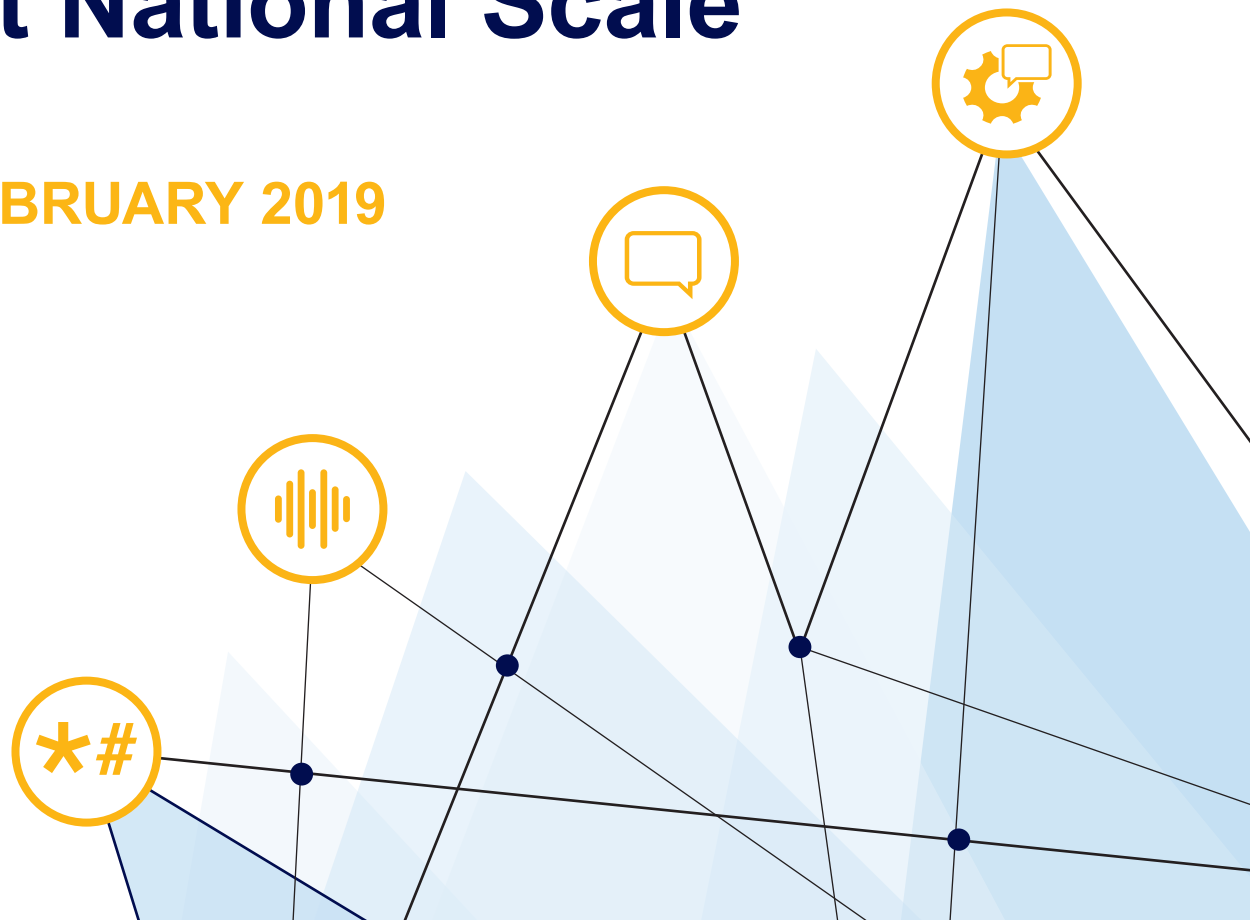


A Guide To Using Mobile Aggregators To Deliver NGO Services At National Scale

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Foreword

The potential for mobile-enabled communications channels (mobile channels) to help deliver services to the underserved and support the achievement of the Sustainable Development Goals across multiple sectors is well documented. However, many projects do not scale beyond the pilot stage, falling short of their intended reach and impact, because they fail to take advantage of these channels. DIAL believes that lack of awareness about mobile capabilities, platforms and players, coupled with the inability to leverage economies of scale within the development and humanitarian sectors makes service delivery slower, costlier and less effective than it could be.

To help address these challenges, DIAL is developing a series of guidance documents to support the following objectives:

- Build awareness of mobile channels and platforms and their ability to deliver at scale (For more information, please see our Mobile Capability Model that was released in November 2018: https://digitalimpactalliance.org/wp-content/uploads/2018/11/MNI_Report_cover2.pdf).
- Increase the visibility of delivery partners' capabilities.
- Test approaches for aggregating demand within the sector.

This paper supports the second objective, to increase the visibility of delivery partners' capabilities, and more specifically, illuminate how mobile aggregators can serve as intermediary organizations with which NGOs can partner.

Mobile aggregators have existing commercial and technical integrations with multiple operators in single or multiple markets and can significantly simplify the work of an NGO wanting to procure mobile services. Under specific conditions, working with an aggregator can allow NGOs to obtain a short code, provision mobile services and start delivering services nationally across all mobile networks within hours if not minutes. This is in stark contrast to the weeks and even months that negotiations with individual mobile operators currently can take. This paper explores the role of aggregators and introduces a mapping exercise aimed at profiling those with a significant presence in the developing world.

A Guide To Using Mobile Aggregators To Deliver NGO Services At National Scale

The opportunity of mobile aggregators

Engaging with mobile aggregators presents an alternative to working with MNOs individually and reduces the complexity, cost and duration of implementation. Aggregators offer pre-negotiated commercial and technical arrangements with multiple MNOs, allowing NGOs to deliver services over a variety of mobile channels. For example, some aggregators have developed cloud-based solutions that allow NGOs to obtain a short code, provision mobile services and start delivering services nationally, all within hours if not minutes. This is in stark contrast to the weeks and even months that negotiations with individual MNOs can take.

However, there are some challenges to working with aggregators. Unlike MNOs, which are well-known national organizations, aggregators are not easily identified, categorized or compared. In addition, they can be more expensive and lack capabilities that may be important to some NGOs.

The challenge of working directly with MNOs

Over the past 5 years, innovative technologies and communication channels have been developed to help deal with devastating humanitarian crises, from disease outbreaks to earthquakes to droughts. For example, text messaging can be used to provide critical information to at-risk populations during a natural disaster, and mobile-enabled data collection can track the spread of a dangerous virus. However, humanitarian organizations' ability to respond to rapidly evolving events is often hampered by the challenges of setting up these communication channels to reach citizens in need.

When the Ebola crisis struck Sierra Leone in 2015, development agencies knew they had to find a way to reach citizens throughout the country as quickly as possible, so they approached mobile network operators (MNOs) for assistance. Unfortunately, the vast number of NGO requests immediately overwhelmed the MNOs, and organizations were forced to spend months negotiating with MNOs for access to their networks. This delayed the provision of needed services and risked increased spread of the disease and loss of life.

Lengthy negotiations also impede the implementation of more routine development projects that are equally critical for the health and well-being of people worldwide, such as efforts to provide health information to expectant mothers or pricing alerts to smallholder farmers. When the vast array of NGOs must reach out individually to the various MNOs operating in each market, there's no opportunity for collective bargaining to secure better value and service provision. What's more, working directly with multiple MNOs in a single country can introduce significant delays and complicate service implementation.

What this guide offers

This paper is designed to help NGOs make an informed decision about whether to use an aggregator to deliver services at scale. Section 1 outlines the advantages of using aggregators, while Section 2 presents the advantages of using MNOs. Together, they help NGOs evaluate their needs and determine the best option to fulfill them.

Section 3 helps demystify the sector by describing the different types of mobile aggregators. It explains their relevance to NGOs and helps them understand what kind of aggregator is right for them. Section 4 introduces a series of tools that are being developed to help NGOs locate an aggregator by country, based on the capabilities and channels that are needed.

1. Why use aggregators?

Key advantages of using an aggregator in a multi-operator market

Less contracting	Working with an aggregator negates the need for NGOs to learn and adapt to the different methodologies and processes each MNO requires for its contract negotiations.
Less technical integration	The same applies for technical integration. Each MNO has its own idiosyncratic implementation process requiring an NGO's technical team or partner to integrate multiple times, presenting potential points of failure for the project.
Single point of contact for support	Even if an NGO were able to overcome the various integration and contractual challenges, it would still need to troubleshoot and address technical and other support issues across multiple MNOs. Aggregators present a much simpler, single point of contact for NGOs.
Potentially more amenable to negotiation	NGOs who previously worked with many MNOs may find advantageous pricing as they consolidate their business to work with one aggregator. Conversely, aggregators may charge a slightly higher price for their services so volume savings would have to offset this new expense.
Value-added services	In emerging markets, MNOs are typically set up to acquire and service end users, not organizations such as NGOs. Many aggregators, on the other hand, distinguish themselves by offering value-added services (e.g., subscription/content management, customer data collection, reporting) that can augment mobile channels.
Integration with other third parties	Some aggregators offer integration with other valuable third-party content, services and organizations. The most prevalent example is a mobile payments aggregator like Cellulant or Beyonic, which specializes in integrating both with mobile operators and financial institutions, as well as the myriad of different platforms on which each operate.

2. Why use MNOs?

The advantages of negotiating directly with MNOs include:

- **Pricing**
Some NGOs have been able to negotiate limited amounts of free or heavily discounted mobile services from MNOs, known as “zero-rating,” which help the MNO fulfil its corporate social responsibility goals. However, discounts are usually only offered for a limited period of time or up to a certain volume and thereby may not meet an NGO’s long-term objectives or requirements for national scale..
- **Marketing and distribution**
The MNO may decide to market the NGO’s service to its customer base via either bulk marketing SMS, USSD messages, or airtime notifications. MNOs may also use their distribution channels (e.g., agents, outlets) to help promote the service with fliers or health kits. Typically, these benefits are available by contract with individual MNOs and would not fulfill an NGO goal to scale these marketing activities.
- **Customer data**
Some NGOs may require from time to time the collection of user data to monitor the performance of the service. This data may include the length of time the caller is on the phone or how often he drops the call. Obtaining the data would require a direct contract with the MNO, even if it is housed at the aggregator.
- **Accountability**
In most service level agreements, the aggregator will only take responsibility for sending the message to the next party in the chain, which is the MNO. The aggregator might not be able to take responsibility for the operator sending the message to the customer.
- **Lack of presence**
There are a number of smaller or more challenging frontier markets where aggregators have not been able to set up a sustainable business. In such cases, the MNO is the default option.
- **Lack of awareness**
NGOs are often unfamiliar with aggregators, including where they operate and what they do. Unlike MNOs, which are known corporate entities in the countries where they operate, aggregators come in all shapes and sizes, and it can be difficult for NGOs to locate and negotiate with an aggregator that suits their needs.

3. Types of aggregators

Aggregators are typically differentiated by their services or business approaches. Below are descriptions of four different types of aggregators, distinguished by what they aggregate (e.g., content), how they aggregate (e.g., platforms), the service they aggregate (e.g., mobile money), and whom they target (e.g., NGOs). This is by no means an exhaustive list, since there is no commonly agreed upon taxonomy of mobile aggregators, even within the mobile sector.

Content aggregators

Aggregators in this category build mobile services that run across multiple MNOs. They are referred to as VAS (value-added services) or content aggregators and are by far the most common type. Examples of the services they provide include local news, sports, betting and lifestyle content. They typically have a good understanding of what content is compelling to target audiences in their country as well as how to market and price it. They also have technical teams that can incorporate content provided by a partner, either into an existing or new service.

However, these aggregators might not have experience marketing to or developing services for underserved populations (e.g., lower-income, rural, women and girls) or creating content that’s not explicitly commercial (e.g., health tips as opposed to sports news). Therefore, NGOs should make sure the content aggregator they are using has experience targeting the underserved or else be prepared to bring significant product design expertise.

API platform providers

Increasingly, players are moving developing a bespoke service to technical platforms with tools that allow clients to design and deploy their own services. This category of aggregator is best typified by global players such as Twilio and Nexmo, whose platforms are driven by programming tools known as APIs (application programming interfaces). Working with this type of aggregator, a software engineer can start developing, testing and deploying services almost immediately, without having to worry about the many technical and commercial integrations.

Also known as Cloud Platform as a Service (CPaaS) providers, these aggregators already integrate with hundreds of operators throughout the world and are present in most all markets. They power the mobile engagement in some of the most popular online services today, including Airbnb, Expedia and Uber. Organizations such as Africa’s Talking have taken this model and applied it specifically to emerging markets (e.g., sub-Saharan Africa), differentiating themselves from the global players with better local presence, more competitive pricing and broader coverage of mobile capabilities.

Mobile money providers

Given the dramatic uptake of mobile financial services in emerging markets and the size of remittances among countries, a significant proportion of aggregators in these markets focus on mobile money rather than core mobile services. Mobile money aggregators, such as Cellulant and Beyonic, also distinguish themselves by developing platforms that allow multiple MNOs and financial institutions to work with one another, so organizations and individuals can make transactions across countries and institutions.

NGO aggregators

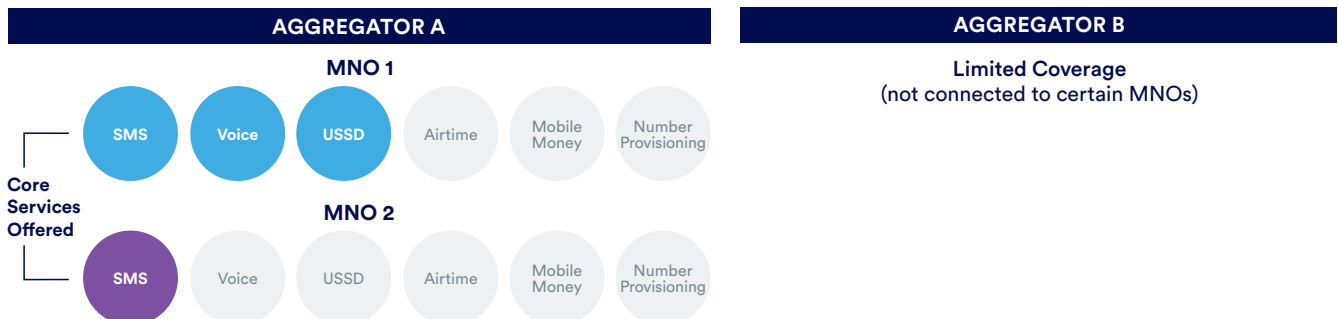
These aggregators have built platforms on top of their mobile integrations to automate specific services and use cases that target the NGO sector. For example, EngageSpark offers a non-technical platform for NGO customers that helps them deal with integration and service design. (Their tagline is: “No tech skills necessary. Launch in minutes.”)

This type of aggregator is ideal for an NGO that doesn’t have and doesn’t want to invest in software development skills. An NGO can sign up for a service online, select one of the aggregator’s offerings, and design a service based on a pre-defined template. However, sometimes the aggregator’s many predefined templates don’t meet the NGO’s needs.

4. Choosing an aggregator partner

There are a number of things to consider when choosing an aggregator:

- **What core mobile capabilities do they offer?**
Many aggregators began by buying SMSs in bulk and reselling them but evolved into offering USSD, voice and mobile money, as well as pre-procuring and obtaining approvals for short codes from regulators. Our Introduction to Mobile Capabilities provides a list of capabilities that most aggregators offer within the core mobile services relevant to NGOs.
- **To which MNOs are they connected?**
Aggregators in one country often have different levels of integration with various MNOs. For example, they might offer SMS, voice and USSD with one MNO, only SMS with another, or limited coverage because they are not connected to certain MNOs. Such limitations may or may not impact the NGO, depending on the exact channel and capability that’s required.



- **How are they connected to each MNO?**

While there are a number of different ways an aggregator can connect to or integrate with an MNO, the most important issue is the chain of integration, as it impacts performance and accountability. In general, it's preferable to source for direct connections (i.e., the aggregator connects with the MNO) as opposed to indirect (i.e., the aggregator connects to another aggregator, which then connects to the MNO). The latter is a common practice for some regional or global aggregators to expand their footprint rapidly. For example, they might work through local aggregators that specialize in working with local MNOs rather than setting up their own MNO relationships.

- **Are they a local, regional or global aggregator? Do they have a local office?**

As would be expected, aggregators based in a particular country typically have the best relationships with MNOs there. Regional or global players that work with local aggregators to make connections with MNOs, as discussed above, may have performance or service issues downstream. However, this is changing rapidly as MNOs change their systems to standard APIs, making it easier even for offshore aggregators (or customers) to integrate directly.

Aggregator Profiling

Based on the above considerations, DIAL mapped the capabilities, geographical coverage and MNO relationships of Africa's Talking, Cellulant and SynqAfrica, three major regional mobile aggregators in sub-Saharan Africa. While DIAL plans to continue profiling major mobile aggregators over time, these three players alone cover **27 countries** and have relationships with more than **59 MNOs**, representing an **overall reach of 500 million people**.



6 countries

- Kenya
- Malawi
- Nigeria
- Rwanda
- Tanzania
- Uganda

19 MNOs



10 countries

- Botswana
- Ghana
- Kenya
- Malawi
- Mozambique
- Nigeria
- Tanzania
- Uganda
- Zambia
- Zimbabwe

31 MNOs



25 countries

- | | |
|-------------|--------------|
| Algeria | Namibia |
| Benin | Niger |
| Burundi | Nigeria |
| Cameroon | Rwanda |
| Ethiopia | Senegal |
| Ghana | South Africa |
| Guinea | Swaziland |
| Ivory Coast | Tanzania |
| Kenya | Togo |
| Lesotho | Uganda |
| Madagascar | Zambia |
| Malawi | Zimbabwe |
| Mauritius | |

59 MNOs

Opportunities for national scale rollout

Below is a list of countries where aggregators can play an immediate role, based on the channels that NGOs are interested in provisioning at national scale.

Countries where there's TWO-WAY SMS offered at full national scale	Countries where there's TWO-WAY USSD offered at full national scale	Countries where there's TWO-WAY VOICE offered at full national scale	Countries where there's MOBILE MONEY CAPABILITY offered at full national scale
27	27	3	7
Algeria	Algeria	Kenya	Botswana
Benin	Benin	Nigeria	Ghana
Botswana	Botswana	Uganda	Kenya
Burundi	Burundi		Tanzania
Cameroon	Cameroon		Uganda
Ethiopia	Ethiopia		Zimbabwe
Ghana	Ghana		Zambia
Guinea	Guinea		
Ivory Coast	Ivory Coast		
Kenya	Kenya		
Lesotho	Lesotho		
Madagascar	Madagascar		
Malawi	Malawi		
Mauritius	Mauritius		
Mozambique	Mozambique		
Namibia	Namibia		
Niger	Niger		
Nigeria	Nigeria		
Rwanda	Rwanda		
Senegal	Senegal		
South Africa	South Africa		
Swaziland	Swaziland		
Tanzania	Tanzania		
Togo	Togo		
Uganda	Uganda		
Zambia	Zambia		
Zimbabwe	Zimbabwe		

Glossary of Terms

Term	Definition	Example
Mobile Network Operator (MNO)	An organization that provides wireless communications services	Verizon, Telus, MTN, Vodafone, Vodacom
Mobile Aggregator	An organization that integrates with various MNOs, providing access to MNO communication services through their aggregation application.	Cellulant, Twilio, Nexmo, InfoBip, Africa's Talking, Synq Africa
Digital Service Provider (DSP)	An organization that either integrates with various MNOs or a mobile aggregator to provide access to MNO communication services. DSPs, along with aggregation services, provide value added services such as content delivery, conducting surveys, setting up hotlines through the various communication services.	Praekelt, EngageSpark, TolaData, Mobile Accord, Souktel

Mobile Capabilities	Description
SMS	A text messaging service (Short Message Service) used to communicate with Subscribers or Applications
SMS One Way (to Subscriber)	Text Message sent by an application to a subscriber's mobile device e.g., Bulk SMS, a popular product offered by service providers.
SMS Two Way	Interactive text messaging services, initiated by a subscriber or application and optional to respond to e.g., services such as mAgri services
SMS Delivery Reports	Detailed report for successful and unsuccessful delivery and receipt of text messages Aggregator: Notification of SMS delivery receipt to aggregator from the application and / or aggregator to the operator ONLY Operator: Notification of SMS delivery receipt to subscriber from the operator ONLY
SMS Zero Rating	The service is configured as non-chargeable, i.e. text messages sent or received are not billed.
SMS Reverse Billing	The service is configured whereby the Digital Service Provider is billed for both sending and receiving text messages.

Mobile Capabilities	Description
Host Flows	An intelligent automated interactive text messaging service between a subscriber and an application, which is normally hosted by a Digital Service Provider
Message Counter	A text message length “calculator” that informs a user if they have exceeded 160 Latin or 70 non-Latin characters
Automatic Character Substitution	An automated solution that identifies and replaces special characters such as ^, {, }, \, [,], ~, “” and €
Maximum Spend Limits	An automated solution where a user can define a threshold on spend amount for messaging services e.g., fix the spend for a messaging service to \$100 regardless the number of SMS sent
Send re-attempt	A feature which queues and schedules undelivered text messages for a delivery retry
SMS Sender ID	Short / Long Code associated by an alphanumeric ID. Useful for adding credibility to a message e.g., signalling that a message originates from an organization (e.g., the telco) or a ministry (e.g., Ministry of Health).
Mobile Originated (MO)	MO messages are initiated by a subscriber or application which are delivered to subscribers or application
Mobile Terminated (MT)	MT messages are messages that have been delivered to a subscriber or application
USSD	The Unstructured Supplementary Service Data (USSD) is a protocol primarily used to delivery text messages to subscribers or applications within a defined USSD Session (refer USSD Session Reports)
USSD One Way (to Subscriber)	<p>Network Initiated: Mobile Network Operator initiated USSD session to inform the subscriber of services, warning or updates.</p> <p>Service Provider Initiated: Digital Service Provider initiated USSD session to inform the subscriber of services, warning or updates.</p> <p>Typically, USSD Flash Messages cannot be saved to the device.</p>
USSD Two Way	Interactive USSD session initiated by a subscriber using their mobile device by dialling a USSD short code e.g. *123#, or initiated by an application for subscriber feedback
USSD Session Reports	USSD interactions are defined in session lasting from 60 seconds to 180 seconds. A USSD session report maintains data of successfully and unsuccessfully initiated USSD sessions of subscribers and or applications.

Mobile Capabilities	Description
USSD Zero Rating	The service is configured as non-chargeable, i.e. USSD sessions are not billed.
USSD Reverse Billing	The service is configured where by the Digital Service Provider is billed for the USSD session.
Hosted Flows	An intelligent automated interactive USSD service between a subscriber and an application or vice versa, which is hosted by either the Digital Service Provider or Mobile Network Operator.
VOICE	A Mobile Telephone Service used as a communication where Voice is the medium.
Inbound Calling (IVR)	Normally, a subscriber-initiated call to an Interactive Voice Response (IVR) platform which routes calls to an individual or an intelligent automated voice service e.g., customer care.
Outbound Dialling	A B2C initiated call to subscribers.
Call Queue / Forwarding	An automated service where inbound calls are kept either put on hold till a customer care agent is available or redirected to a service a subscriber requires.
Call Detail Record	Data detailing subscribers' network usage related to calls, text messages, data usage, etc.
Zero Rating	The IVR service is configured as non-chargeable i.e. voice calls are not billable.
Reverse Billing	The service is configured where by the Digital Service Provider is billed for the call e.g., Toll Free or Collect Call.
Hosted Flows	An intelligent automated interactive voice service between a subscriber and an application or vice versa, which is hosted by either the Digital Service Provider or Mobile Network Operator.
PROVISIONING	This is an activity carried out by, primarily, the Mobile Network Operator with some input from Digital Service Providers to configure network services / channels for specialized projects e.g. configuration of reverse / zero billing for text messaging services.
Dedicated Short Codes	A 5 to 6-digit number acquired and solely owned by a specific organization to address SMS traffic to subscribers or applications.
Share Short Codes	A 5 to 6-digit number acquired and owned by an aggregator to address SMS traffic to subscribers or applications for multiple organizations.

Mobile Capabilities	Description
Standard Short Code	A 5 to 6 digit randomly generated non-sequential number to address SMS traffic to subscribers or applications.
Premium Short Code	A 5 to 6-digit sequential number requested by an organization e.g. 435763 which spells “HELPME.”

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