they meet certain conditions (i.e. a parent receiving money from the government in return for sending their child to school)

GLOSSARY OF TERMS CONT.

CONNECTIVITY

A broad indicator of mobile access that is measured by both the level of mobile telephone coverage and the level of cell phone ownership, and which is usually disaggregated to be more specific (i.e. connectivity to basic mobile phones, connectivity to mobile internet, etc.)

CONTENT

The information made available through a mobile device or service

CUSTOM-BUILT

A mobile service that is built specifically for one need or development project

DATA PRIVACY

The aspect of mobile services that deals with the ability an organization or individual has to determine what personal information can be shared with third parties

DELIVERY MODEL

A specific method for delivery content to a mobile device (i.e. voice, messaging, web browsing, and apps)

DIGITAL LITERACY

The ability to effectively and critically navigate, evaluate, and create information using a range of digital technologies

ELECTRONIC PAYMENT

A transfer of money that uses technology rather than cash; including card-based payments, funds transfers, and cloud-based payments

ENABLING ENVIRONMENT

Attitudes, policies, and practices that stimulate and support effective and efficient functioning of organizations and individuals; in the case of mobiles this includes the regulatory framework, data security and privacy, and the level of market freedom available to mobile service providers

FEATURE PHONE

Mobile phone that provides access to voice, text, and internet-services; enables the use of applications and multimedia content

FINANCIAL LITERACY

The ability to effectively and critically navigate and evaluate financial services and to manage money; in the case of M4D, financial literacy is important for mobile money adoption and usage

FRAMEWORK

Software tools that are built with the intention of enabling multiple uses and customizations

FUNCTIONALITY

The range of operations that can be run on a mobile device; the ability of a mobile service to serve its intended purpose within a given context

GPS

Global Positioning System; GPS uses satellites to provide geo-location services to mobile devices

GSM

Global System for Mobile Communications, one of the leading digital cellular systems, distinguished by the use of a SIM card; the de facto standard in most of the world

HARDWARE

The physical storage and display device which provides mobile access

HUMAN-CENTERED (OR USER-CENTERED) DESIGN

In broad terms, a type of user interface design, and a process in which the needs, wants, and limitations of end users of a product are given extensive attention at each stage of the design process

ICT4D

Information and communications technology for development, a term referring the use of technology such as mobile phones and computers to achieve development goals

GLOSSARY OF TERMS CONT.

INFRASTRUCTURE

Infrastructure necessary to facilitate mobile uptake includes electricity, cell towers, data servers, and sales distribution networks

INTEGRATED APPROACH

The use of mobile service as part of a complex development program, rather than as an isolated approach

INTERACTIVE

A description of any service that allows for a simultaneous two-way flow of information; a service that responds to a user's input

INTERACTIVE VOICE RESPONSE (IVR)

A technology that allows a computer to interact with humans through the use of voice and tones inputted via a mobile keypad

JAVA

A high-level programming language that allows software developers to build applications for WAP-enabled feature phones

LITERACY

Basic literacy is defined by the World Bank as anyone "who can, with understanding, read and write a short, simple statement on their everyday life"

M4D

Mobiles for development, a term referring to the use of mobile devices to achieve development goals

MANY-TO-MANY

Collective communication

MMS (MULTIMEDIA MESSAGING SERVICE)

A protocol accepted on most feature phones that enable users to send and receive audio images and videos

MOBILE ACCESS (MACCESS)

The ability of individuals to benefit from mobile devices and services without being hindered by location, income, gender, or other variables beyond their control

MOBILE BANKING

The use of a mobile phone to interact with a personal bank account; used to check balances, pay bills, and transfer money between accounts

MOBILE BROWSER

The application through which a mobile user can access the internet; a scaled-down version of internet browsers used on computers

MOBILE DATA COLLECTION

The use of portable, electronic devices to collect information for monitoring and evaluation and for evidence-based decision making

MOBILE DEVICE

The physical piece of mobile equipment, generally divided into three different categories: basic, feature, and smartphone

MOBILE ECOSYSTEM

A complex and multi-faceted system that encompasses the full range of different mobile devices, business models, content delivery models, and user habits available in a country or region

MOBILE MONEY

A term used to describe the use of a mobile phone account to store and access funds, which are held in a mobile wallet account

MOBILE NETWORK OPERATOR (MNO)

A private company that provides mobile network services to customers

MOBILE VIRTUAL NETWORK OPERATOR (MVNO)

A private company that provides mobile network services to customers using a mobile network

GLOSSARY OF TERMS CONT.

infrastructure that they do not own. They purchase bulk access to network services at wholesale directly from MNOs and then sell back those services at retail prices to customers.

NATIVE VOICE

Peer-to-peer communication via voice on a mobile phone

OFF-THE-SHELF

A mobile service that is used in its pre-existing condition

ONE-TO-MANY COMMUNICATION

between an individual user (i.e. a development organization) and many individual users

ONE-TO-ONE

Communication between two individual users (i.e. a development organization and a user)

OPEN SOURCE SOFTWARE

Generically, open source refers to a program in which the source code is available to the general public for use and/or modification from its original design free of charge

OPERATING SYSTEM

The system through which a smartphone user accesses data, including internet and apps (i.e. Android)

PARTNERSHIPS

An aspect of a business model for a mobile service by which the appropriate donor, private sector, non-profit, and government organizations are brought together in order to effectively implement the service

PERSON-TO-PERSON (P2P) TRANSFER

A transfer of money from one individual to another through a mobile money account

PLATFORM

The operating system that provides the overarching environment for accessing mobile services

PLUGIN

A software component that adds a specific feature to an existing software application

PROJECT GOAL

The ultimate aim of a given development project

PROMOTION

The marketing and communication of mobile service including traditional advertising, training, and/or grassroots outreach

PROPRIETARY SOFTWARE

Privately owned and controlled; in the terms of M4D, proprietary is the opposite of open source

PULL

A function that allows a central user to request information from an individual through their mobile phone

PUSH

A function that allows a central user to send information to an individual's mobile phone

RISK ANALYSIS

A technique to identify and assess factors that may jeopardize the success of a project or achieving a project goal

SERVICE DESIGN

The concept of mobile service which includes the technology, business model, partnerships, and promotion

SIM CARD

A smart card inside a mobile phone, carrying an identification number unique to the owner; storing personal data, and preventing operation if removed

SIM OVERLAY

A thin, rubber sheet that can be laid ontop of a SIM card enabling the user to access additional services and features from a third-party provider

GLOSSARY OF TERMS CONT.

SMART INDICATORS

Data points by which to monitor the success of project which are Specific, Measurable, Attainable, Relevant, and Time-bound

SMARTPHONE

Mobile phone that provides access to voice, text, and advance operating systems for accessing the internet; enables the use of wireless internet (WiFi) and GPS/location-based services

SMS

Short Message Service; SMS is a service for sending short text messages between mobile phones

SOFTWARE

Anything that can be stored electronically is software; in terms of mobiles, software can be divided into platform, framework, and apps (refer to relevant glossary entries)

STORAGE

The ability of a mobile device to hold information for future use

TABLET

A mobile device that provides similar functionality to a smartphone with a larger screen

THEORY OF CHANGE

An explicit presentation of the assumptions about how changes are expected to happen in relation to a particular project and/or due to the implementation of a specific mobile service

USABILITY

The ability and ease at which an individual can operate a mobile device or service for its intended purpose

USER HABITS

The typical ways that people choose to interact with their phones

USSD (UNSTRUCTURED SUPPLEMENTARY SERVICE DATA)

A protocol used to communicate with a mobile service provider's computers; unlike SMS, USSD creates a real-time connection, allowing for multiple two-way messages to be sent during a single USSD session

WAP (WIRELESS APPLICATION PROTOCOL)

A secure, basic specification that allows users to access information via the internet instantly via a mobile phone; most often used on older model feature phones



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