





# Mapping software helps CRS tackle tough emergency implementation challenges

With limited information, emergency response teams often need to make decisions about where to work and who to serve. As they do so, they work with other humanitarian actors to coordinate their responses and ensure that needs are appropriately met across the affected areas. Maps are critical to this effort.

In Northeast Nigeria, CRS and its partners have been supporting more than 120,000 people displaced by the Boko Haram crisis. Emergency assistance has included food; shelter; water, sanitation and hygiene; living supplies; and agriculture support. To facilitate program implementation, CRS merged cartography, spatial analysis and information from various databases to more effectively identify and register vulnerable families in the highly congested urban centers of Maiduguri and Gubio. CRS also leveraged GIS to coordinate the 2017 cholera outbreak response in the Muna Dalti neighborhood of Maiduguri.

## Targeting and registration

As the basis for targeting and carrying out an emergency response, registering households on project beneficiary lists is a challenging process. During the first round of beneficiary identification, CRS teams in Northeast Nigeria collected and mapped the GPS coordinates of the households. In so doing, they realized that those collecting the data had registered families outside of the target areas and, more importantly, that neighborhood boundaries were neither known nor clearly defined.

To more accurately identify and enroll households that met the vulnerability and targeting criteria, several iterative steps were taken:

- Teams carried out detailed mapping exercises, using a variety of methods and tools, including transect walks, participatory mapping, and reviews of existing administrative maps and satellite images.
- Once geographical and administrative boundaries had been clearly defined, CRS and its partners divided the neighborhoods into smaller sections—based on physical landmarks such as roads—and assigned registration teams.
- Registration teams fanned out across their assigned areas and were able to quickly enroll households.
- The global information system (GIS) data was synchronized and reviewed daily, allowing the team lead to track progress, troubleshoot and more accurately estimate the time needed to cover the remaining zones.
- Finally, CRS and our partner teams carried out spot checks to validate the data collected.

The mapping allowed us to effectively plan the ratio of staff to the number of households, address errors of inclusion or exclusion, reduce the time taken to complete the process and ensure the integrity of our lists.

“Maps bring layers of data to life by not only allowing CRS’ staff to see where needs are located, but by also enabling collaboration on a larger scale.”

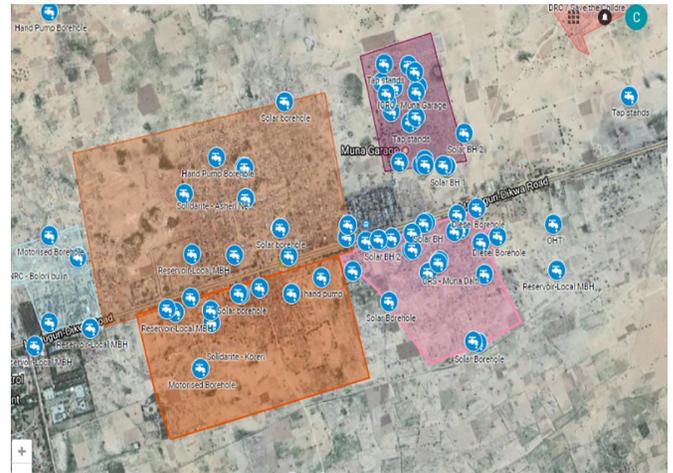
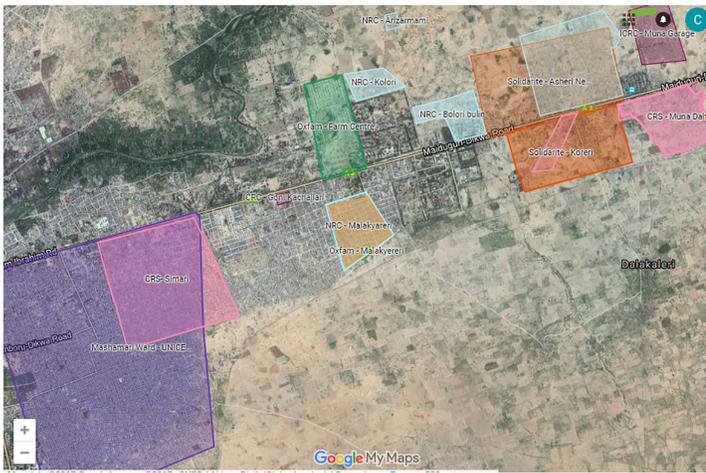
[CRS and Geographic Information Systems factsheet](#)



A Google Maps image of an initial registration process. The yellow dots indicate registered households, while the wider rectangle indicates the neighborhood's administrative boundaries.



In a subsequent registration process, the team identified the boundaries of each targeted area and assigned each sub-section to a team of enumerators.



Google Maps images used by the local area coordination forum, available at the public [Muna Corridor](#) Humanitarian Response Platform information site, showing areas of operation by WASH actors (left) and the presence of operational water sources (right).

**Coordination**

Controlling cholera during an outbreak requires an effective, coordinated response from nongovernmental organizations. When several suspected cholera cases were reported in a camp for internally displaced people in NE Nigeria in August 2017, CRS—as co-lead of the local area coordination (LAC) group—took responsibility for coordinating water, sanitation and hygiene, or WASH, activities.

In this effort, CRS organized a series of meetings to draw up area maps, since most actors only had single GPS points for their areas of intervention. Having determined the boundaries of the areas of coverage, the LAC co-leads confirmed each actors’ capacity to implement cholera prevention activities at their assigned location.

Using satellite imagery, CRS worked with actors to divide those neighborhoods assessed as being at risk of cholera, with each of the four WASH actors taking responsibility for hygiene promotion in two or more zones. Also, in consultation with local communities, each of the four WASH actors gathered GPS coordinates of water sources and shared these with CRS for mapping. CRS teams generated Google Maps, enabling well-coordinated and widespread batch and bucket chlorination of water sources.

While the response was successful in controlling further outbreaks, it highlighted how many actors were not accustomed to thinking spatially and were unfamiliar with mapping technology. Assigning specific areas and using GPS coordinates to identify the water infrastructure in need of chlorination or desludging was a challenge. The practice highlighted the need to train and familiarize WASH actors with mapping tools, as well as the importance of the LAC group to create and compile maps clearly showing their areas and the types of coverage, and regularly updating maps of water and sanitation infrastructure in high-density urban and peri-urban IDP settlements. Mapping proved key to cholera response and preparedness work.

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**Using satellite imagery, CRS worked with actors to divide neighborhoods assessed as being at risk of cholera, with each of the four WASH actors taking responsibility for hygiene promotion in two or more zones. GPS coordinates of water sources were also mapped.**

# Mobile money challenges mean pen and paper are still needed

Mobile money—or the use of phones and SIM cards to access financial services such as payments, transfers, insurance, savings and credit—is often touted as an effective technological alternative for making payments. It can also make activities quicker and safer—avoiding risks associated with teams carrying cash to distribution sites—and increases transparency and accountability. As cash assistance becomes an increasingly important strategy in humanitarian work, mobile money should provide an ideal solution. Yet CRS teams have encountered challenges.

## Central African Republic

While CRS teams in Central African Republic have had success using mobile money in Bangui and other town centers, we had to revert to paper vouchers and direct cash distributions to reach nearly 8,000 households and 137 vendors in the rural prefectures of Lobaye and Ouham. This is because mobile money was not possible without mobile network coverage. Participating households and vendors would have had to travel far from their homes and villages to make mobile transactions.

## Democratic Republic of the Congo

Similarly, in the Democratic Republic of the Congo, CRS teams have found that mobile phone ownership in the rural areas of the Kasais is limited. Where it exists, men own the devices, while women—who are often the primary project participants—have little or no phone access. Also, mobile network coverage is extremely limited in some areas, and mobile money companies lack the required infrastructure, liquidity and human resources to carry out large-scale payments in a timely manner. For example, as part of a cash distribution project in the country, CRS distributed SIM cards to 2,131 households that were each to receive \$109. To overcome the challenge that families lacked the necessary paperwork and identification required by the service provider, all the SIM cards were registered to CRS. Nevertheless, there was a further hurdle: the transfer value proved too large for the service provider to process during the project timeframe in this remote area so CRS had to revert to cash payments.

## Lessons learned

Mobile money and ICT4D solutions are not always a good fit, particularly in rural and isolated areas where infrastructure is limited and/or access to mobile phones is uncommon among program participants. It is important to continue to explore alternative and creative payment solutions.

- It is important to pilot test innovative approaches and technologies, particularly when they are delivered in rural or remote areas.
- Work with service providers that have a proven track record.
- Ensure that service contracts include guarantees and penalties.



Airtel agents distribute cash to CRS beneficiaries using unique SIM cards distributed to each household.



CRS staff confirm the delivery of the cash using separate beneficiary lists.

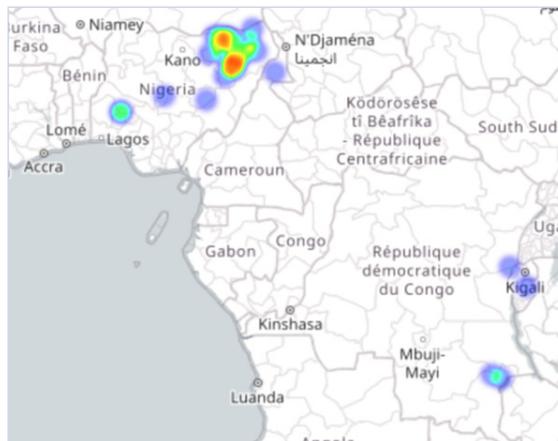
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**Mobile network coverage is extremely limited in some areas, and mobile money companies lack the required infrastructure, liquidity and human resources to carry out large-scale payments in a timely manner.**

# Cash and Assets Transfer (CAT) platform

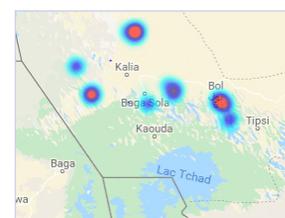
The [Cash and Assets Transfer](#) (CAT) Platform<sup>1</sup> is an ICT4D software for beneficiary data management, and a program tool for market-based programs.

## FACTS AND FIGURES: USE OF CAT IN CARO

CRS is operating or has operated the CAT platform in Cameroon, Nigeria, Burundi and DRC, and is supporting its local Caritas partner to use CAT in Chad. CRS country programs in the region integrate the platform into all phases of the project cycle—from targeting, to the delivery of goods and services (in kind, e-vouchers or cash), to the monitoring of training participation, facilitation of payments, and collection of data.



### TRANSACTION METRICS (EMERGENCY PROGRAMS)

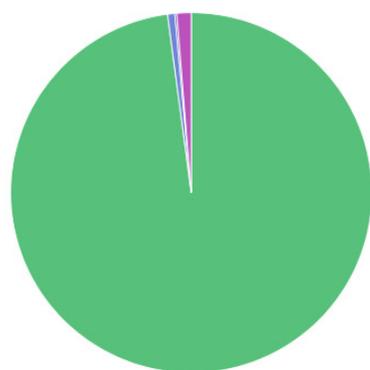


### BENEFICIARY METRICS (EMERGENCY PROGRAMS)



Heatmaps generated by the CAT platform. The top one represents beneficiaries served by CRS and our partners in the CARO region, while the one above shows Chad.

### Breakdown of monthly US\$ transfer value per country



- Nigeria: 98% (\$30.46 million)
- Burundi: 0.8% (\$259,660)
- DRC: 0.6% (\$189,950)
- Cameroon: 0.2% (\$52,110)

Chad is not included in the chart as activities there were not implemented directly by CRS.

### Donors

- United States Agency for International Development Food for Peace
- United States Agency for International Development Office of U.S. Foreign Disaster Assistance
- Latter Day Saints Charities
- The W. O'Neil Foundation
- PIQA Private Funds
- Global Fund
- Directorate-General for European Civil Protection and Humanitarian Aid Operations
- Caritas Germany

In Chad, activities using CAT were undertaken by CRS partners Caritas Chad and SECADEV, with our technical support, for a total redemption value of \$254,584 among 17,378 beneficiaries.

1. The CAT platform is built on RedRose's One Platform operating system and customized for CRS. Figures on these dashboards are estimates.



This project participant in DRC said it was the first time in her life that, when receiving humanitarian assistance, she had been given the choice to decide what to buy. “I am in charge of the money received,” she said. *Photo by CRS staff*

## USING THE CAT PLATFORM FOR IMPROVED RESULTS

The use of the CAT platform in CRS country programs across the CARO region has resulted in the following benefits:

**Beneficiary satisfaction:** Families we served, as well as other key stakeholders, in Northeast Nigeria, Cameroon, and the DRC reported high satisfaction with e-voucher cards. Both men and women in NE Nigeria reported an appreciation for the cards’ ease of use, freedom of choice to buy the items they needed the most, and the dignity they restored in enabling people to provide for their families. In Cameroon, 80 percent of program participants interviewed reported being very satisfied with the e-voucher methodology, 19 percent reported being satisfied, while only 1 percent reported not being satisfied.

**Ability to reach more people in less time:** The CAT platform facilitates providing solutions at scale and in a short period of time. Between 2014 and 2018, food assistance in NE Nigeria was scaled up from an initial 3,346 households per month to 21,657 households per month—an increase of 547 percent. In Cameroon, teams completed the transfers and paid vendors within 7 days of project launch. Finally, during DRC’s e-voucher fairs, CRS was able to carry out the financial reconciliation process at the end of each day in less than 30 minutes; when using paper vouchers, this exercise took on average up to 3 hours or more. In Chad, CRS is supporting Caritas Chad in the roll-out of its own CAT platform.

**Accessible and easy to use:** The platform is easy to use, meaning that beneficiaries, vendors and program staff quickly became accustomed to and able to operate CAT software and hardware.

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**Using a [smart] card is more convenient compared to other systems as it prevents others from committing identify theft: I am the only one who can access my assistance.**

Ibrahim Abubakar  
Yobe project beneficiary

# CRS and Global Fund take ICT4D to scale in Nigeria

In 2018, CRS Nigeria became the largest implementor of the long lasting insecticide-treated net (LLIN) mass campaigns in the world, distributing 12 million bed mosquito nets to 22.5 million people. Integrating ICT4D was been key to operating successfully on such a large scale.

Using the CAT platform—complemented by fingerprint scanners and security-enabled vouchers called net cards—CRS and partners, the Government of Nigeria and Global Fund, achieved the following:

- Electronically registered 5 million households, which resulted in a detailed census—including household size and location—in each state where the platform was used
- Conducted just-in-time verification of registration lists, and avoided duplication or irregularities
- Mapped distances to campaign distribution sites and health centers, ensuring complete coverage
- Monitored registration and distribution progress in real time, sharing daily campaign progress with key stakeholders, including senior managers in Abuja and members of CRS' Global Steering Committee
- Used rich, timely spatial data to identify irregularities, which allowed campaign staff to adjust as needed.
- Tracked training attendance, ensuring that the activities reached targeted community mobilizers and health workers with important education messages. Some 50,000 community mobilizers participated in over 2,000 training sessions.
- Conducted post-distribution monitoring and spot checks to verify the alignment of information on the CAT platform with the number of nets distributed, and number of people living in the households

Real-time data, spatial information and access to rapid analytics gave the campaign team enormous visibility of all program activities, allowing for the swift identification and resolution of challenges, and facilitating regular and transparent communication with a wide range of stakeholders. ICT4D is enabling CRS to operate at scale, reaching more people in one of the most challenging contexts, more rapidly and effectively than ever before.

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**5 million**

**HOUSEHOLDS WERE ELECTRONICALLY REGISTERED USING THE CAT PLATFORM**  
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## Resources

### Policy documents

- [GKIM Access Control Policy](#): Details password complexity, requires password changes, and restricts who is authorized to access any given ICT system

### Guidelines and tools

- GKIM's library on [ICT4D solutions: CRS Data Privacy and Protection Guidelines](#)
- [CAT User Portal](#)
- [Data Protection and CAT](#)

### Case studies

- [E-vouchers in Conflict Situations](#)
- [Nigeria Malaria Brief](#)
- [Local area-based coordination and the utilization of GIS](#)

### Training

- [Information Security Awareness Training](#), required by all CRS staff, teaches password safety and data protection
- Information on the creation and upkeep of [databases](#)
- Introduction to [CommCare](#)

# Ensuring data privacy in an era of ICT4D

In November 2017, due to a weakness in CRS' password management, an unauthorized entity accessed one of CARO's [online platforms](#), downloading project data. While the isolated incident was quickly corrected and had no negative impact on project participants, the breach highlighted the broader security vulnerabilities linked to the use of ICT4D if strong protection systems are not fully adopted, regularly tested and updated. Data privacy has become a priority focus as CRS explores ways to increase the reliance of development and humanitarian programming with new, relevant and accessible technology.

Digital surveys, cloud-based databases, point-of-sale card readers and mobile money payments are all examples of how ICT4D is being integrated on a daily basis throughout the program cycle: from needs assessment and beneficiary targeting, to the delivery of goods and services, and monitoring and evaluation.

While these innovations present great opportunities to help those in need with improved efficiency and impact, protecting their privacy and ensuring data security is a notable challenge. We must remain mindful and responsive to the vulnerabilities and threats to data that have increased due to the quantity of data collected, the diversity of data sources, and the portability and pair-ability of data.

## Recommendations

To ensure data protection and privacy, follow CRS' [ICT4D Data Privacy and Protection Guidelines](#). Consider the following core values and rights of the users/beneficiaries:

### 1. Knowledge and transparency

- Users/beneficiaries should know how ICT4D data collection systems operate
- Users/beneficiaries should know how and with whom personal information might be shared
- Users/beneficiaries should know when new information is collected and/or shared

### 2. Agency and control

- Users/beneficiaries should consent to data collection and sharing before any information is collected
- Users/beneficiaries should have the ability to access, audit and amend their personal data
- Users/beneficiaries should have the ability to hold data collectors responsible for gross negligence, misuse and/or harm resulting from data collection/sharing outside of the scope of the project

## Design principles for developing ICT4D solutions

- **Address surveillance risks**  
Projects should take steps to ensure that user/beneficiary data is secure from third party surveillance.
- **Limit data collection and use**  
ICT4D projects should limit data collection to what is absolutely necessary to meet the project's goals.
- **Promote and facilitate transparency**  
ICT4D projects should be transparent about what data is collected, how it is shared and how it might be used in the future.
- **Incorporate user feedback**  
In addition to addressing user questions and concerns, ICT4D projects should give users the ability to access, amend and/or delete their data.
- **Assume responsibility**  
ICT4D projects should assume accountability for potential risks and harm incurred via their projects and platforms.

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**Data privacy has become a priority focus as CRS explores ways to increase the reliance of development and humanitarian programming with new, relevant and accessible technology.**



JACQUES NKWAR  
Database Officer  
Democratic Republic of the Congo

# Staff Spotlight

A CRS colleague shares their relevant perspective and experience

**Greatest value ICT4D contributes** The development and implementation of a unique system for the storage and management of all data for each project contributes great value. And, for our emergency programs, ICT4D has enabled us to reach vulnerable populations in a more timely manner.

**Exciting developments in ICT4D** I am excited about the integration of different technologies—such as CommCare, Power BI, ArcGIS—into the monitoring and evaluation process. This improves data collection and automates indicator calculations.

**Challenges** We work in areas with limited or no internet access, electricity or mobile network coverage, and our partner staff are not always familiar with or well versed in the use of ICT4D. To facilitate M&E activities, we:

- Organize frequent trainings and refresher sessions for enumerators.
- Use generators, solar panels and external batteries to charge ICT4D equipment.
- Design the tools to limit data entry errors, facilitate the data collection process and ensure that it is done in a timely manner. One important learning is to ensure that we mark mandatory fields within the forms to ensure enumerators do not forget to collect essential information.
- Invest time at the start of the project to develop and test tools.

**Key lessons learned** Surprisingly, we have found that in areas where we deploy ICT4D solutions—such as electronic tablets—for data collection, communities accept us without any issues; they see e-data collection as a way to ensure greater transparency. We have also found that ICT4D discourages fraud, which significantly reduces the time of response from evaluation to intervention. Also, capturing the photos of beneficiaries while targeting can be helpful if done correctly, but we always need to get the consent of the community and of the individual.

**Encouragement to those hesitant about using ICT4D** I want to encourage them to use ICT4D to facilitate the collection, analysis, reporting and centralization of data. In DRC, the integration of ICT4D has resulted in greater efficiencies, effectiveness and program quality. CRS has highly qualified technical staff available to offer real-time support to country programs, from project design to execution. This is particularly helpful for programs that have yet to dip their toes into ICT4D. Generally, the scale-up of ICT4D and its integration into all facets of a program cycle has yielded great results. Country programs that have yet to use it should feel reassured that they will receive the support they need to deploy it.

**Proudest achievement** This was the integration of an attendance tracker tool to capture the number of cash-for-work beneficiaries coming to work each day. I am also excited that the majority of our emergency projects have integrated ICT4D. In fact, ICT4D is used in 80 percent of all project activities.

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