

MANUAL

Digital Communication Systems

COVID-19 GLOBAL RESPONSE

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Contents

- Contents..... 0
- Introduction 1
 - What are digital communication systems and what can you do with them? 1
 - Who are digital communication systems for? 1
 - Why use digital communication systems? 1
- Setting up digital communication systems: what are the possibilities? 3
 - Types of digital communication systems..... 3
 - 1-way communication system (outgoing).....3
 - 1-way communication system (incoming)4
 - 2-way communication system (incoming & outgoing).....5
 - Examples of digital communication systems applied by NS: 5
 - Bottlenecks & Workarounds 6
- Case study..... 8
- Data responsibility 9
 - Datasets 9
 - Data processing 9
 - Non-discrimination 9
 - Human oversight 9
 - Risks 9
- Requirements 10
 - Commonly used software & services 10
 - Time requirements 11
- Abbreviations 12
- Resources..... 12

Introduction

Since March 2020, the 510 Data Team of the Netherlands Red Cross (NLRC) has provided solutions for digital communications of various National Societies (NS). This manual provides information on the various systems for digital communications, the available programs and platforms used and the caveats when setting up digital communication systems.

What are digital communication systems and what can you do with them?

Digital communication systems are technology-based channels which enable the user(s) to:

1. quickly reach out to a high number of community members/ beneficiaries/ volunteers/ staff. This is categorized under 1-way communication.
2. quickly receive input from a high number of beneficiaries/ volunteers/ staff/ community members. This is categorized under 1-way communication.
3. Both. This is categorized under 2-way communication.

Important note: setting up communication systems can take up to 2 months. Therefore, we recommend initiating set up as early as possible so digital communication systems are ready to be used if a (natural) disaster occurs.

Who are digital communication systems for?

Systems for digital communications can be used by any NS looking to set up 1-way or 2-way communication channels. Until now the 510 Data Team has aided the Malawi Red Cross Society in setting up a 1-way communication system for addressing incoming questions from volunteers and staff. Furthermore, the 510 Data Team is currently collaborating with the Yemen Red Crescent Society to set up a 1-way communication system which disseminates info from headquarters to branches and volunteers.

Why use digital communication systems?

Digital communication systems offer various benefits to any NS using them:

1. Fast and automated way for sending and/or receiving information and humanitarian aid. This helps the NS with fast decision making and allows rapid response to the needs of community members/ beneficiaries/ volunteers/ staff.
2. Centralized and transparent history of communication. This increases the efficiency of the NS and keeps the communication consistent.

3. Customized humanitarian aid according to the needs of the beneficiary. This is achieved by sending digital aid coupons and/or cash en masse to beneficiaries. They can exchange the coupons for goods (e.g., food, building materials) they are most in need of.

Setting up digital communication systems: what are the possibilities?

In this section of the manual, we present the types of communication systems and the bottlenecks & solutions during their setup. The user can decide what strategy is best to follow for their NS.

Types of digital communication systems

Here we describe the different types of digital communication systems that can be set up by NS, and briefly describe their workflow. For more information on the software and services mentioned in this section, please refer to section “Commonly used Software & Services” of this manual.

1-way communication system (outgoing)

Outgoing information from the NS to community members/ beneficiaries/ volunteers/ staff. This system can be set up in the following way:

1. Typically, a virtual phone number is acquired by the NS, and is then coupled to Twilio. Twilio enables sending thousands of messages in various languages, by SMS or WhatsApp. Please note that the release of the phone number to the target audience will have to be timed until after the system has completely been set up. Number approval could last up to 6 weeks.
2. Microsoft (MS) Excel is used to create message templates, keep track of the status of messages, organise recipient data etc. WhatsApp message templates need to be approved before being able to use them. Approval takes a maximum of 48 hours. SMS templates do not need to be approved.
3. MS Flow is used to couple Excel to Twilio, creating an automated way of forwarding messages written in Excel to Twilio to subsequently be sent to the target audience (**Figure 1**). By coupling Twilio to Excel, the user can also keep track of the status of the messages sent by Twilio as the Excel file will be kept up to date.
4. Optionally, Microsoft Teams can be integrated in the MS Flow-Excel-Twilio system, to create alerts of outgoing messages and inform the user of the status of the system.

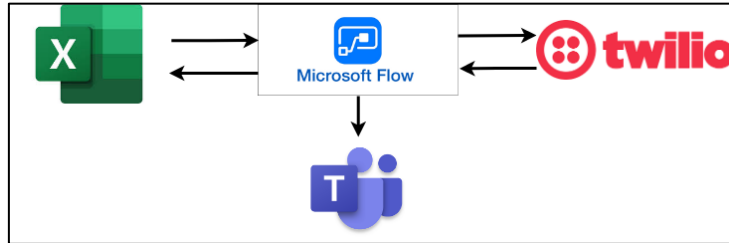


Figure 1 • The workflow of the 1-way communication system using MS Excel, MS Teams and Twilio. MS Flow is used to link the all of the above, thereby automating the process of monitoring the progress of sending messages.

1-way communication system (incoming)

Incoming communication from community members/ beneficiaries/ volunteers/ staff to the NS. This system can be set up in the following ways:

Through an online helpdesk (Freshdesk¹):

1. An account and a home page can be made through the online helpdesk service Freshdesk. The platform can support in various languages.
2. Frequently asked questions and their answers can be stored online by the NS.
3. Community members/ beneficiaries/ volunteers/ staff can access the home page of the NS on the Freshdesk website and register their question by filling in a “ticket”.
4. If the question is similar to a pre-registered question by the NS, the Freshdesk website visitor will be forwarded to the answer. If the question is unlike the questions pre-answered by the NS, it will be forwarded to the NS Freshdesk operator who can view the ticket and answer online.

Through a call centre connected to an internet helpdesk (Freshcaller²):

1. A network operator provides a telephone line for the NS which can be dialled free of charge using a short code number (or a virtual number is bought through Freshcaller which can be dialled).
2. The line can be rerouted (through Freshcaller) to several computers from which phone operators of the NS can answer calls.
3. The phone operators can manually keep track of incoming calls by recording the questions/information into an internet-based helpdesk such as Freshdesk.

¹ www.freshdesk.com

² www.freshworks.com/freshcaller-cloud-pbx/

2-way communication system (incoming & outgoing)

2-way communication is incoming communication from community members/ beneficiaries/ volunteers/ staff to the NS and the other way around.

Through an automatic workflow between KoBo and Twilio

1. The beneficiary enters their details in a KoBo form through the KoBoCollect mobile app or through the KoBo website.
2. Once the registration is complete, MS Flow prompts Twilio to send a message confirming completion of registration to the beneficiary in the form of a SMS/WhatsApp message/e-mail, depending on the beneficiary's preferences.

Through the KatiKati system

Another noteworthy 2-way communication system whose use however has not yet been established by the 510 Data Team, is the KatiKati system³. This program is an initiative between the non-profit Africa's Voices Foundation (AVF) and the company Lark Systems and allows 2-way communication through SMS. We briefly explain the concept below:

1. A short code used by KatiKati is shared with the target community, the members of which send an SMS to that short code.
2. The incoming SMS will be registered on the KatiKati platform, which will be handled by the NS or other collaborating organisation.
3. The SMS will be categorized based on its' content into pre-determined themes and theme tags will be added to it.
4. Per theme, pre-written responses will be available for selection and if needed, adjustment, before being sent as an answer back to the person making the inquiry.

Examples of digital communication systems applied by NS:

1. The 510 Data Team in collaboration with Malawi Red Cross Society have set up a 1-way communication system for incoming calls from the staff and volunteers. Through a short code provided by the TNM network provider, the staff and volunteers can contact the call centre of the Malawi Red Cross Society. The call centre operators register the incoming calls and their answers on Freshdesk to keep track of the communication history.
2. The NLRC applied a 1-way communication system that reached out to beneficiaries on the Caribbean islands of Sint Maarten, Curaçao and Aruba. The 510 Data Team set up a

³ <https://www.africasvoices.org/2020/03/23/trusted-two-way-mass-and-individual-health-communications-and-rapid-socio-epidemiological-insights-to-support-the-covid-19-public-health-response-in-kenya/>

framework which uses MS Flow that links Excel to Twilio. By using a virtual phone number, the 510 Data reached thousands of beneficiaries by WhatsApp and SMS. This way, e-vouchers were distributed (around 40,000 beneficiaries per month). By adding MS Teams to the framework, the 510 Data Team was able to keep track of the progress by using automatic alerts.

3. The 510 Data Team and the Hellenic Red Cross have collaborated to set up a 2-way communication system for incoming information gathered with the data collection platform KoBo. The pipeline involves an automatic flow connecting the KoBo form with Twilio through MS Flow. Whenever a beneficiary registers their information through a KoBo form and their data is registered successfully, MS Flow prompts Twilio to send a registration confirmation to the beneficiary through SMS, WhatsApp or e-mail, depending on the preference of the beneficiary.

Bottlenecks & Workarounds

The setup procedure of the digital communication systems mentioned above can vary per country. This depends on network operators, the availability of virtual phone numbers and other parameters. Below, we list possible bottlenecks and discuss their workarounds.

- **Bottleneck:** No option to acquire a virtual number through Twilio.
Workaround: Acquire an international phone number from a country such as Switzerland. Using an international number is coupled to 1) Costs for the receiver if they reply to the number 2) the risk of international numbers not being accepted by local carriers and 3) the risk of beneficiaries not recognizing the sender number. To tackle this, Alphanumeric Sender Names⁴ can be used to mask the international phone number and show the name of the sender organization. This is possible in a number of countries⁵. Note that 2-way communication is not possible for phone numbers that have been masked by an Alphanumeric Sender Name.
- **Bottleneck:** No option to acquire a virtual number through Twilio and no option to acquire an international number.
Workaround: Port a phone number that is already in use through a local network operator to Twilio. This process entails that the number and the services are transferred from the current network operator to Twilio. The feasibility of this depends on the network operator, Twilio and the country⁶. The flipside of this workaround is that the

⁴ <https://www.twilio.com/docs/glossary/what-alphanumeric-sender-id>

⁵ <https://support.twilio.com/hc/en-us/articles/223133767-International-support-for-Alphanumeric-Sender-ID>

⁶ <https://support.twilio.com/hc/en-us/articles/115000781088-International-Porting-Process>

porting process takes 4 weeks to be completed (on average), and that additional porting fees might apply.

- **Bottleneck:** No option to acquire a virtual number through Twilio nor an international number nor to port a number to Twilio.
Workaround: Set up a smartphone to act like a local SMS gateway. For this, an Android smartphone with a local SIM card and internet access is needed, as well as the Telerivet Gateway app⁷. Please note that there is a 1,000 SMS-per-day cap attached to this type of setup. This system also enables the move of analog call traffic over an internet connection by using Session Initiation Protocol (SIP), enabling the gateway phone to also take incoming calls⁸.
- **Bottleneck:** No option to acquire a number through a network operator.
Workaround: Discuss with a regional provider what the options are to set up a communications system. For example, the regional provider for Africa is Africa's Talking⁹.
- **Bottleneck:** No option to acquire a number through a network operator or regional provider.
Workaround: Acquire a virtual number through Freshcaller (Freshdesk). This platform allows incoming phone calls in parallel which can be directed to the NS staff computers on the work location or remotely.

⁷ www.telerivet.com/product/app

⁸ www.telerivet.com/product/sip

⁹ <https://africastalking.com/>

Case study

Communication internally and externally becomes critical to any NS when an emergency situation arises. Having built-in communication systems can be a turning point for any NS when responding to a crisis.

In Malawi, the Red Cross Society was affected by the COVID-19 pandemic and were left with many unanswered questions that were received from volunteers and community members. The 1-way communication system that was set up with the National Society, foremost allowed the volunteers in the field to reach out to the Malawi Helpdesk with questions regarding COVID-19 or other matters. The field work volunteers forwarded both their own questions and the ones that were asked by the community through this system. Malawi Red Cross Society was able to keep track of the variety of messages and questions received and link them to internal departments that provided a well-rounded and informed response.

Apart from the increased efficiency of this setup, such a communication system can be extremely beneficial in instances of natural or conflict disasters. The 1-way communication system can be used to send safety messages to staff and volunteers that work in the field. In this case, messages can be sent out warning the members of a particular situation in the region, while informing them of measures and/or precautions that need to be taken.

Data responsibility

Datasets

The data used is in the form of incoming and/or outgoing messages as well as personal information of the beneficiaries such as name, phone number, age etc. In a helpdesk setup, any incoming messages that do not match a pre-registered question will be categorized manually.

Data processing

Processing of messages can be set up in an automated way or can be done manually. In the case of the 1-way communication system (incoming) through the helpdesk, in cases where questions and/or answers differ from those available, a response can be addressed manually.

Non-discrimination

The digital communication systems described in this manual are non-discriminatory.

Human oversight

The communication systems could include already embedded questions and answers that can be automated. However, these messages need to be developed and approved by staff members of the NS as well as the system provider. Additionally, in cases where an automated response is not activated, incoming messages and/or responses will need to be managed manually, which might cause oversight to some messages and will increase the workload of staff, especially if the existing capacity is low.

Risks

The foreseen risks are 1) system malfunctioning due to external factors, such as internet connection and availability of electricity, in emergency situations where staff and volunteers become unreachable and 2) the ability to identify individual's numbers might lead to privacy issues, depending on the type of software or service used.

Requirements

Commonly used software & services

Here we provide information about the most commonly used software and services to set up and use the various digital communication systems.

- **Microsoft Flow:** renamed recently to MS Power Automate, is a process and task automation tool that can connect applications and services together, for example MS Excel and Twilio, and create automated workflows. It allows the user to schedule tasks and automate sending SMS messages. MS Flow is accessible for users with an Office 365 subscription or a free Microsoft account but the available runs per month differ according to the chosen plan.

<https://flow.microsoft.com/en-us/>

- **Microsoft Excel:** a spreadsheet-based program that can be used to create message templates, keep track of message status, organize recipient data such as phone numbers, name, language of communication, and other important information. Can be linked to Twilio through MS Flow. MS Flow is accessible for users with an Office 365 subscription or users that have acquired the Office Home & Business 2019 software.

<https://www.microsoft.com/en-ww/microsoft-365/excel>

- **Microsoft Teams:** a communications platform which can be linked to Excel and Twilio through MS Flow to keep the user updated through live updates. MS Teams is accessible for users with a Microsoft 365 Business Basic subscription or a free Microsoft account, but the available features differ according to the chosen plan.

<https://www.microsoft.com/en-ww/microsoft-teams/group-chat-software>

- **Twilio:** a cloud communications platform that uses Application Program Interfaces (APIs) to enable communication through SMS, WhatsApp and other channels. Twilio makes use of SMS-enabled phone numbers which are available in more than 180 countries. It also offers a cloud-based contact center. Pricing depends on the number of messages sent, the amount of acquired numbers and other parameters.

<https://www.twilio.com/>

- **Freshdesk:** a cloud-based customer support software that includes channels such as chat, email, phone and others and offers automated solutions. Pricing depends on the chosen plan but there is a free option.

<https://freshdesk.com/>

- **Freshcaller:** one of the cloud-based features of Freshdesk which allows the user to make and receive calls through the internet.
<https://www.freshworks.com/freshcaller-cloud-pbx/>
- **Telerivet:** a software platform that can be used to launch an SMS service, utilizing only a smartphone, without the need of shortcodes. Pricing depends on the chosen plan and starts at € 25.20 per month.
<https://telerivet.com/>
- **KoBo:** an open-source toolkit for collecting and managing data in challenging environments and is the most widely-used tool in humanitarian emergencies. There are no costs tied to the use of the KoBo toolbox.

Time requirements

Here we indicate which parameters can influence the duration of setting up digital communication systems.

For reference, the 510 data team of the NLRC department needed 3 days to set up the 1-way communication system (outgoing) in the Caribbean islands of Sint Maarten, Curacao and Aruba. Within 1 hour of usage, the platform is able to send up to 1,000 messages.

Abbreviations

NLRC	The Netherlands Red Cross
NS	National Society/Societies
MS	Microsoft
SIP	Session Initiation Protocol
API	Application Program Interface

Resources