AFFORDABLE, SIMPLE TOOLS TO COLLECT DATA, COMMUNICATE WITH CLIENTS, AND MEASURE IMPACT.

SUMMARY

What if nonprofits and social enterprises had an affordable way to report real-time, large scale data on their social impact?

Organisations are under pressure to measure their performance and results. Many low-cost, information communication technology (ICT) -based tools already exist to help collect data on a large-scale, real-time basis. Yet, while both supply and demand for ICT-based tools exist, nonprofits and social enterprises often fail to take advantage of them.

The issue is access. There isn't a central marketplace at which organisations can access ICT-based tools and come to understand their pros and cons as well as their applications to specific needs.

The other issue is technical language. 'Free and open source' doesn't mean no-cost, turn-key solutions ready for immediate deployment. Rather, it means that people with specific skills, such as IT programmers, can use open source tools to build something useful for organisations. However, most nonprofits and social enterprises do not have in-house programmers to help adapt such tools.

In addition to addressing these gaps, this catalogue goes a step further by providing recommendations that assist users to make decisions in certain categories of tools (i.e. digital data collection apps and SMS communication platforms). Beyond these targeted recommendations, the catalogue displays all relevant research findings so that users can draw their own comparisons.

This catalogue aims to feature the options as neatly and simply as possible so that the catalogue's audience - small-to-medium organisations - can understand and take action. But such a simplification poses the risk of eliminating some of the nuances and complexities of individual tools. The result is a careful balancing of simplicity and complexity, rigour and practicality, and subjectivity and objectivity.

This field of impact tracker technology is dynamic and fast-moving. New tools come out on the market on a regular basis. Existing tools frequently expand their features to cater to users' needs and challenge their competitors. Given this dynamism, the online version of this catalogue will be updated regularly: **impacttrackertech.kopernik.info** This print catalogue in your hands is a snapshot of existing tools and their features as of October 2014.

We hope you find this catalogue useful and relevant. For any comments and feedback, please reach us on info@kopernik.info

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Find our about our methodology, what resources we've used and who should use this catalogue on the following pages.

CONTENTS

We have divided the impact tracker technologies into the following categories.

ABOUT THIS PROJECT

Authored by Kopernik, a nonprofit connecting simple, life-changing technology with the people who need it the most.

In recent years, we have seen an inspiring surge of simple, innovative technologies designed to improve the lives of the poor. Social enterprises, research institutions, and transnational corporations are making breakthroughs in developing affordable solar lanterns, water filters, clean cookstoves, and ICT innovations.

Yet despite the progress and promise of these life-changing technologies, we are far from seeing their benefits realised on a grand scale. This is neither an issue of supply nor demand; rather, it is a distribution challenge.

Kopernik was launched in 2010 precisely to respond to this gap between new technologies and communities in need. Since then, we have connected life-changing technologies technologies with last mile communities in Asia and Africa by partnering with technology producers, donors and community organisations.

Authored by Kopernik, this catalogue focuses on a particular set of existing innovative technologies - low-cost, ICT-based tools that allow organisations to collect data and communicate with clients - which we call **impact tracker technologies.**

Funded by the Impact Economy Innovation Fund

This catalogue and the research behind it were funded by the Impact Economy Innovations Fund in East and Southeast Asia, which provided financial support for a period of one year (10/2013-10/2014). The Fund was launched by the Rockefeller Foundation and Asia Community Ventures at the Impact Investing Forum held in Hong Kong on March 14-15, 2013. The Fund aims to catalyse collective action and regional market development that will accelerate market-driven solutions to important development challenges.

THIS IS A CATALOGUE WITH SOME RECOMENDATIONS

There is no single tool or combination of tools that is right for all organisations. The right tool for your organisation depends on your needs, resources, and capacity. That's why we designed this catalogue so that you can browse to find the most appropriate tool(s) for your own context.

In certain categories, however, we felt the need to offer recommendations. Otherwise, we would have ended up with a long list of tools, overwhelming readers with options. Instead, we wanted to create a catalogue that helps organisations choose among the available options in order to help facilitate the adoption and implementation of these helpful tools.

HOW TO MEASURE

This catalogue showcases tools to help your organisation collect data and communicate with clients. These tools will be useful once your organisation has decided what you want to measure. It is important to start with a decision regarding what to measure; we strongly advise against working backwards, that is, starting with convenient tools and deciding what to measure based on what the tools enable you to do.

If you want to figure out what to measure, we recommend that you look at resources such as the Impact Reporting and Investment Standards (IRIS) catalogue, which lists generally-accepted performance metrics. In the IRIS catalogue, you will find metrics for financial performance; operational performance; product performance; sector performance; and social and environmental objective performance.

FOUR CATEGORIES

This catalogue divides impact tracker technologies into four categories.

1. **Digital data collection apps**
2. **SMS communication platforms**
3. **Geospatial mapping tools**
4. **Remote sensors**

Interestingly, the first three categories seem to be converging into a single category; we learned that some of the top-tier recommendations in these categories are developing all three functionalities based on their success in a single category. This is a positive trend from a user perspective, as one impact tracker technology could cater to most, if not all, of an organisation's data collection and client communication needs.

EXCLUDES mHEALTH

In order to keep the scope of work focused, we made a decision to exclude emerging ICT-based tools in mHealth from the research. Examples of mHealth tools include smartphone-attachable blood pressure monitors and retina screening software. While exciting and promising, these tools and their specific functions are beyond the scope of this research.

WHO SHOULD USE THIS CATALOGUE

This catalogue has been designed, researched, and written with the following type of organisation in mind:

A small-to-medium social enterprise or a nonprofit organisation working in international development or humanitarian emergencies. Its main office is located in an urban area with decent infrastructure and has access to slow to medium internet connection. **The organisation engages in work in rural, last-mile communities where mobile (2G) and internet (3G) connections are poor.** Financially, the organisation cannot afford to build its IT capacity in terms of hardware, software, and know-how. Therefore, affordable, turnkey solutions are needed to enhance its impact tracking mechanisms.

©Lincoln Rajali, Kopernik

A Kenyan NGO, working in the water and sanitation sector. Using grants and donations, the organisation builds community-managed water sources and toilets in five slum areas in Nairobi, and five in rural villages. So far, it managed to establish 10 public water sources servicing 500 households. They hire field workers to conduct bi-monthly monitoring visits to ensure that the facilities are being used and maintained by the respective communities.

©Dipak Dahal

An Indian social enterprise committed to distributing simple, life-changing technologies to remote communities through its microreseller network. Most of their resellers and customers only own basic phones with limited access to the internet. Besides monitoring the sales and repayments of their resellers, the organisation is also actively monitoring the use of their solar lights and clean cook stoves.

©Misran Lubis, PKPA

An Indonesian NGO, working in emergency response, wants to assess the damage of an eruption that just shook the urban area of North Sumatra. The NGO wants to collect data from different sources to gain a comprehensive picture of the conditions and facilitate the necessary assistance to reach the ground.

METHODOLOGY

DESK RESEARCH, FIRST-HAND USAGE, AND INTERVIEWS

Researching the impact tracker technologies involved countless hours of browsing their websites to understand a range of aspects including features, usage, and pricing. Since the best way to assess a tool's strengths and weaknesses is to actually use it, we also experimented with as many of the tools as possible in Kopernik's own projects and activities.

Alongside conducting desk research and using the tools on our own, we also conducted interviews with tech developers and tech users for one hour interviews. These conversations were very informative and helped us understand, for example, how and why these tools were developed, what challenges developers faced, how developers understand their competition, and who uses these technologies.

CRITERIA

Spider chart ratings are used for for the first two categories. Tools in the digital data collection apps and SMS communication platform categories were assessed against the following five criteria, which are critical determinants from a user perspective.

1. **Affordability**: Cost of monthly subscription plans, as well as running costs.
2. **Usability**: Richness and user-friendliness of features offered.
3. **Rapidity**: Ability to send and receive large volumes of data on a real-time basis.
4. **Scalability:** Ability to handle multiple services, large data volume, and multiple users with different circumstances at the same time.
5. **Transferability**: Flexibility in using the services for different purposes, sectors, and contexts.

SCORING SYSTEM

We have dissected each criterion into components and sub-components to ensure rigour and objectivity in our assessment. The details of this rigourous analysis are shown in the appendix. For simplicity's sake, only the high-level scores for each criterion, as well as the aggregate, overall rating are displayed in the technology summary pages.

WHOSE ASSESSMENT DID WE USE FOR THE RATINGS?

We opted not to rely on a single data source, so we combined ratings from Kopernik's own experience, other user experiences, and tech developers' self-assessment for each of the above criteria.

HOW TO USE THIS CATALOGUE

TECHNOLOGY PAGE

1 TITLE

The title contains the name of the technology including the company location and website.

2 SPIDERCHART

The spiderchart shows ratings relative to the top three technologies in the same category.

3 USER INTERFACE

The images show pictures, application screenshots, and menu.

HOW TO USE THIS CATALOGUE

KEY SYMBOLS

DIGITAL DATA COLLECTION APPS

GEOSPATIAL MAPPING TOOLS

SMS COMMUNICATION PLATFORMS

REMOTE SENSORS

DIGITAL DATA COLLECTION APPS

- Magpi
- CommCare
- iFormBuilder

- ViewWorld
- TaroWorks

- Formhub
- EpiCollect
- EpiCollect+
- KoboToolbox
- DataWinners
- OpenDataKit
- OpenXData

SUMMARY

The digital data collection apps are solutions to eliminate paper surveys in the field and reduce the time it takes to compile data. These apps work on smart phones and tablets, allowing for easy and robust data collection. They often allow users to develop digital questionnaires using a pre-programmed form builder, deploy these forms to mobile devices, collect data on devices, and sync forms with the cloud when connected to a data network. Some of the apps can also produce charts and maps from the collected data, generate PDF reports, and allow users to download aggregated data to conduct more complex analysis.

For decades, organisations have used paper forms to conduct surveys, as paper was the cheapest and easiest solution. Paper-based data collection may be convenient to take notes in an interview setting, but entering the collected data into an electronic format takes hours and days.

At first glance, using mobile devices to collect data might seem costly when taking device procurement and training time into consideration. But, given the increasingly lower prices of mobile devices, the upfront equipment cost is a good investment in the long term for organisations that gather data on a regular basis. Training time is minimal since these apps are user-friendly. Digital data collection apps also eliminate the extra step of data entry in paper-based processes, thereby cutting costs for human resources.

Of the 12 tools featured in this category, our top recommendations include Magpi, Commcare, and iFormBuilder, which are user-friendly, affordable, and comprehensive in their feature

Last updated in October 2014

MAGPI

http://magpi.com/

MAGPI - Washington DC, US

Magpi is a 'freemium' data collection application with rich functionalities to address field data collection needs. The application is very easy to use. Anyone with basic computer skills can simply sign up for an account and start building questionnaires and collecting data. The newly launched Magpi 2.0 offers more advanced features such as the Text to Speech functionality, subform integrations, automatic device synchronisation, as well as scheduled broadcast messages. The application works on various mobile platforms, and data collection with SMS and web-based entry can be integrated.

GEOGRAPHY
No geographical restrictions

SECTOR
No sectoral focus

APPLICATION USERS
- Camfed
- IFRC
- Internews

CUSTOMER SERVICE
- Free Account: Free via email
- Pro & Enterprise Accounts: Free via email, 24 hours priority response
- Phone, Skype, ground support with additional cost

AWARDS & ACCOLADES
- The ComputerWorld 21st Century Achievement Award for Collaboration (2012)
- The Wall Street Journal Technology Innovation Award for Healthcare IT (2009)

OPERATING SYSTEM	
Android	√
iOS	√
Symbian	√

DATA COLLECTION FEATURES	
Web-based application	√
Drag & drop form builder	√
SMS data collection	√

TYPE OF DATA COLLECTED	
Location/geospatial	√
Multimedia (picture, audio, video)	✗
Text	√
Numeric	√
Single/multiple Choices	√
Date/time	√

LOGIC FUNCTION	
Count logic	√
Skip logic	√
Answer limits & validation	√

DATA TRANSMISSION & ANALYSIS	
Automatic sync	√
Auto-generated map	√
PDF report	√

LANGUAGE SUPPORT	
Localisation	√
Non-Latin font support	√

REVIEW

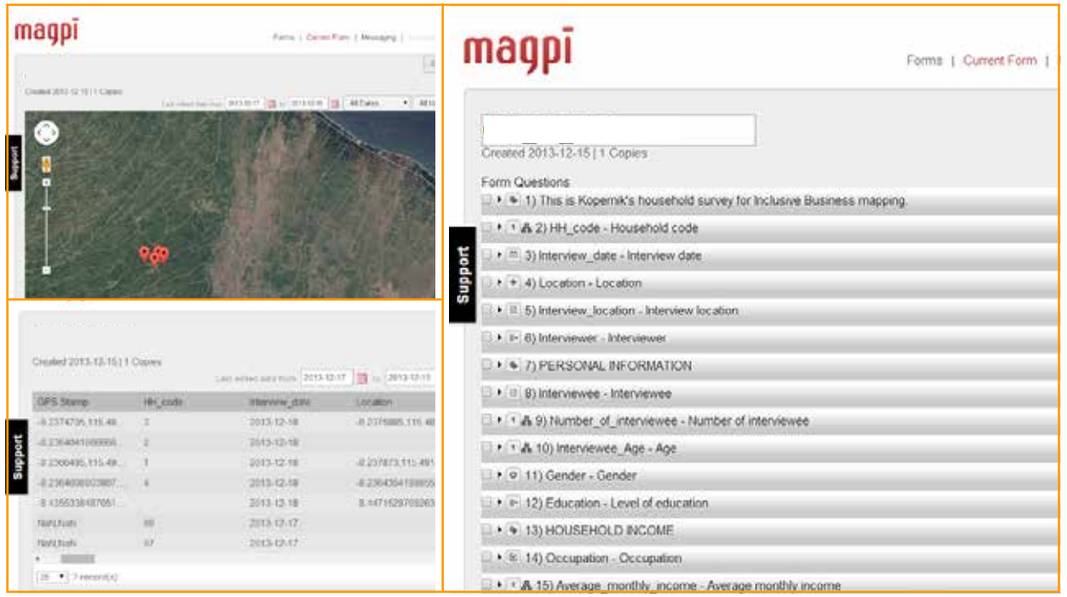
BEST FEATURES
- Comprehensive basic features available for free users
- Easy-to-use 'drag & drop' form builder
- Text to Speech messaging feature
- Integrated with SMS data collection

LIMITATIONS
Multimedia data entry is not available

PRICING

	Free	Pro	Enterprise
Price	US$0	US$50/month or $5,000/year	US$10,000/year
Free account duration	No Limit	N/A	N/A
Forms per account	20	Unlimited	Unlimited
Questions per form	100	Unlimited	Unlimited
Submissions per year	6,000	Unlimited	Unlimited
Upload credit included	N/A	500 (monthly), or 10,000 (yearly)	20,000
API access	No	Yes	Yes
SMS data collection	No	Yes	Yes

USER INTERFACE



COMMCARE

http://www.commcarehq.org/home/

DIMAGI - Cambridge, US

Initially designed for the data collection needs of community health workers, CommCare is an open-source software with mobile and cloud infrastructure that can be used to build forms and collect data in the field using a wide range of Java phones and Android mobile devices. CommCare supports cross-platform data collection and case-based monitoring for field workers to keep track of their beneficiaries and clients.

GEOGRAPHY

No geographical restrictions, unless integrated with CommConnect for SMS data collection

SECTOR

Initially designed for health sector, however also applicable in other sectors.

APPLICATION USERS

- Mae Fah Luang Foundation (Thailand)
- Save The Children
- WHO

CUSTOMER SERVICE

- Online community support/user group mailing list (all users)
- Direct email & phone support (except Community users)
- Dedicated support staff (Advanced & Enterprise users only)

AWARDS & ACCOLADES

- Innovative eHealth Solutions for Africa Awards by the African Development Bank (2013)
- Business Action Health Award by GBC (2012) for Dimagi, Inc

OPERATING SYSTEM	
Android	√
iOS	✗
Symbian	✗

DATA COLLECTION FEATURES	
Web-based application	√
Drag & drop form builder	✗
SMS data collection	√

TYPE OF DATA COLLECTED	
Location/geospatial	√
Multimedia (picture, audio, video)	√
Text	√
Numeric	√
Single/multiple choices	√
Date/time	√

LOGIC FUNCTION	
Count logic	√
Skip logic	√
Answer limits & validation	√

DATA PROCESSING & ANALYSIS	
Automatic sync	√
Auto-generated map	√
PDF report	✗

LANGUAGE SUPPORT	
Localisation	√
Non-Latin font support	√

PRICING

	Community	Standard	Pro	Advanced	Enterprise
Price	US$0	US$100/month	US$500/ month	US$1,000/ month	Upon request
Free account duration	No Limit				
Number of mobile users	50	100	500	1,000	Unlimited / Discounted
Additional mobile user	US$1/user/ month	Unlimited/Discounted Pricing			
SMS outbound messaging	No	Yes	Yes	Yes	Yes
SMS data collection	No	No	Yes	Yes	Yes
Web-based data collection	No	No	Yes	Yes	Yes

REVIEW

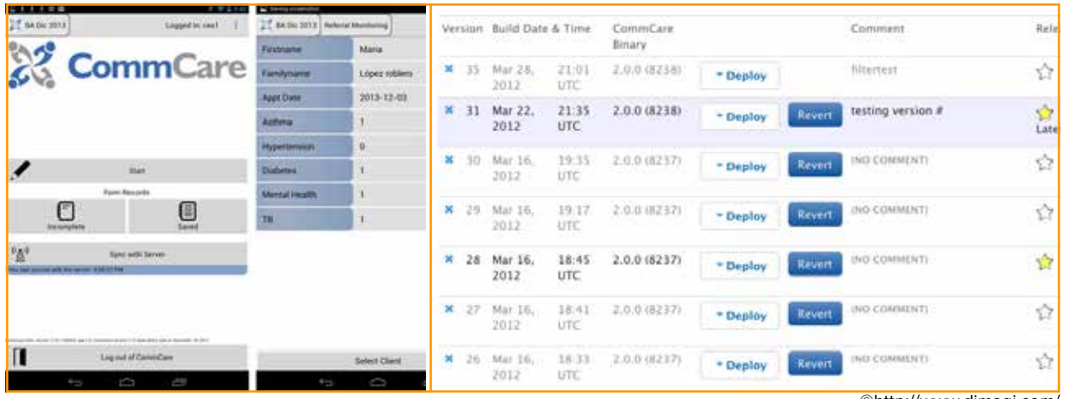
BEST FEATURES

- Create case-based database per beneficiary allowing for future follow up
- CommCare Exchange, a knowledge sharing forum among users
- Integration with SMS data collection platform, CommConnect

LIMITATIONS

- User interface may be confusing for people with limited computer skills
- Organisations may need to hire additional IT consultants to get started
- Form builder is not very intuitive

USER INTERFACE



©http://www.dimagi.com/

iFormBuilder

https://www.iformbuilder.com/

Zerion Software Inc. - Herndon, US

iFormBuilder is a cloud-based mobile data collection platform that includes more than 40 data input types, including: hand drawings, signatures, barcodes, and RFID scans for complex data collection and management. It offers advanced data collection abilities such as leveraging multiple subforms with one-to-many relationships. With an additional hardware, the application works in environments with internet connections do not exist.

GEOGRAPHY

No geographical restrictions

SECTOR

No sectoral focus

APPLICATION USERS

- The Hunger Project
- Mercy Corps
- Living Water International

CUSTOMER SERVICE

- Free help desk support for product-specific questions
- Web-based chat features
- Paid implementation support at US$ 500/4 hours
- Includes 4hrs of kick-start training for Emerging users

AWARDS & ACCOLADES

- Best New Partner by Esri (2014)
- Mobilizer Award by Mobile Enterprise (2011 and 2012)

OPERATING SYSTEM	
Android	✓
iOS	✓
Symbian	✗

DATA COLLECTION FEATURES	
Web-based application	✓
Drag & drop form builder	✓
SMS data collection	✓

TYPE OF DATA COLLECTED	
Location/geospatial	✓
Multimedia (picture, audio, video)	✓
Text	✓
Numeric	✓
Single/multiple choices	✓
Date/time	✓

LOGIC FUNCTION	
Count logic	✓
Skip logic	✓
Answer limits & validation	✓

DATA PROCESSING & ANALYSIS	
Automatic sync	✓
Auto-generated map	✓
PDF report	✓

LANGUAGE SUPPORT	
Localisation	✓
Non-Latin font support	✓

REVIEW

BEST FEATURES

- Over 40 types of data entry, including multimedia data and signature
- Forms can be assigned to specific users
- Automatic device synchronising

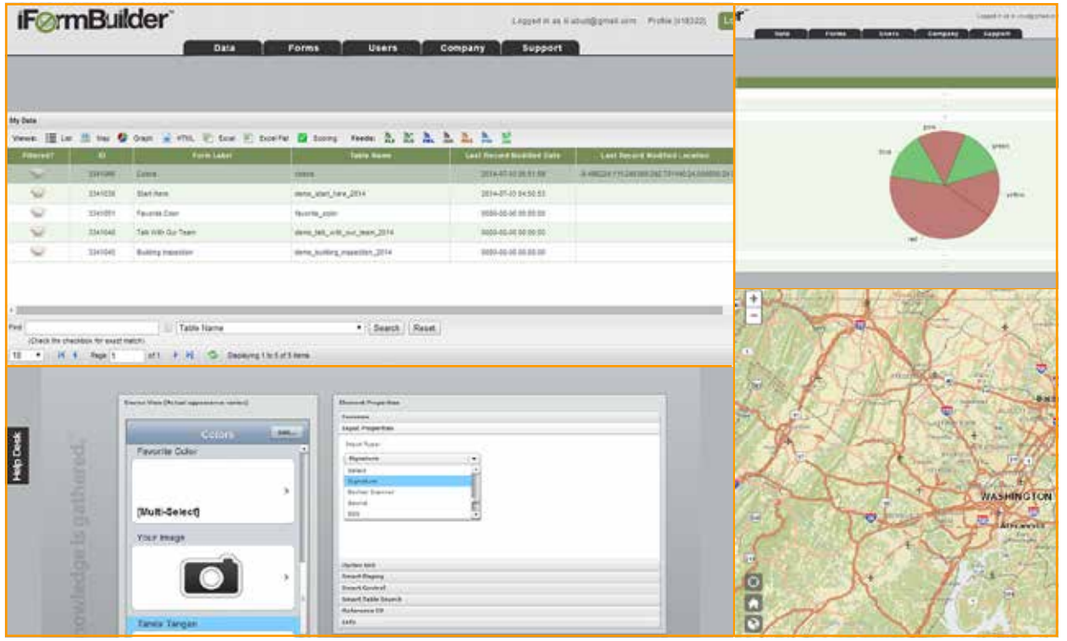
LIMITATIONS

- Not integrated with SMS data collection
- Advanced features only work on iOS devices

PRICING

	Exploring	Growing	Emerging
Price	US$50/ month	US$500/ month, or US$5,000/ year	Upon request
Free account duration	30 days		
Number of forms	100	1,000	Unlimited
Numbers of submission	Unlimited	Unlimited	Unlimited
Custom PDF report	Yes	Yes	Yes
Custom URL	No	Yes	Yes
API access	No	Yes	Yes

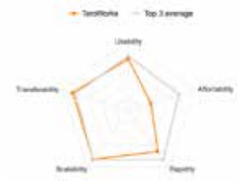
USER INTERFACE



TAROWORKS

http://http://taroworks.org/

Grameen Foundation - Washington DC, US



TaroWorks is a mobile application built on the Salesforce platform and designed for field data collection and field work management. The rich features on the mobile app allow for robust project management, including task management and performance monitoring. The powerful database features on Salesforce enable organisations to conduct further business analytics and to measure project impact against social performance management tools.

GEOGRAPHY

No geographical restrictions

SECTOR

Social enterprise

APPLICATION USERS

- d.light
- Ilumexico

CUSTOMER SERVICE

- 1 hour intro training session
- Access to online training videos and support documentation
- 1 hour of technical support per month, with guaranteed response within 72 hours
- Additional support available for US$175/hour

OPERATING SYSTEM	
Android	√
iOS	✗
Symbian	✗

DATA COLLECTION FEATURES	
Web-based application	√
Drag & drop form builder	√
SMS data collection	✗

TYPE OF DATA COLLECTED	
Location/geospatial	√
Multimedia (picture, audio, video)	√ (picture only)
Text	√
Numeric	√
Single/multiple choices	√
Date/time	√

LOGIC FUNCTION	
Count logic	✗
Skip logic	√
Answer limits & validation	√

DATA PROCESSING & ANALYSIS	
Automatic sync	✗
Auto-generated map	√
PDF report	✗

LANGUAGE SUPPORT	
Localisation	√
Non-Latin font support	✗

PRICING

Number of Mobile Users	<40	<70	<100	<150	<200
Price	US$5,000/year	US$7,500/year	US$10,000/ year	US$12,500/ year	US$15,000/ year
Free account duration	No free trial				
Additional mobile users	N/A				US$50/user
Database access	10 Licenses				
Additional access	US$30/user/month				
Number of forms	Unlimited				
Number of submissions	Unlimited				

REVIEW

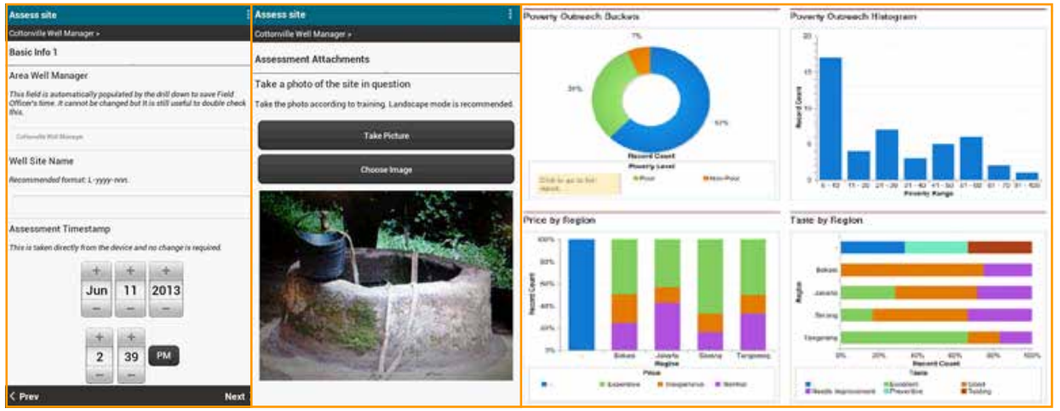
BEST FEATURES

- Built-in portfolio management tool enables project managers to distribute tasks within field workers
- Multimedia capability to utilize video on the device for training or educational purposes

LIMITATIONS

- Pricing might be considered high for small - medium scale organisations
- Multimedia data entry only support image files

USER INTERFACE



©http://taroworks.org/

VIEWWORLD

http://viewworld.net/

VIEWWORLD Inc - Copenhagen, Denmark

ViewWorld enables organisations to create project groups for easier data management. Multiple subforms can be linked under one main form. The app allows collection of multimedia data entry, such as audio, video, and picture. The form builder is web-based, with a verification feature to allow the admin or project manager to verify data submitted by field staff. Collected data can be viewed on an online dashboard in either gallery view or map view.

GEOGRAPHY

No geographical restrictions

SECTOR

No sectoral focus

APPLICATION USERS

- Village Savings & Loans Associations (multi-region, Africa)
- Danish Civil Protection League (Denmark)
- Water for Cambodia (Cambodia)

CUSTOMER SERVICE

- Complimentary: user's guide on website, email, video tutorial
- Professional & Organisations account: tailored training & support, two hours personal support

AWARDS & ACCOLADES

Nominated for Danish App Award in Tools and Utilities category (2013)

OPERATING SYSTEM	
Android	√
iOS	✗
Symbian	✗

DATA COLLECTION FEATURES	
Web-based application	√
Drag & drop form builder	√
SMS data collection	✗

TYPE OF DATA COLLECTED	
Location/geospatial	√
Multimedia (picture, audio, video)	√
Text	√
Numeric	√
Single/multiple choices	√
Date/time	√

LOGIC FUNCTION	
Count logic	✗
Skip logic	✗
Answer limits & validation	√

DATA PROCESSING & ANALYSIS	
Automatic sync	✗
Auto-generated map	√
PDF report	✗

LANGUAGE SUPPORT	
Localisation	√
Non-Latin font support	√

REVIEW

BEST FEATURES

- Questions grouping (not single question per page)
- Gallery view, where image data entry can be viewed on the website

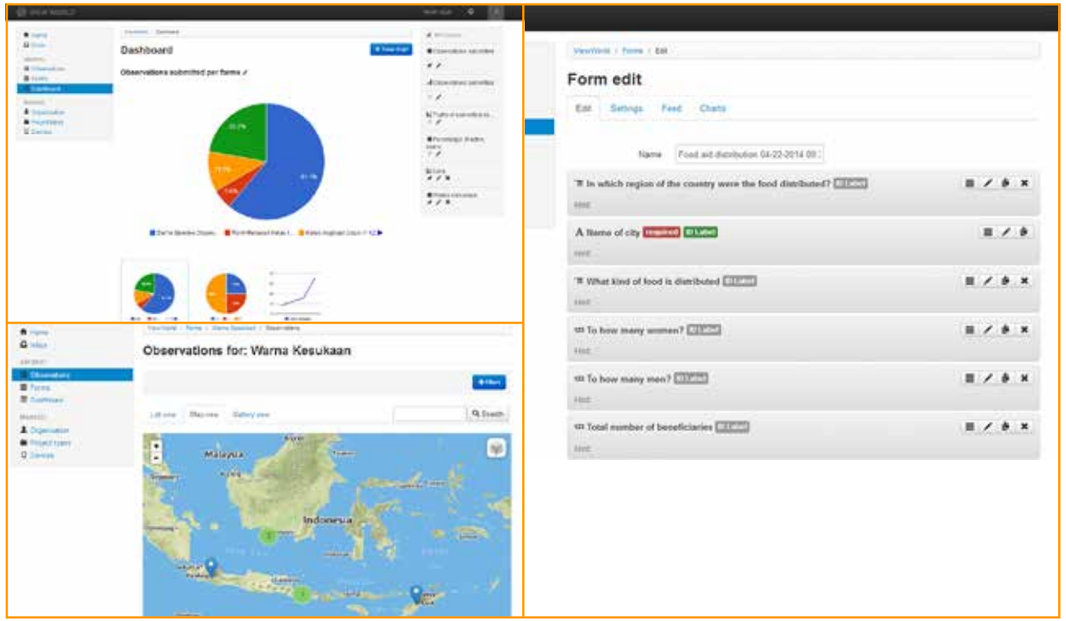
LIMITATIONS

- No logic functions
- May be costly for small organisations

PRICING

	Project	Professional	Organisation
Price	US$0	Upon request	Upon request
Free account duration	No Limit	N/A	N/A
Number of projects	1	Unlimited	Unlimited
Forms per account	3	Any	Any
Number of users per project	5	Any	Any
Submissions per month	300	1,000	1,500
API access	No	Yes	Yes

USER INTERFACE



RATINGS

MAGPI

Magpi is an easy-to-use mobile data collection application that works on different mobile devices with comprehensive features, such as SMS and audio messaging, to be used by organisations with limited IT and financial resources.

COMMCARE

CommCare is an open-source software with mobile and cloud infrastructure designed to build forms and collect data from the field using a wide range of mobile devices, including Java-based phones, as well as cross-platform data collection.

IFORMBUILDER

iFormBuilder is a mobile data collection platform offering advanced form building on iOS and Android devices offering over 40 data input types, high level data security, and offline data collection capabilities for NGOs and corporations alike.

TAROWORKS

TaroWorks is a mobile application for Android devices designed for field data collection and work management using the Salesforce platform.

VIEWWORLD

ViewWorld allows dynamic data collection and organisation by project grouping, and subforms. The collected data can be viewed on map or gallery view on the dashboard.

FEATURES

	MAGPI	COMMCARE	IFORMBUILDER	TAROWORKS	VIEWWORLD
OPERATING SYSTEM					
Android	√	√	√	√	√
iOS	√	✗	√	✗	✗
Symbian	√	✗	✗	✗	✗
DATA COLLECTION FEATURES					
Web-based application	√	√	√	√	√
Drag & drop form builder	√	✗	✗	√	√
TYPE OF DATA COLLECTED					
Location/geospatial	√	√	√	√	√
Multimedia (picture, audio, video)	✗	√	√	√	√
Text	√	√	√	√	√
Numeric	√	√	√	√	√
Single/multiple choices	√	√	√	√	√
Date/time	√	√	√	√	√
LOGIC FUNCTION					
Count logic	√	√	√	✗	✗
Skip logic	√	√	√	√	✗
Answer limits & validation	√	√	√	√	√
DATA PROCESSING & ANALYSIS					
SMS feature	√	√	√	✗	✗
Automatic sync	√	√	√	✗	✗
Auto-generated map	√	√	√	√	√
PDF report	√	✗	√	✗	✗
LANGUAGE SUPPORT					
Localisation	√	√	√	√	√
Non-Latin font support	√	√	√	✗	√

Last updated in October 2014

OTHER OPTIONS

DATAWINNERS
https://www.datawinners.com/

EPICOLLECT
http://www.epicollect.net/

EPICOLLECT+
http://plus.epicollect.net/

FORMHUB
https://formhub.org/

KOBOTOOLBOX
http://www.kobotoolbox.org/

OPENDATAKIT
http://opendatakit.org/

OPENXDATA
http://www.openxdata.org/

APPS FOR SMART PHONES AND TABLETS THAT ALLOW FOR EASY DATA COLLECTION. NO MORE PAPER SURVEYS AND DATA ENTRY.

SMS COMMUNICATION PLATFORMS

- Telerivet
- TextIt
- Echomobile

- Frontline Cloud
- CommConnect
- Voto

- Vusion
- RapidSMS
- Frontline SMS
- Clickatell
- Esoko

SUMMARY

This ITT category features tools that can efficiently manage large-scale communications with clients and beneficiaries through SMS so that organisations can reduce the number of phone calls and physical visits to project sites. These platforms are cloud-based and can be accessed using any web browser straight from your computer, as well as via the platform's dedicated Android apps where available.

Many social enterprises and NGOs have shown a strong preference for communicating with their stakeholders using SMS because of its low cost, high accessibility, and long-standing widespread adoption in low-resource areas. However, until quite recently, the main issues in SMS usage had centered around efficiency, data storage, and data management. Even on a small scale, keeping track of incoming messages and replying to them proved to be time- and energy-consuming. Limited accessibility to the SMS data outside of mobile devices was another drawback.

The good news: Technology is now catching up to our needs. These platforms have come up with a suite of features to monitor large volumes of SMS communications on a real-time basis. Among other things, these tools allow users to act automatically on incoming messages by replying with preset templates, processing them as poll responses, and extracting certain pieces of data in the messages and saving them to the respondents' profiles.

These messages travel from and to the platforms through selected gateway connections like a local mobile number running on the user's Android device, a shared phone number operating on the platform's server, or a virtual number administered by a third-party aggregator. Your choice of medium depends on your SMS volume needs, which dictate both the overall affordability and scalability of an SMS service application.

Our 'Top Recommendations' include TextIt and Telerivet, which offer the most comprehensive sets of features that can be easily set up by users with limited IT knowledge. 'Other Recommendations' and 'Other Options' platforms lack some of the essential features found in the top recomendations and do not offer optimal user experience. However, tools like VOTO, CommConnect, and EchoMobile make up for these shortcomings by offering distinct features that cater to specific target groups.

Last updated in October 2014

KOPERNIK

TEXTIT

http://textit.in/

Nyaruka - Kigali, Rwanda

Through its simple Flow engine, TextIt allows anyone to visually set up and modify complex SMS services that were only possible by IT programmers or consulting companies. TextIt offers a wide range of connection options, ensuring that anyone can launch an SMS application in any country with internet connectivity within minutes. Built into the platform is powerful real-time analytics that lets one compare datasets across populations.

DETAILS

GEOGRAPHY

No geo-specific features, services or rates; and no geographic restrictions

SECTOR

No sectoral focus

APPLICATION USERS

- Unicef
- TechnoServe
- NURU

CUSTOMER SERVICE

- Complimentary: Email support and access to knowledge center
- Additional fees: Priority support via Skype and phone calls

SMS GATEWAY	
SMS gateway method	
Local mobile number running on Android app	√
Virtual number operated by third party aggregator	√
Shared number operated by tech developer	✗
Custom message routing	Unlimited

SMS SERVICES	
Bulk SMS	√
Scheduled SMS	√
Subscription service	√
Automated replies	√
Surveys/polls	√
Voice messages & IVR	√
Message personalisation	√

CONTACT MANAGEMENT	
Multiple group membership	√
Custom contact variables	√
Automated contact editing	√
Automated contact group updating	√

DATA PROCESSING & ANALYSIS	
Automatic poll response aggregation	√
Cloud-based storage & analysis	√

PRICING

	US$20	US$40	US$140	US$250	US$550	US$2,250	US$4,000
SMS credits	1,000	2,500	10,000	20,000	50,000	250,000	500,000
Cost per SMS	2 cents	1.6 cents	1.4 cents	1.2 cents	1.1 cents	0.9 cents	0.8 cents
Free starting credits	1,000						

REVIEW

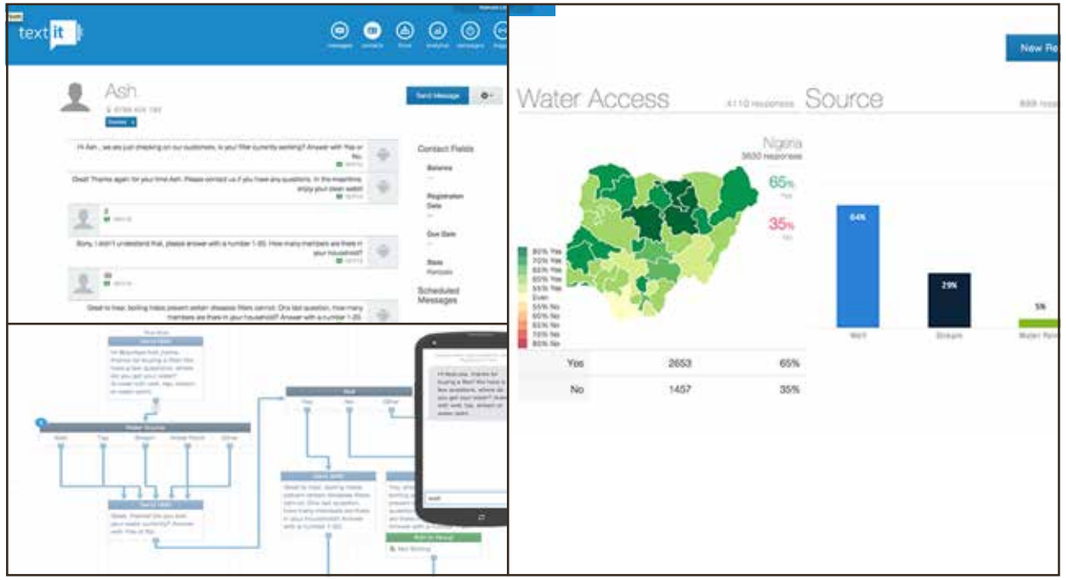
BEST FEATURES

- Intuitive visual user interface with the Flow engine
- Diverse selection of if/then conditions and actions they can trigger
- Voice messages & IVR response input choice for low-literacy population

LIMITATIONS

Inability to separate message service management into different projects

USER INTERFACE



TELERIVET

https://telerivet.com/

TELERIVET Inc - San Fransisco, US

Telerivet is a comprehensive mobile messaging platform that is easy to set up and deploy in any country with ordinary equipment and basic internet connectivity. Its cloud-based management system routes messages to and from any mobile number, as well as through virtual numbers and short codes. A wide variety of SMS services can be set up easily with no programmer's help including a custom automated service from if/then conditions and basic user actions.

DETAILS

GEOGRAPHY

No geo-specific features, services or rates; and no geographic restrictions

SECTOR

No sectoral focus

APPLICATION USERS

- KIVA
- Farm Radio International
- MyAgro

CUSTOMER SERVICE

- Complimentary: Limited support
- Standard Plan: Email support
- Premium Plan: Priority support

SMS GATEWAY	
SMS gateway method	
Local mobile number running on Android app	✓
Virtual number operated by third party aggregator	✓
Shared number operated by tech developer	✗
Custom message routing	2-20

SMS SERVICES	
Bulk SMS	✓
Scheduled SMS	✓
Subscription service	✓
Automated replies	✓
Surveys/polls	✓
Voice messages & IVR	✗
Message personalisation	✓

CONTACT MANAGEMENT	
Multiple contact group membership	✓
Custom contact variables	✓
Automated contact editing	✓
Automated contact group updating	✓

DATA PROCESSING & ANALYSIS	
Automatic poll response aggregation	✓
Cloud-based storage & analysis	✓

REVIEW

BEST FEATURES

- Diverse selection of if/then conditions and actions they can trigger
- Temporary custom variables to perform numeric computations, and permanent ones associated with a particular contact, phone or even project
- Missed call response input to incentivise target recepients to reply to polls

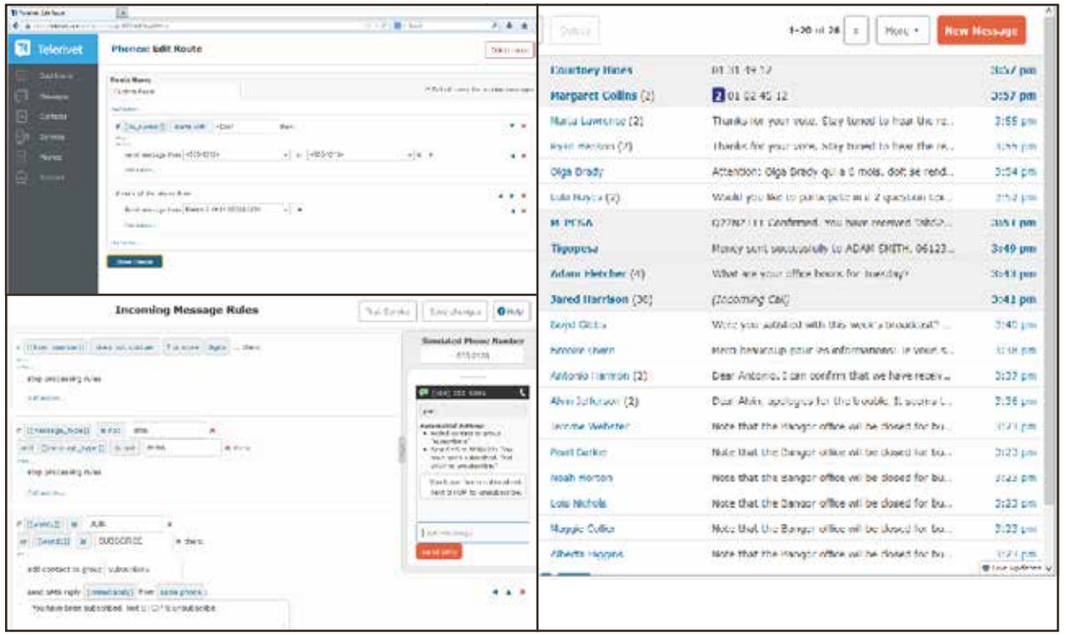
LIMITATIONS

Lack of voice messaging and IVR response input

PRICING

	Free	Standard	Premium
Monthly price	Free	US$30	US$125
Daily outgoing messages	100	5,000	20,000
Stored contacts	100	10,000	Unlimited
Host phone numbers	Up to 2	Up to 5	Up to 20
Daily API requests	200	20,000	200,000
Support	Limited	Email	Priority

USER INTERFACE



ECHOMOBILE

http://www.echomobile.org/

ECHOMOBILE - Nairobi, Kenya

EchoMobile is an SMS communication service for organisations working in low-resource communities with unique features tailored to address specific challenges, such as sales tracking and product authentication functionalities. Bulk messaging, auto-response and poll services are also available for general users to manage interactions with their clients and improve monitoring and evaluation.

DETAILS

GEOGRAPHY

EchoMobile's shared short code that allows respondents to reply at no cost is currently only available in Kenya and Tanzania

SECTOR

No sectoral focus

APPLICATION USERS

- Innovations for Poverty Action
- Juhudi Kilimo
- d.light

CUSTOMER SERVICE

- 1 hour initial training for new customers
- Open office hours for Kenya-based customers
- Access to knowledge center
- Online support via in-app chat or email

SMS GATEWAY	
SMS gateway method	
Local mobile number running on Android app	✓
Virtual number operated by third party aggregator	✓
Shared number operated by tech developer	✓
Custom message routing	Unlimited

SMS SERVICES	
Bulk SMS	✓
Scheduled SMS	✓
Subscription service	✓
Automated replies	✓
Surveys/polls	✓
Voice messages & IVR	✗
Message personalisation	✓

CONTACT MANAGEMENT	
Multiple contact group membership	(5-10)
Custom contact variables	✓
Automated contact editing	✓
Automated contact group updating	✓

DATA PROCESSING & ANALYSIS	
Automatic poll response aggregation	✓
Cloud-based storage & analysis	✓

REVIEW

BEST FEATURES

- Integration and synchronisation with digital data collection platform EchoAgent
- 'Fuzzy parsing' feature to interpret incomplete/ inaccurate poll responses from respondents
- Auto-reminder for poll recipients who have not responded to specific questions

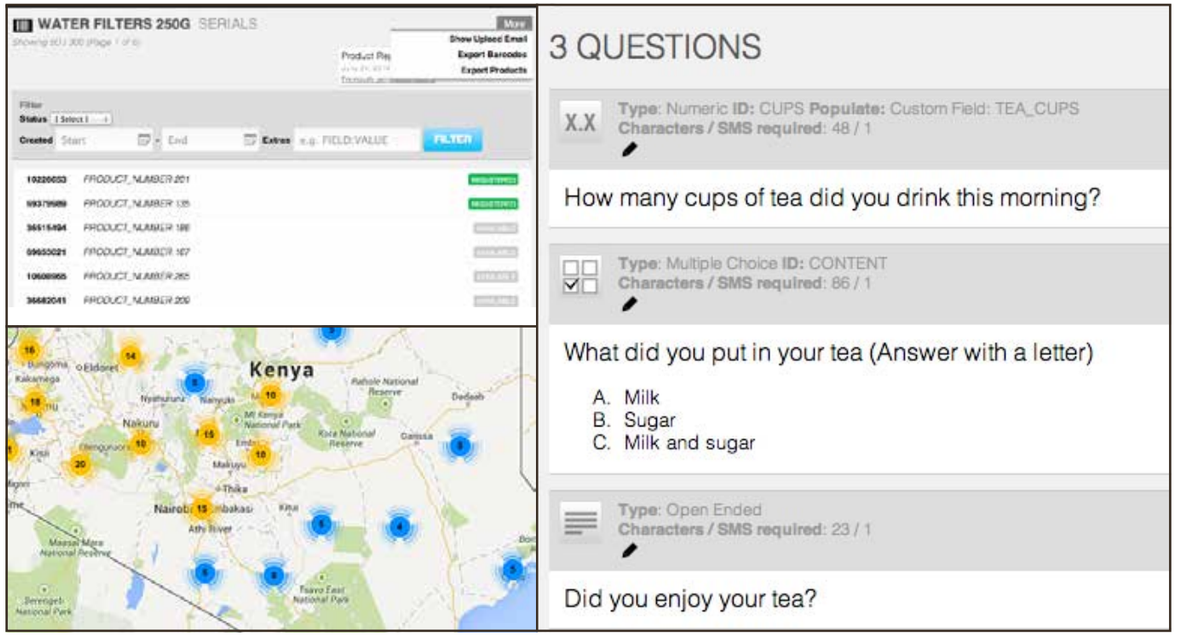
LIMITATIONS

- Limited number of contact groups
- User interface could be made simpler & more intuitive
- Shared short codes are currently only available in Kenya and Tanzania

PRICING

	Via shared short code	Via private short code
Monthly price	US$57 (KES5,000)	
+ Cost per outgoing SMS	US$0.03 (KES3)	US$0.02 (KES2)

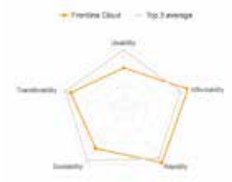
USER INTERFACE



FRONTLINE CLOUD

http://www.frontlinesms.com/

Social Impact Lab - Washington DC, US



Frontline Cloud is a significant upgrade to its predecessor Frontline SMS by bringing the convenience of the web to text message communications in low-resource settings. With its low-cost structure, Frontline Cloud manages to host a suite of the most essential SMS services to build and develop relationships with customers or beneficiaries through full-range choices of SMS connections.

DETAILS

GEOGRAPHY

No geo-specific features, services or rates; and no geographic restrictions

SECTOR

No sectoral focus

APPLICATION USERS

- PLAN International
- Georgetown University
- Oro Verde Program

CUSTOMER SERVICE

- Email support
- Access to knowledge center
- Community group

AWARDS & ACCOLADES

- Google Global Impact Award (2013)
- The #1 Tech NGO by The Global Journal (2013)

SMS GATEWAY	
SMS gateway method	
Local mobile number running on Android app	√
Virtual number operated by third party aggregator	√
Shared number operated by tech developer	✗
Custom message routing	Unlimited

SMS SERVICES	
Bulk SMS	√
Scheduled SMS	✗
Subscription service	√
Automated replies	√
Surveys/polls	√
Voice messages & IVR	✗
Message personalisation	√

CONTACT MANAGEMENT	
Multiple group membership	√
Custom contact variables	√
Automated contact editing	√
Automated contact group updating	✗

DATA PROCESSING & ANALYSIS	
Automatic poll response aggregation	√
Cloud-based storage & analysis	√

REVIEW

BEST FEATURES

- 'Smart Groups' functionality, which automatically sorts contacts into specified groups based on contact variables

LIMITATIONS

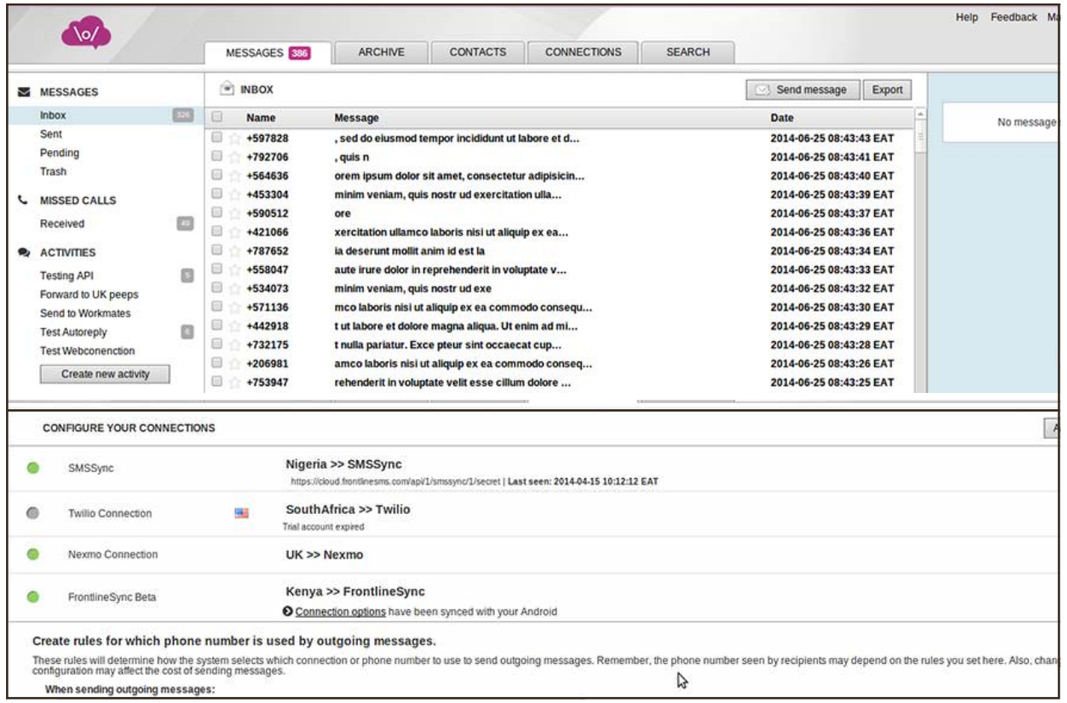
- Inability to schedule messages or polls
- Lack of text and numeric comparison logics to interpret poll responses
- Each poll question has to be set up as a separate activity

PRICING

SUBSCRIPTION FEE

US$ 10/ month

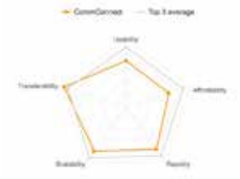
USER INTERFACE



COMMCONNECT

http://www.dimagi.com/commconnect/

DIMAGI Inc - Cambridge, US



A member of the healthcare-focused CommCare family, CommConnect interacts with other CommCare applications, including its digital data collection app, to manage timely communications between an organisation's office-based staff, its field staff and its beneficiaries or customers. Its all-free application market, Cloud Exchange, makes it possible for its users to share more complex SMS applications among themselves.

DETAILS

GEOGRAPHY

Two-way SMS gateways that allow for cheaper rates for both senders and respondents are currently available in Uganda, Philippines, India, South Africa, USA and Canada.

SECTOR

Some features are targeted for use by community health workers.

APPLICATION USERS

- UCLA Medical Center
- Millennium Villages Project
- Abt Associates

CUSTOMER SERVICE

- Standard Plan: Email support, access to community group
- Pro Plan: Plus phone support and application troubleshooting
- Advanced: Plus dedicated support staff
- Enterprise: Plus dedicated enterprise account management

SMS GATEWAY	
SMS gateway method	
Local mobile number running on Android app	✓
Virtual number operated by third party aggregator	✓
Shared number operated by tech developer	✓
Custom message routing	2-20

SMS SERVICES	
Bulk SMS	✓
Scheduled SMS	✓
Subscription service	✓
Automated replies	✓
Surveys/polls	✓
Voice messages & IVR	✓
Message personalisation	✓

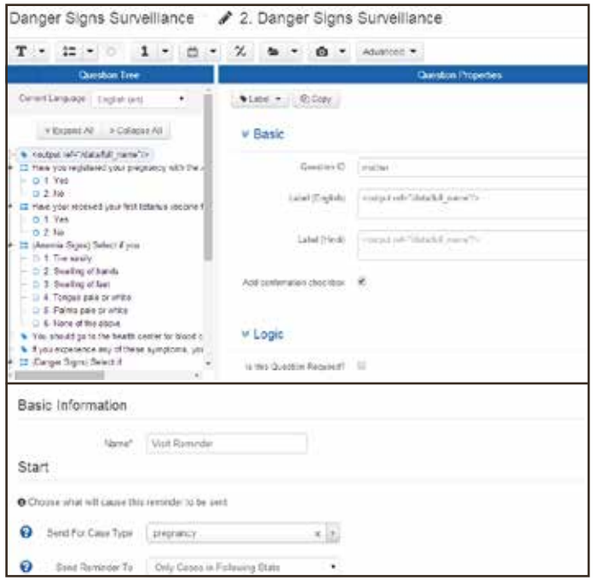
CONTACT MANAGEMENT	
Multiple contact group membership	✗
Custom contact variables	✓
Automated contact editing	✗
Automated contact group updating	✓

DATA PROCESSING & ANALYSIS	
Automatic poll response aggregation	✗
Cloud-based storage & analysis	✓

PRICING

		Standard	Pro	Advanced	Enterprise
Monthly price		US$100	US$500	US$1,000	Upon request
Mobile users		100	500	1,000	Unlimited
SMS capabilities		Outbound only	Outbound SMS (everywhere) & inbound SMS services (only in select countries)		
SMS Pricing Plans	**Shared gateway**	100 included messages/month	500	1,000	2,000
	Private gateway	Additional fee of US$0.01 for every outgoing/incoming SMS			
Customisation		Additional API access	Web-based apps; Custom reports	Web-based apps with custom branding; Special reports focusing on monitoring and perfomance improvement	

USER INTERFACE



REVIEW

BEST FEATURES

- Integration with CommCare, the digital data collection platform
- CommCare Exchange, a centralised marketplace for users to share instances
- Structured SMS to enable responding to multiple poll questions in a single text message

LIMITATIONS

- Cannot send messages in bulk
- Lack of contact groups

VOTO

http://www.votomobile.org/
VOTO MOBILE - Kumasi, Ghana

Dedicated to facilitating citizen engagement in places with high linguistic diversity and low literacy, VOTO provides a platform to send messages and surveys in forms of voice, text or a combination of the two across a wide variety of languages. Additionally, the target audience can also access information on request and respond to polls through its keypad-driven IVR functionality.

DETAILS

GEOGRAPHY
Specific country rates

SECTOR
No sectoral focus

APPLICATION USERS
- World Bank
- CAMFED
- Savannah Signatures

CUSTOMER SERVICE
- Complimentary: Email support and access to knowledge center
- Additional Cost: Access to VOTO's mobile engagement & software development experts

SMS GATEWAY	
SMS gateway method	
Local mobile number running on Android app	✗
Virtual number operated by third party aggregator	✓
Shared number operated by tech developer	✓
Custom message routing	Not applicable

SMS SERVICES	
Bulk SMS	✓
Scheduled SMS	✓
Subscription service	✓
Automated replies	✗
Surveys/polls	✓
Voice messages & IVR	✓
Message personalisation	✓

CONTACT MANAGEMENT	
Multiple contact group membership	✓
Custom contact variables	✗
Automated contact editing	✓
Automated contact group updating	✗

DATA PROCESSING & ANALYSIS	
Automatic poll response aggregation	✓
Cloud-based storage & analysis	✓

REVIEW

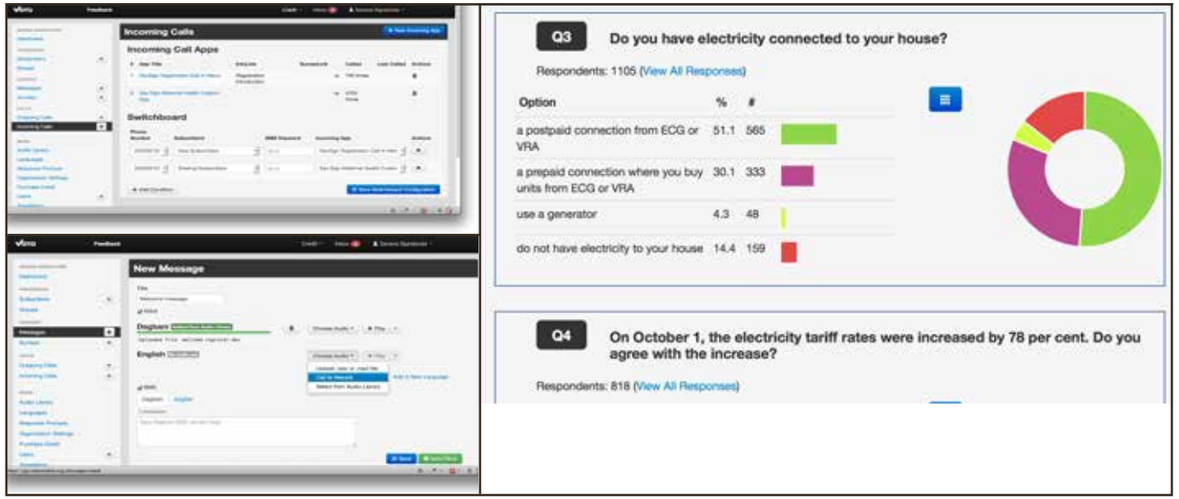
BEST FEATURES
- SMS and voice surveys can be responded to either by SMS or IVR
- Advanced analytics functionality
- 'Call-to-Record' feature, which enables voice message translation via phone

LIMITATIONS
- Lack of text and numeric comparison logics to interpret poll responses
- Missing custom contact fields and functionality to update customer profiles based on poll responses
- Android gateway option not available

PRICING

Country availability	Features	Price
Ghana	Shared short code	(Please enquire tech developer)
Ghana, Canada, USA	2-way short code & local phone numbers with cheaper rates	US$5,000
Tanzania, South Africa, Canada, US	2-way SMS number with respondent registration	(Please enquire tech developer)
Other countries	Outbound voice and SMS at various rates	(Please enquire tech developer)

USER INTERFACE



RATINGS

TEXTIT

TextIt allows anyone to visually set up complex SMS services using its simple yet powerful Flow engine.

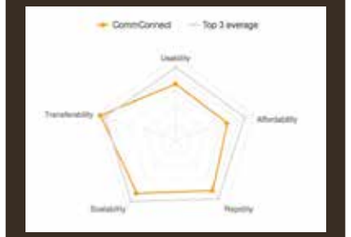
TELERIVET

Telerivet is a comprehensive mobile messaging platform that is easy to set up and deploy in any country with ordinary equipment and basic internet connectivity.

ECHOMOBILE

EchoMobile is an integrated SMS communication service system for organisations working in low-resource communities with unique features tailored to address specific challenges faced by many social enterprises.

COMMCONNECT



CommConnect interacts with its mobile data collection counterparts and web platform to manage timely communications between an organisation's office-based staff, its field staff and its beneficiaries or customers.

FRONTLINE CLOUD

Frontline Cloud affordably brings the convenience of the web to text message communications in low-resource settings.

VOTO

VOTO combines voice and text communications across a wide variety of languages to facilitate citizen feedback and engagement in low-literacy communities.

FEATURES COMPARISON

SMS GATEWAY	TEXTIT	TELERIVET	ECHOMOBILE	FRONTLINE CLOUD	COMMCONNECT	VOTO
SMS gateway method						
Local mobile number running on Android app	✓	✓	✓	✓	✓	✗
Virtual number operated by third party aggregator	✓	✓	✓	✓	✓	✓
Shared number operated by tech developer	✗	✗	✓	✗	✓	✓
Custom message routing	Unlimited	2-20	Unlimited	Unlimited	2-20	Not applicable
SMS SERVICES						
Bulk SMS	✓	✓	✓	✓	✓	✓
Scheduled SMS	✓	✓	✓	✗	✓	✓
Subscription service	✓	✓	✓	✓	✓	✓
Automated replies	✓	✓	✓	✓	✓	✗
Surveys/polls	✓	✓	✓	✓	✓	✓
Voice messages & IVR	✓	✗	✗	✗	✓	✓
Message personalisation	✓	✓	✓	✓	✓	✓
CONTACT MANAGEMENT						
Multiple group membership	✓	✓	(5-10)	✓	✗	✓
Custom contact variables	✓	✓	✓	✓	✓	✗
Automated contact editing	✓	✓	✓	✓	✗	✓
Automated contact group updating	✓	✓	✓	✗	✓	✗
DATA PROCESSING & ANALYSIS						
Automatic poll response aggregation	✓	✓	✓	✓	✗	✓
Cloud-based storage & analysis	✓	✓	✓	✓	✓	✓

Last updated in October 2014

OTHER OPTIONS

- **CLICKATELL**
  https://www.clickatell.com/
- **FRONTLINE SMS**
  http://www.frontlinesms.com/
- RapidSMS
  https://www.rapidsms.org/
- esoko
  https://esoko.com/
- VUSION
  http://www.ttcmobile.com/

CLOUD-BASED PLATFORMS TO EFFICIENTLY MANAGE LARGE-SCALE SMS COMMUNICATIONS. FEWER PHONE CALLS AND VISITS TO PROJECT SITES.

GEOSPATIAL MAPPING TOOLS

Ushahidi Platform
CrowdMap

Resource Map
Poimapper

SUMMARY

Geospatial mapping tools enable users to visually compile information from various sources in the form of a map. These visual maps are useful for tracking information, analysing data, and presenting updates. Organisations can use the tools internally or externally, depending on their needs.

These tools operate on web-based applications. Administrators need to build data forms to be filled out by individual users who can submit information via their smart phones or tablets. Information can be sent through web browsers, mobile apps, email, and SMS depending on the features of the tools. Once submitted, the data will be automatically aggregated on a map. Some tools have export features that produce various files such as csv, excel, word, and PDF for easier analysis and data processing.

Our research surprised us as we only discovered a few geospatial mapping tools focused on international development and humanitarian sectors. In other words, the competition in geospatial mapping tools is not as fierce as it is in digital data collection apps or SMS communication platforms. Nevertheless, the few that we found are all excellent for different purposes.

If an organisation is interested in tracking and analysing resource allocation, the free, open-source Resource Map is a reliable solution. In order to improve capacities in planning and monitoring field activities among a select group of field workers, we found Poimapper with various data export options to be a useful tool. Finally and perhaps most exceptionally, the Ushahidi platform and its streamlined version, Crowdmap, are free and open source platforms that enable entities to compile information from anyone who wishes to submit data.

We have observed that technologies under this category keep improving their features. Some tool developers are eager to provide additional services and integrate extra features in order to accommodate customer needs.

Last updated in October 2014

KOPERNIK

USHAHIDI PLATFORM

http://www.ushahidi.com/product/ushahidi/

USHAHIDI Inc - Nairobi, Kenya

Ushahidi is a free and open source platform that allows organisations to collect information through web-forms, SMS, email, and Android/IOS applications, and then visualise it on the map. Anyone could easily submit information to the map and track information on the map over time, filter data by time, and see when and where things happened. The platform needs a hosting for installation and deployment. It also supports full customisation both on its content and interface.

DETAIL

GEOGRAPHY

No geographical restriction

SECTOR

While there are no sectoral restrictions, its use is often seen in humanitarian emergencies and election monitoring.

APPLICATION USERS

- EnviroMap - WALHI
- Ubud Watch
- Uchaguzi - Kenyan Elections 2013

CUSTOMER SERVICE

- Ushahidi Community Hub (a wiki site)
- In-person meet-ups organised by Ushahidi
- Online forum for Q&A

AWARDS & ACCOLADES

- The MacArthur Award - 2013
- Global Adaptive Index Prize - 2012

PRICING

PRICING PLAN

Free and open source

ADDITIONAL COST

- Domain/web hosting cost
- Internet cost
- SMS service cost

REVIEW

BEST FEATURES

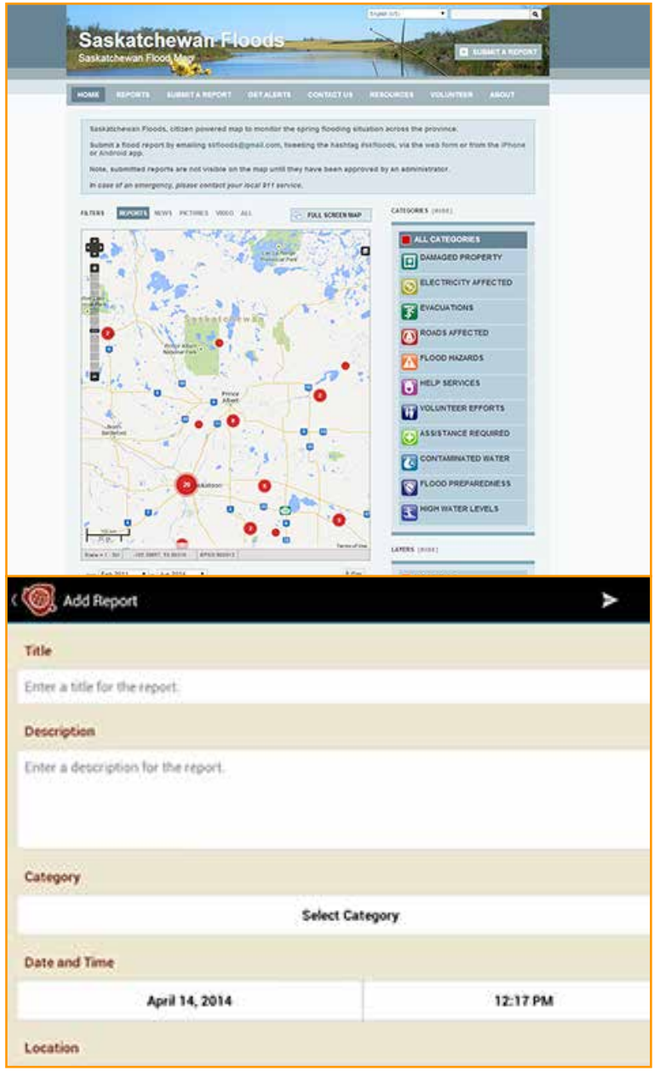
Full customisation

LIMITATIONS

User cannot display customise form in Android device

PLATFORM	
Browser-based platform	√
Requires own hosting	√
Programming & DB	MySQL, PHP
MAP TYPES	
Google	√
Bing	√
OSM	√
Esri	√
OPERATING SYSTEM	
Android	√
iOS	√
Windows Phone	√
DATA TYPES	
Text	√
Numeric	√
Yes/no	✗
Single/multiple choices	√
Date/time	√
Hierarchy	✗
Email	✗
Website	✗
User	✗
Identifier	✗
Dropdown	√
Divider	√
ADDITIONAL FEATURES	
SMS feature	√
Export options	√
Import wizard	✗

USER INTERFACE



CROWDMAP

https://crowdmap.com/

USHAHIDI Inc - Nairobi, Kenya

CrowdMap is designed and built by the people behind Ushahidi, a platform that was originally built to crowdsource crisis information. Like the Ushahidi Platform, CrowdMap is free and open source and allows anyone to collect information through web forms, SMS, emails, and Android applications. The setup is all browser-based, thus organisations can easily set up a map on CrowdMap. It's essentially a streamlined, basic version of the Ushahidi Platform.

PRICING

PRICING PLAN

Free and open source

ADDITIONAL COST

- Internet cost
- SMS service cost

DETAIL

GEOGRAPHY

No geographical restriction

SECTOR

No sectoral restrictions

APPLICATION USERS

- Hubs in Africa - BongoHive
- Women Under Siege - Women's Media Centre's
- Cost of Chicken

CUSTOMER SERVICE

Online forum for Q&A

REVIEW

BEST FEATURES

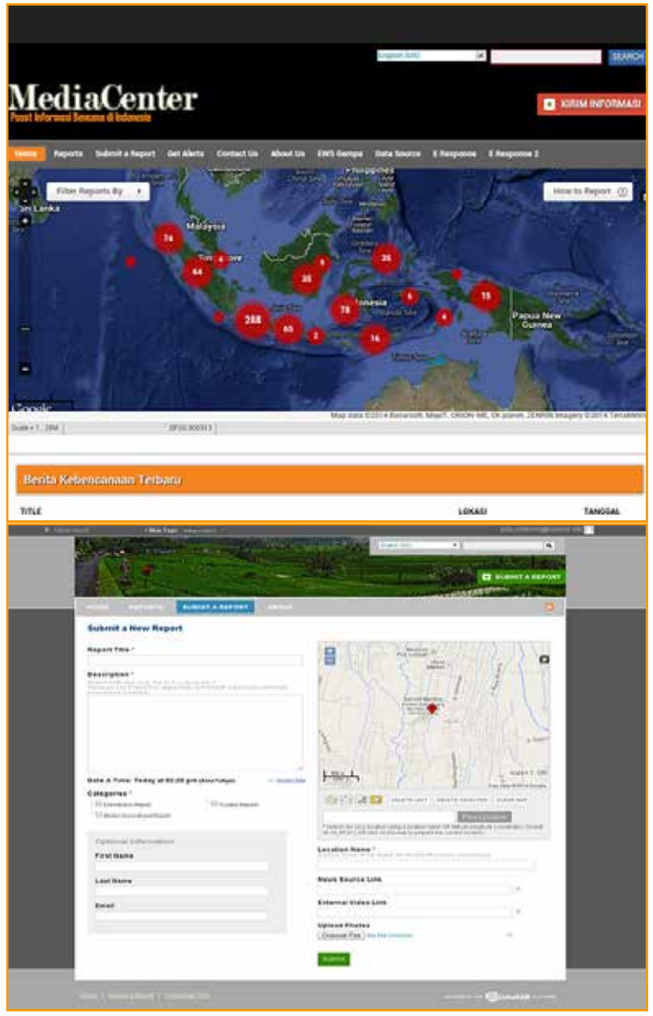
- Simple
- Easy to use - Users don't need to have their own web hosting to use the tools

LIMITATIONS

Android app is not fully developed

PLATFORM	
Browser-based platform	√
Requires own hosting	√
Programming & DB	✗
MAP TYPES	
Google	√
Bing	√
OSM	√
Esri	√
OPERATING SYSTEM	
Android	√
iOS	✗
Windows Phone	✗
DATA TYPES	
Text	√
Numeric	√
Yes/no	✗
Single/multiple choices	√
Date/time	√
Hierarchy	✗
Email	✗
Website	✗
User	✗
Identifier	✗
Dropdown	√
Divider	√
ADDITIONAL FEATURES	
SMS feature	√
Export options	✗
Import wizard	✗

USER INTERFACE



RESOURCE MAP

http://resourcemap.instedd.org/

INSTEDD - Sunnyvale, US

Resource Map is a free, open-source tool for anyone to record, track and analyse resource allocation using a live map. Resource Map has a user-friendly interface that works with any computer or cell phone with text messaging capability. There are a number of APIs in addition to the Native Resource Map API, each that has been developed to respond to particular requirements from different users.

DETAIL

GEOGRAPHY

No geographical restriction

SECTOR

While there are no sectoral restrictions, its use is often seen in health, food price monitoring, and supply management.

APPLICATION USERS

- Cambodia National Center for Parasitology, Entomology, and Malaria Control
- Rwanda Ministory of Health

CUSTOMER SERVICE

- InSTEDD Technology Google Group
- Provide backstopping support as needed for larger more complex project

PRICING

PRICING PLAN

Free and open source

ADDITIONAL COST

- Internet cost
- SMS service cost

REVIEW

BEST FEATURES

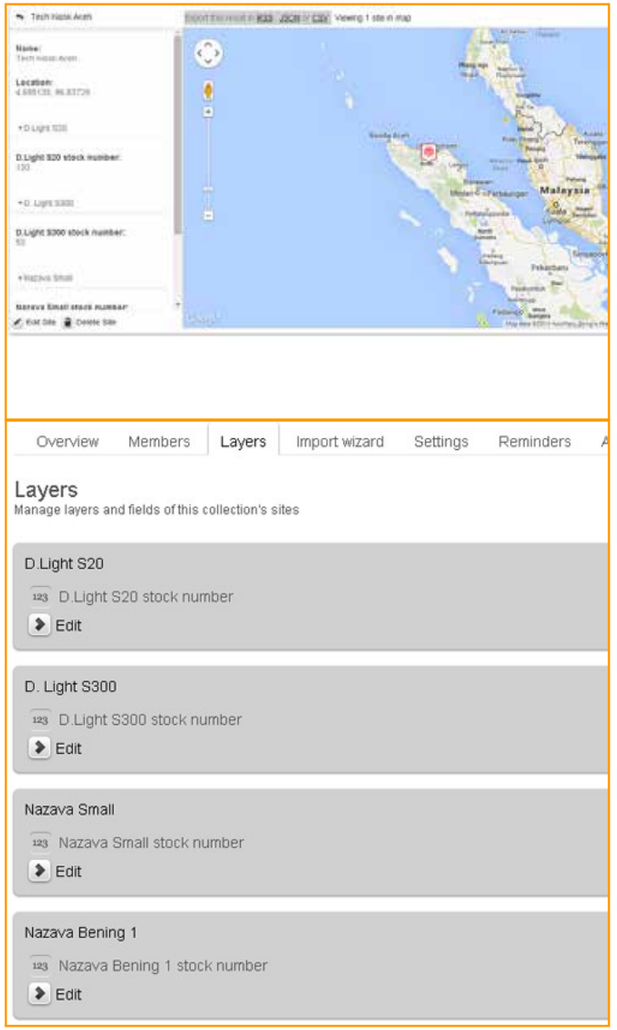
- Easy to use
- Import and export wizard

LIMITATIONS

Mobile app is unavailable

PLATFORM	
Browser-based platform	✓
Requires Own Hosting	✗
Programming & DB	✗
MAP TYPES	
Google	✓
Bing	✗
OSM	✗
Esri	✗
OPERATING SYSTEM	
Android	✗
iOS	✗
Windows Phone	✗
DATA TYPES	
Text	✓
Numeric	✓
Yes/no	✓
Single/multiple choices	✓
Date/time	✓
Hierarchy	✓
Email	✓
Website	✓
User	✓
Identifier	✓
Dropdown	✓
Divider	✗
ADDITIONAL FEATURES	
SMS feature	✓
Export options	✓
Import wizard	✓

USER INTERFACE



POIMAPPER

http://www.poimapper.com/

PAJAT SOLUTIONS LTD - Espo, Finland

Poimapper was developed to support humanitarian work in data collection and sharing. Field personnels can carry their field data in a mobile device for browsing and updating. For office personnel, Poimapper enables visualisation on interactive maps and tables. The platform makes fieldwork more efficient and improves the capability to plan and monitor activities. Data can be exported to various file types such for Excel, Word, and SPSS for further data processing and analysis. Poimapper also has a series of analytical features to generate tables, cross tabulations, pie, bar and line charts.

DETAIL

GEOGRAPHY

No geographical restriction

SECTOR

No sectoral restrictions

APPLICATION USERS

- Plan International
- Niras
- Millenium Development Goals

CUSTOMER SERVICE

- Training in-person or via skype
- Knowledge base with videos and manuals
- Support offered by country representatives

AWARDS & ACCOLADES

- Europian CSR Award Scheme - 2013
- Nominated for The World Summit Award - 2012

PLATFORM	
Browser-based platform	√
Requires own hosting	X
Programming & DB	MySQL, PHP
MAP TYPES	
Google	√
Bing	X
OSM	√
Esri	X
OPERATING SYSTEM	
Android	√
iOS	√
Windows Phone	X
DATA TYPES	
Text	√
Numeric	√
Yes/no	√
Single/multiple choices	√
Date/time	√
Hierarchy	√
Email	√
Website	√
User	√
Identifier	X
Dropdown	√
Divider	√
ADDITIONAL FEATURES	
SMS feature	X
Export options	√
Import wizard	√

PRICING

	Free	Light	Pro	Custom
Price	US$0	US$0.09/up/downloaded form US$9.95/ user/month	US$0.29/up/downloaded form US$29.95/user/month	For pricinge and other licensing conditions contact sales@poimapper.com
Mobile	Yes	Yes	Yes	Yes
FormBuilder	Yes	Yes	Yes	Yes
Map & Table View	Yes	Yes	Yes	Yes
Sync	Yes	Yes	Yes	Yes
Export	Yes	Yes	Yes	Yes
User Management	-	Yes	Yes	Yes
Location Hierarchy	-	Yes	Yes	Yes
Private Database	-	Yes	Yes	Yes
Advanced Data	-	-	Yes	Yes
Intelligent Forms	-	-	Yes	Yes
Validation	-	-	Yes	Yes
Create Reports	-	-	Yes	Yes
Quality Assurance	-	-	Yes	Yes
Customise	-	-	-	Yes
Integration	-	-	-	Yes
Local Installation	-	-	-	Yes

REVIEW

BEST FEATURES

- Easy to use
- Various exported data
- Runs on Java Phones, Smartphones, and Tablet

LIMITATIONS

- Pre-integrated with other tools
- Lack of import wizard

USER INTERFACE

FEATURES COMPARISON

PLATFORM	USHAHIDI	CROWDMAP	RESOURCE MAP	POIMAPPER
Browser-based platform	√	√	√	√
Requires own hosting	√	✗	✗	✗
Programming & DB	MySQL, PHP	✗	✗	MySQL, PHP
MAP TYPES				
Google	√	√	√	√
Bing	√	√	✗	✗
OSM	√	√	✗	√
Esri	√	√	✗	✗
OPERATING SYSTEM				
Android	√	√	✗	√
iOS	√	✗	✗	√
Windows Phone	√	✗	✗	✗
DATA TYPES				
Text	√	√	√	√
Numeric	√	√	√	√
Yes/no	✗	✗	√	√
Single/multiple choices	√	√	√	√
Date/time	√	√	√	√
Hierarchy	✗	✗	√	√
Email	✗	✗	√	√
Website	✗	✗	√	√
User	✗	✗	√	√
Identifier	✗	✗	√	✗
Dropdown	√	√	√	√
Divider	√	√	✗	√
ADDITIONAL				
SMS feature	√	√	√	✗
Export options	√	✗	√	√
Import wizard	✗	✗	√	√

Last updated in October 2014

TOOLS TO COMPILE AND COMMUNICATE EVENTS AND REPORTS THROUGH AN ONLINE MAP.

REMOTE SENSORS

STOVE
- Berkeley Air SUMS
- Nexleaf Cookstove
- Sweetsense Stove

STORAGE
- Nexleaf Cold Chain Monitor

WATER
- Sweetsense Flow
- Sweetsense Water
- Mobosens

INFRASTRUCTURE
- Sweetsense Structure

AIR
- Sweetsense Air
- UCB-PATS
- Nexleaf Black Carbon

FOREST
- Rainforest Connection

SUMMARY

Tools in this category are low-power and low-maintenance remote sensors used to monitor and measure the use of cook stoves, water filters and other devices, as well as to evaluate changes in environmental conditions.

These sensors were developed to address the challenge of collecting unbiased and precise data on technology adoption and program interventions. Traditionally, development organisations have relied on the less accurate method of interviews or observations to measure their outputs and outcomes. Only research institutions with technical expertise and large budgets could perform remote measurements until fairly recently.

Most of the profiled tools utilise commercially available sensors that were once only accessible to technical experts who understood how to process the sampled data. However, processing software is now built into the tools; this software uses complex algorithms to turn data points into meaningful, actionable information accessible to those without advanced analytical skills and relevant sectoral expertise.

Moreover, taking advantage of growing access to the internet and sliding costs of IT components, many of the sensors have the capability to send data wirelessly with very minimal internet connectivity. This eliminates the need to physically go to the field and download data from the devices.

Each featured sensor measures something particular such as stove usage, air quality, and forest logging. Therefore, we sequenced the tools into six groups depending on the object of measurement: stove, water, air, infrastructure, forest, and storage.

Primarily developed in university labs, these sensors are currently only available in small orders to select trusted partners. However, these tools hold a very promising future and point to limitless applications. We are inspired by the continuous, frequent improvements made to these tools and are excited to see this sector of remote monitoring grow in the near future.

Last updated in October 2014

STOVE USE MONITORING SYSTEM (SUMS)

http://berkeleyair.com/services/stove-use-monitoring-system-sums/

Berkeley Air - Berkeley, US

The Stove Use Monitoring System (SUMS) provides insights into cookstove usage patterns, number of meals cooked, and time of use by recording stove temperature changes. Data sampled by SUMS are uploaded to a computer via a data cable and further analysed using proprietary algorithms developed to quantify cookstove usage in households.

POWER	
Power source	1x 3V Lithium battery (internal, not replaceable)
Power life	0.5 - 3 years, depending on temperature and sampling frequency
Real-time power level updates	✗

SAMPLING	
Remote auto calibration	✗
Sampling frequency rates (max and typical deployment) in Hz (samples/ second)	Logging rate every 1 sec to 273 hours (depending on sensor selected)
Detection limits	-40 to 85° Celcius or 0 to 125° Celcius, depending on variant of sensor selected

DATA PROCESSING & ANALYSIS	
Back-up data storage	512 bytes SRAM
Data transmission frequency rates	Once every 5 minutes to 10 minutes
Wi-fi	✗
Cellular network - 3G	✗
Cellular network - GPRS	✗
Cloud-based data processing and analysis interface	✗

PRICE

COMMERCIAL AVAILABILITY
Commercially available

UNIT COST
US$17-73/ sensor, depending on model and quantity desired

INCLUDES
1x Thermal sensor

DATA SERVICE COSTS
None

COMPLEMENTARY EQUIPMENT* (IN ADDITION TO BASIC COMPUTER)
Probe/ adapter, launching and processing software (on CD)

NEXLEAF COOKSTOVE USAGE SENSORS

http://nexleaf.org/technology/cookstove-usage-sensor

Nexleaf - Los Angeles, US

Nexleaf Cookstove Usage Sensor monitors frequency of stove use, duration of each use, as well as estimates fuel consumption. Temperature data are wirelessly uploaded from a cellphone to a server using mobile networks. Sensors can run indefinitely when connected to main power or solar panels.

POWER	
Power source	1x rechargeable and replaceable Li-ion battery. Can be simultaneously plugged to solar panels for continuous charging.
Power life	72 hours, or indefinitely if connected to solar panel AC power
Real-time power level updates	✓

SAMPLING	
Remote auto calibration	✗
Sampling frequency rates (max and typical deployment) in Hz (samples/ second)	Max: 1/60Hz; Typical: 1/600Hz
Detection limits	0-300° Celcius

DATA PROCESSING & ANALYSIS	
Back-up data storage	Internal memory to store up to 5 years at 1-minute sampling interval
Data transmission frequency rates	Once every 6 hours to every 24 hours
Wi-fi	✓
Cellular network - 3G	✓
Cellular network - GPRS	✓
Cloud-based data processing and analysis interface	✓

PRICE

COMMERCIAL AVAILABILITY
Commercially available

UNIT COST
US$80 - US$125, depending on volume

INCLUDES
- 1x Thermal sensor
- 1x Desktop-based processing and analysis software access

DATA SERVICE COSTS
US$1 - US$5/ unit/ month, depending on volume

SWEETSENSE STOVE

http://www.sweetsensors.com/hardware/stove/

SweetSense - Portland, US

SWEETSense STOVE monitors cookstove use, both its pattern and duration, in low-resource settings. The sensor can send out alerts at pre-defined alarm pointss. Data are relayed over the GSM networks directly to the cloud server, where they are analysed and graphed to optimize the performance of a particular cookstove intervention.

POWER	
Power source	5x AA batteries
Power life	6-18 months
Real-time power level updates	✓

SAMPLING	
Remote auto calibration	✓
Sampling frequency rates (max and typical deployment) in Hz (samples/ second)	Max: 8 Hz; Typical: 1 Hz
Detection limits	*Different sensor choices have different detection limits. Please contact SweetSense directly for more info

DATA PROCESSING & ANALYSIS	
Back-up data storage	SD Card
Data transmission frequency rates	Can set to report at frequencies ranging from once every 5 minutes to every 24 hours; can also set to report only when a certain threshold of data is recorded.
Wi-fi	✓
Cellular network - 3G	✓
Cellular network - GPRS	✓
Cloud-based data processing and analysis interface	✓

PRICE

COMMERCIAL AVAILABILITY
Minimum order of 50 sensors

UNIT COST
US$400 - US$700, depending on volume and timeline for delivery

INCLUDES
- 1x Thermal sensor
- 5x AA batteries
- 1x Cloud-based processing and analysis software access

DATA SERVICE COSTS
US$50 - US$100, depending on volume, country and telecom provider

SWEETSENSE FLOW

http://www.sweetsensors.com/hardware/flow/

SweetSense - Portland, US

SWEETSense FLOW is a modified flowmeter that monitors water movement through a pipe to derive water usage in various appliances, such as hand washing stations. Sensor can send out alerts at pre-defined alarm pointss and relays data over GSM networks directly to the cloud server. A variant has also been developed to specifically measure usage of rural hand pumps.

POWER	
Power source	5x AA batteries
Power life	6-18 months
Real-time power level updates	√

SAMPLING	
Remote auto calibration	√
Sampling frequency rates (max and typical deployment) in Hz (samples/ second)	Max: 8 Hz; Typical: 1 Hz
Detection limits	*Different sensor choices have different detection limits. Please contact SweetSense directly for more info.

DATA PROCESSING & ANALYSIS	
Back-up data storage	SD Card
Data transmission frequency rates	Can set to report at frequencies ranging from once every 5 minutes to every 24 hours; can also set to report only when a certain threshold of data is recorded.
Wi-fi	√
Cellular network - 3G	√
Cellular network - GPRS	√
Cloud-based data processing and analysis interface	√

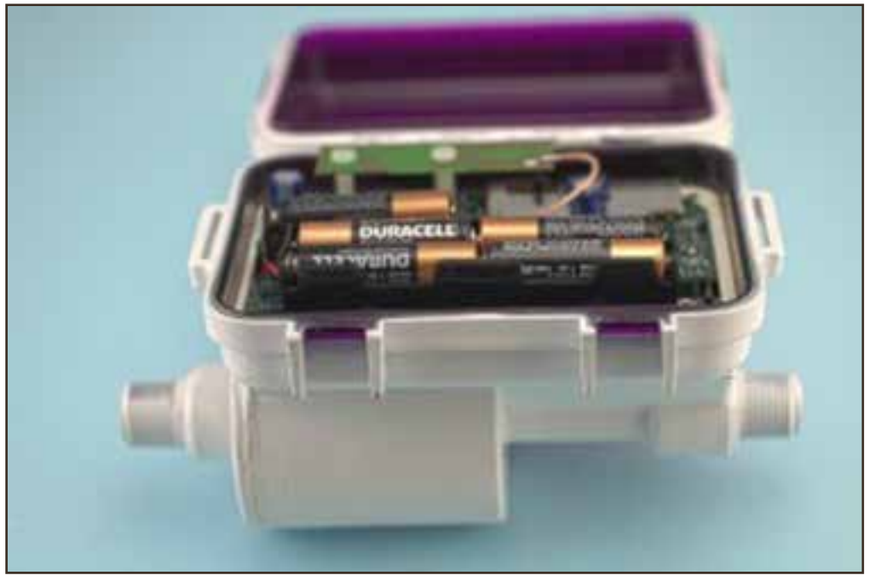
PRICE

COMMERCIAL AVAILABILITY
Minimum order of 50 sensors

UNIT COST
US$400 - US$700, depending on volume and timeline for delivery

INCLUDES
- 1x Thermal sensor
- 5x AA batteries
- 1x Cloud-based processing and analysis software access

DATA SERVICE COSTS
US$50 - US$100, depending on volume, country and telecom provider



SWEETSENSE WATER

http://www.sweetsensors.com/hardware/sweetsense-water/

SweetSense - Portland, US

SWEETSense WATER monitors water consumption in domestic, industrial and outdoor environments. It can be customised with a variety of water-quality sensors upon request. Sensor can send out alerts at pre-defined alarm pointss and relays data over the GSM networks directly to the cloud server.

POWER	
Power source	5x AA batteries
Power life	6-18 months
Real-time power level updates	✓

SAMPLING	
Remote auto calibration	✓
Sampling frequency rates (max and typical deployment) in Hz (samples/ second)	Max: 8 Hz; Typical: 1 Hz
Detection limits	*Different sensor choices have different detection limits. Please contact SweetSense directly for more info.

DATA PROCESSING & ANALYSIS	
Back-up data storage	SD Card
Data transmission frequency rates	Can set to report at frequencies ranging from once every 5 minutes to every 24 hours; can also set to report only when a certain threshold of data is recorded.
Wi-fi	✓
Cellular network - 3G	✓
Cellular network - GPRS	✓
Cloud-based data processing and analysis interface	✓

PRICE

COMMERCIAL AVAILABILITY
Minimum order of 50 sensors

UNIT COST
US$400 - US$700, depending on volume and timeline for delivery

INCLUDES
- 1x Thermal sensor,
- 5 x AA batteries
- 1x Cloud-based processing and analysis software access

DATA SERVICE COSTS
US$50 - US$100, depending on volume, country and telecom provider

MOBOSENS

http://nanobionics.mntl.illinois.edu/mobosens/

Mobosens - Urbana, US

Mobosens is a smartphone-attachable sensor that detects concentrations of different water contaminants, including nitrate, arsenic, ammonia and phosphate, and transmits the data to preferred social media outlets and private servers. Further expansion plans on this nanotechnology-enabled sensor include other contaminants, such as heavy metal, carcinogens, and bacteria, as well as improvements to render the tool better-suited for use in low-resource settings.

PRICE

COMMERCIAL AVAILABILITY
Small-scale sales to collaborators and partners only

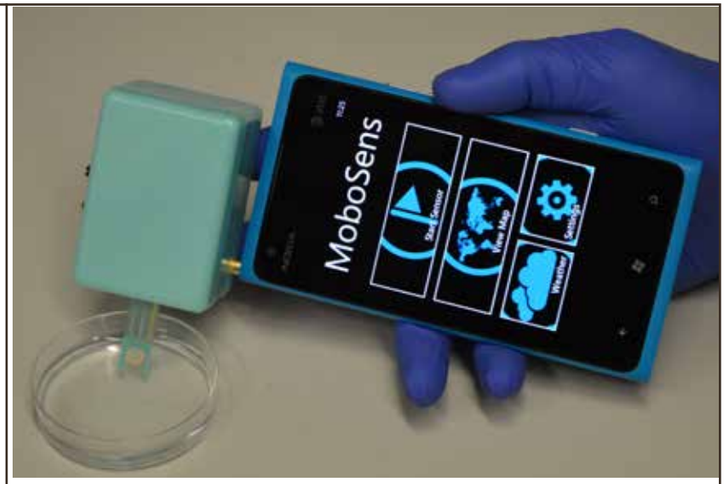
UNIT COST
US$50/sensor, and US$2/disposable strip

INCLUDES
- 1x Nitrate/ Arsenic/ Ammonia/ Phosphate sensor
- Disposable strips
- 1x Cloud-based processing and analysis software access

DATA SERVICE COSTS
Price available upon request

COMPLEMENTARY EQUIPMENT* (IN ADDITION TO BASIC COMPUTER)
Windows/ Android/ iOS smartphone

POWER	
Power source	Battery of the cellphone it's attached to
Power life	Depending on phone battery's life
Real-time power level updates	✓
SAMPLING	
Remote auto calibration	✓
Sampling frequency rates (max and typical deployment) in Hz (samples/ second)	As often as users want to activate the sensor
Detection limits	100 ppb
DATA PROCESSING & ANALYSIS	
Back-up data storage	Phone internal memory or memory card
Data transmission frequency rates	As often as users want to export the data to the server
Wi-fi	✓
Cellular network - 3G	✓
Cellular network - GPRS	✗
Cloud-based data processing and analysis interface	✓



SWEETSENSE AIR

http://www.sweetsensors.com/hardware/sweetsense-air/

SweetSense - Portland, US

SWEETSense AIR monitors environmental air quality in domestic, industrial and outdoor environments using various types of gas emission sensors, including CO and CO2. It also measures frequency of use and thermal efficiency of a cookstove. Sensor can send out alerts at pre-defined alarm points and relays data over GSM networks directly to the cloud server.

POWER	
Power source	5x AA batteries
Power life	6-18 months
Real-time power level updates	✓

SAMPLING	
Remote auto calibration	✓
Sampling frequency rates (max and typical deployment) in Hz (samples/ second)	Max: 8 Hz; Typical: 1 Hz
Detection limits	*Different sensor choices have different detection limits. Please contact SweetSense directly for more info.

DATA PROCESSING & ANALYSIS	
Back-up data storage	SD Card
Data transmission frequency rates	Can set to report at frequencies ranging from once every 5 minutes to every 24 hours; can also set to report only when a certain threshold of data is recorded.
Wi-fi	✓
Cellular network - 3G	✓
Cellular network - GPRS	✓
Cloud-based data processing and analysis interface	✓

PRICE

COMMERCIAL AVAILABILITY
Minimum order of 50 sensors

UNIT COST
US$400 - US$700, depending on volume and timeline for delivery

INCLUDES
- 1x Thermal sensor
- 5 x AA batteries
- 1x Cloud-based processing and analysis software access

DATA SERVICE COSTS
US$50 - US$100, depending on volume, country and telecom provider

UCB Particle and Temperature Sensor (UCB-PATS)

http://berkeleyair.com/services/ucb-particle-and-temperature-sensor-ucb-pats/

Berkeley Air - Berkeley, US

UCB Particle and Temperature Sensor is a small, portable data-logging device that uses an optical scattering sensor to measure concentrations of fine particle (~PM2.5) in indoor environments. It saves sampled data until transferred and analysed by a fit-for-purpose processing software on a computer.

An upgraded version, PATS+, which is due to be launched in early 2015, will include other pollutants such as carbon monoxide, carbon dioxide, and black carbon. It will also have SD card storage option.

PRICE

COMMERCIAL AVAILABILITY
UCB-PATS is no longer being manufactured; limited quantities available for rental. PATS+ is expected to be commercially available in early 2015

UNIT COST
UCB-PATS: US$550 each; US$99 for required software.
PATS+: Price TBD

INCLUDES
- 1x PM sensor
- 1x launching and processing software (on CD)

DATA SERVICE COSTS
None

COMPLEMENTARY EQUIPMENT* (IN ADDITION TO BASIC COMPUTER)
UCB-PATS: Keyspan USB serial cable. PATS: None.

POWER	
Power source	1x 9V rechargeable and replaceable battery
Power life	5-7 days
Real-time power level updates	✗

SAMPLING	
Remote auto calibration	✗
Sampling frequency rates (max and typical deployment) in Hz (samples/ second)	Max: 1/60 Hz; Typical: 1/60 Hz.
Detection limits	30-50 µg/m3 to ~25,000 µg/m3 (PM2.5)

DATA PROCESSING & ANALYSIS	
Back-up data storage	32,768 records
Data transmission frequency rates	Once every minute
Wi-fi	✗
Cellular network - 3G	✗
Cellular network - GPRS	✗
Cloud-based data processing and analysis interface	✗

NEXLEAF BLACK CARBON FILTER ANALYZER

https://sootswap.nexleaf.org/bc/

Nexleaf - Los Angeles, US

Nexleaf Black Carbon Filter Analyzer measures black carbon concentration in the air. It uses a quartz fine-grade filter, on which black carbon particulates from air-pumped smoke settle. Using a special reference card to calibrate for different lighting conditions and camera configurations, a user will snap a picture of the exposed filter using any cellphone camera and send it to the server where it's further processed to determine the concentration of black carbon in the air.

PRICE

COMMERCIAL AVAILABILITY
Commercially available

UNIT COST
US$1 per filter, US$30 per reference card

INCLUDES
- Air filters
- Reference cards

DATA SERVICE COSTS
US$ 1 - US$ 3 / filter analysis, depending on volume

COMPLEMENTARY EQUIPMENT* (IN ADDITION TO BASIC COMPUTER)
- Air sampler
- Calibrator
- Low-flow adjusters, if applicable
- Basic camera cell phone

POWER	
Power source	No power required. Air sampler, that is sold separately, runs on AC power
Power life	N/A
Real-time power level updates	N/A

SAMPLING	
Remote auto calibration	✗
Sampling frequency rates (max and typical deployment) in Hz (samples/ second)	As soon as filters get saturated with black carbon (approx. 1 day)
Detection limits	1 µg/cm2 - 25 µg/cm2

DATA PROCESSING & ANALYSIS	
Back-up data storage	N/A
Data transmission frequency rates	As frequent as photographs of filters get sent to the server
Wi-fi	✓
Cellular network - 3G	✓
Cellular network - GPRS	✓
Cloud-based data processing and analysis interface	✓

NEXLEAF COLD CHAIN MONITOR

http://nexleaf.org/technology/cold-chain-monitor

Nexleaf - Los Angeles, US

Nexleaf Cold Chain Monitor is a cellphone-enabled sensor that remotely monitors the temperatures of refrigerated units used to store and transport vaccines and drug along the supply chain from warehouses to local health clinics. Sensor periodically transmits temperature data to the cloud server that oversees and provides SMS and email alerts if the temperature-sensitive goods reach critical temperatures.

POWER	
Power source	1x Rechargeable and replaceable Li-Ion battery. Can be simultaneously plugged to solar panels for continuous charging.
Power life	3 days, or indefinitely if connected to solar or AC power
Real-time power level updates	√
SAMPLING	
Remote auto calibration	✗
Sampling frequency rates (max and typical deployment) in Hz (samples/ second)	Max: 1/60 Hz; Typical: 1/600 Hz
Detection limits	-20 to 40° Celcius
DATA PROCESSING & ANALYSIS	
Back-up data storage	Internal memory to store up to 5 years of data recorded at 1-minute sampling interval
Data transmission frequency rates	Once every 6 hours to every 24 hours
Wi-fi	✗
Cellular network - 3G	√
Cellular network - GPRS	√
Cloud-based data processing and analysis interface	√

PRICE

COMMERCIAL AVAILABILITY
Commercially available

UNIT COST
US$50 - US$75, depending on volume

INCLUDES
- 1x Sensor
- 1x Cloud-based processing and analysis software access

DATA SERVICE COSTS
US$1 - US$5/ unit/ month, depending on volume

SWEETSENSE STRUCTURE

http://www.sweetsensors.com/hardware/structure/

SweetSense - Portland, US

SWEETSense STRUCTURE measures usage of facilities including homes, offices, pedestrian pathways and bridges, through three sensor choices: door use sensors, motion detectors, and cameras. Sensor can send out alerts at pre-defined alarm points and relays data over GSM networks directly to the cloud server.

POWER	
Power source	5x AA batteries
Power life	6-18 months
Real-time power level updates	✓
SAMPLING	
Remote auto calibration	✓
Sampling frequency rates (max and typical deployment) in Hz (samples/ second)	Max: 8 Hz; Typical: 1 Hz
Detection limits	*Different sensor choices have different detection limits. Please contact SweetSense directly for more info
DATA PROCESSING & ANALYSIS	
Back-up data storage	SD Card
Data transmission frequency rates	Can set to report at frequencies ranging from once every 5 minutes to every 24 hours; can also set to report only when a certain threshold of data is recorded.
Wi-fi	✓
Cellular network - 3G	✓
Cellular network - GPRS	✓
Cloud-based data processing and analysis interface	✓

PRICE

COMMERCIAL AVAILABILITY
Minimum order of 50 sensors

UNIT COST
US$400 - US$700, depending on volume and timeline for delivery

INCLUDES
- 1x Thermal sensor
- 5x AA batteries
- 1x Cloud-based processing and analysis software access

DATA SERVICE COSTS
US$50 - US$100, depending on volume, country and telecom provider

RAINFOREST CONNECTION SENSOR

https://rfcx.org/

Rainforest Connection - San Francisco, US

Rainforest Connection Sensor is a solar-powered listening device that monitors and pinpoints signs of environmental destruction activities at great distance to prevent illegal logging, poaching, and encroachment of indigenous communities' habitats in rainforest areas.

The sensor consists of recycled cell-phones equipped with solar panels and special enclosures to withstand tough weather conditions when placed in tree canopies. Upon picking up the sound of a chainsaw, gunshot, or animal distress call, the device uses minimal GSM connectivity to transmit an alert to a cloud server.

PRICE

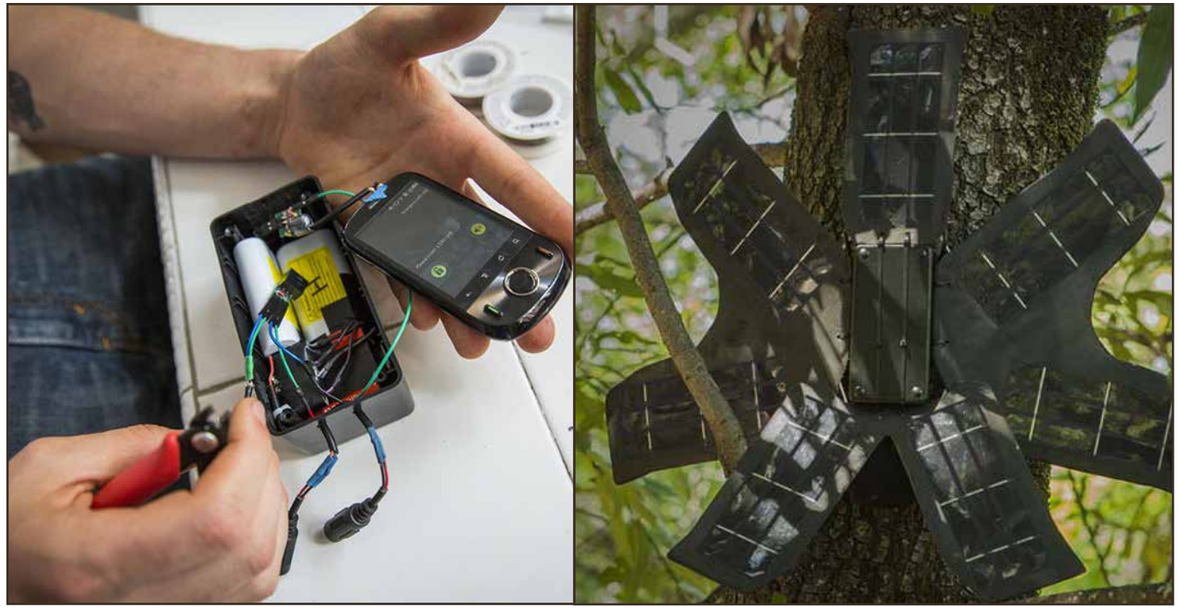
COMMERCIAL AVAILABILITY
Not commercially available

UNIT COST
*Please contact Rainforest Connection directly for possible partnerships

INCLUDES
*Please contact Rainforest Connection directly for possible partnerships

DATA SERVICE COSTS
*Please contact Rainforest Connection directly for possible partnerships

POWER	
Power source	Solar panels
Power life	Indefinitely
Real-time power level updates	✗
SAMPLING	
Remote auto calibration	✓
Sampling frequency rates (max and typical deployment) in Hz (samples/ second)	Continuous audio monitoring at up to 22kHz audio sampling rate
Detection limits	Different noise frequency levels for different detections (110 Hz, 220 Hz, 440 Hz, 660 Hz, 880 Hz) within 1 km radius
DATA PROCESSING & ANALYSIS	
Back-up data storage	Phone internal memory or memory card
Data transmission frequency rates	Once every 3 minutes to every 5 minutes
Wi-fi	✓
Cellular network - 3G	✓
Cellular network - GPRS	✓
Cloud-based data processing and analysis interface	✓



TECHNOLOGY	SWEETSENSE					BERKELEY AIR	
	STOVE	AIR	WATER	FLOW	STRUCTURE	STOVE USE MONITORING SYSTEM	UCB-PATS
SENSOR TYPE	STOVE	AIR	WATER	WATER	INFRASTRUCTURE	STOVE	AIR
POWER							
Power source	5 x AA Batteries					1x 3V Lithium battery (internal, not replaceable)	1x 9V rechargeable and replaceable battery
Power life	6-18 months					0.5 - 3 years, depending on temperature and sampling frequency	5-7 days
Real time power level updates	✓	✓	✓	✓	✓	✗	✗
SAMPLING							
Remote auto calibration	✓	✓	✓	✓	✓	✗	✗
SAMPLING FREQUENCY							
Max rate (Hz)	8 Hz					1 Hz	1/60 Hz
Typical rate (Hz)	1 Hz					1 Hz	1/60 Hz
Detection limits	*Different sensor choices have differing detection limits. Please contact SweetSense directly for more info.					-40 to 85° Celcius or 0 to +125°Celcius, depending on variant of sensor selected	30 µg/m3 to ~25,000 µg/m3 (PM2.5)
DATA TRANSMISSION							
Frequency	Once every 5 minutes to every 24 hours; or only report when a certain threshold of data is recorded					Once every 5 minutes to every 10 minutes	Once every minute
Wifi	✓	✓	✓	✓	✓	✗	✗
Cellular network (3G)	✓	✓	✓	✓	✓	✗	✗
Cellular network (GPRS)	✓	✓	✓	✓	✓	✗	✗
DATA PROCESSING & ANALYSIS							
Backup data storage	SD Card					512 bytes SRAM	32,768 records
Cloud-based data processing & analysis interface	✓	✓	✓	✓	✓	✗	✗

	NEXLEAF				
	BLACK CARBON FILTERS	COOKSTOVE SENSORS	COLD CHAIN MONITORS	MOBOSENS	RAINFOREST CONNECTION
	AIR	STOVE	STORAGE	WATER	FOREST
	No power required. Air sampler, complimentary piece of equipment, that is sold separately runs on AC power.	1x rechargeable and replaceable Li-Ion battery. Can be simultaneously plugged to solar panels for continuous charging.		Battery of the cellphone it's attached to	Provided and replaceable solar panels
	Not applicable	72 hours, or indefinitely if connected to solar panel AC power	3 days, or indefinitely if connected to solar or AC power	Depending on phone battery's life	Indefinitely
	✗	✓	✓	✓	✗
	✗	✗	✗	✓	✓
	As soon as filters get saturated with black carbon (approx. 1 day)	1/60 Hz		As often as users want to activate the sensor	22kHz
	As soon as filters get saturated with black carbon (approx. 1 day)	1/600 Hz		As often as users want to activate the sensor	22kHz
	1 µg/cm2 - 25 µg/cm2	0-300 degrees Celcius	-20 to 40 degrees celcius	100 parts per billion	Audio detection range varies by amplitude of noise. For chainsaw, detection it can be up to 1 km.
	As frequent as photographs of filters get sent to the server	Once every 6 hours to every 24 hours		As often as users want to export the data to the server	Once every 3 minutes to every 5 minutes
	✓	✓	✗	✓	✓
	✓	✓	✓	✓	✓
	✓	✓	✓	✗	✓
	Not applicable	Internal memory to store up to 5 years at 1-minute sampling interval		Phone internal memory or memory card	
	✓	✓	✓	✓	✓

ABOUT KOPERNIK

Kopernik is a nonprofit delivering simple, affordable, and innovative technologies to poor communities living in the last mile.

KOPERNIK

Kopernik's co-founders, Toshi Nakamura and Ewa Wojkowska, saw that technologies, like solar lights, clean cookstoves, and water filters, for the poor existed, but they weren't reaching the last mile. They wanted to bridge the gap. They left a decade of service with the United Nations to launch Kopernik in 2010.

Kopernik connects producers of innovative technologies, communities that need them, and donors through an online marketplace facilitating the movement of money, technology, and information to improve the lives of the poor

Kopernik balances a philanthropic and business approach to distributing technology. Donors fund the upfront costs of introducing technologies and creating micro-business opportunities in remote communities. The money raised from product sales is reinvested in more technology for the last mile.

Since its launch, Kopernik has disseminated over 20 types of technologies including solar lights, fuel efficient clean cookstoves, water filters, solar-powered hearing aids, and rollable water containers, all of which directly improve socioeconomic productivity in poor households.

Kopernik promotes technologies that have been designed to benefit people in developing countries. The technologies fall under the following sectors:

- Agriculture
- Energy and environment
- Education
- Health
- ICT and mobile technologies
- Water and sanitation

This research on impact tracker technologies covers the 'ICT and mobile technologies' sector in particular.

ABOUT THE IMPACT ECONOMY INNOVATIONS FUND

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The Fund was launched by the Rockefeller Foundation and Asia Community Ventures at the Impact Investing Forum held in Hong Kong on March 14-15, 2013. The Fund aims to catalyse collective action and regional market development to accelerate market-driven solutions to important development challenges.

APPENDIX: ASSESSMENT CRITERIA

DIGITAL DATA COLLECTION APPS

Assesment Variables	MAGPI	VIEWWORLD	iFormBuilder	COMMCARE	TAROWORKS
USABILITY (40%)					
Mobile operating systems:					
Android	■	■	■	■	■
iOS	■	■	■		
Symbian	■				
Others (with Java)				■	
Form builder types:					
Web-based, drag down form builder	■	■		■	■
Web-based, simple form builder			■		
Data inputs:					
Text	■	■	■	■	■
Numeric	■	■	■	■	■
Single/multiple choices	■	■	■	■	■
Date and time	■	■	■	■	■
Audio and video		■	■	■	
Images		■	■	■	■
Meters		■	■	■	■
Signatures			■		■
Geospatial data	■	■	■	■	■
Logic functions:					
Calculation logic	■		■	■	
Skip logic	■		■	■	■
Answer limits & validations	■	■	■	■	■
Formatting and organisation:					
Subform / Link to other forms	■		■	■	
Multiple questions, page grouping		■			
Multiple questions, no grouping					■
Data visualisation:					
Sophisticated charts and map-based views.		■	■		■
Basic charts and basic map-based views.	■				
None				■	

Assesment Variables	MAGPI	VIEWWORLD	iFormBuilder	COMMCARE	TAROWORKS
Additional features:					
SMS	■			■	
Sending audio recorded messages	■				
Text-to-speech	■				
Mobile worker task management					■
AFFORDABILITY (40%)					
Cheapest price plan (yearly)					
Free	■	■		■	
US$ 500 - US$ 1,000			■		
>US$ 1,000					■
Free trial period:					
Basic price plan is free	■	■		■	
1 month			■		
No free trial offered					■
Annual fee to accommodate 6 surveys and 3,000 entries per year					
Free	■			■	
< US$ 100					
US$ 101 - 1,000		■	■		
> US$ 1,000					■
Additional charge per year to accommodate 10 data collectors					
Unlimited users	■				
<US$ 20		■		■	
US$ 20-100			■		■
SCALABILITY (10%) **All variables are assessed based on the platform's most applicable pricing plan according to Kopernik's user persona, with following requirements:** **- 6 surveys per year** **- 500 submissions per survey, or 3,000 per year** **- 10 field workers**	**Free**	**Organisation**	**Emerging**	**Free**	**Up to 40 mobile users**
Number of forms per account					
>100 forms				■	■
50-100			■		

Last updated in October 2014

Last updated in October 2014

ASSESSMENT CRITERIA

DIGITAL DATA COLLECTION APPS

Assesment Variables	MAGPI	VIEWWORLD	iFormBuilder	COMMCARE	TAROWORKS
10-49	■				
<10		■			
Number of questions per form					
Unlimited questions		■	■	■	■
100 - 149	■				
Number of data collectors per account					
Unlimited users	■				■
50-99				■	
10-49					
<10		■	■		
Number of form submissions per month					
Unlimited submissions	■		■	■	■
100-1,000		■			
Multi-source data entry					
From mobile app	■	■	■	■	■
From website	■	■	■		
SMS entry	■			■	
RAPIDITY (10%)					
Wireless form synchronsation	■	■	■	■	■
Wireless data submission (when internet connection is available)	■	■	■	■	■
Automatic data aggregation and analysis					
For free with basic plan	■	■		■	
Only available on paid plans			■		■
Not available					
Automated reports in pdf/ docx.					
For free with basic subscription	■				
Only available on paying subscription		■	■		■
Not available				■	

Assesment Variables	MAGPI	VIEWWORLD	iFormBuilder	COMMCARE	TAROWORKS
TRANSFERABILITY (10%)					
Language support					
Form localisation: forms deployed in local languages, but entries received in one master language	■	■	■	■	■
Non-latin fonts as inputs/ outputs	■	■	■	■	■
Centralised marketplace for users to share form templates					
Accessible for free with basic plan	■	■		■	
Accessible with additional cost/on paid plans					■
No sharing marketplace available			■		
Data export formats					
.tsv/.csv	■	■	■	■	■
.xlsx / .xml	■		■	■	■
User support media:					
Knowledge center (website)	■	■	■	■	■
Email/ phone/ Skype support	■	■	■	■	■
Online Forum			■	■	
Developers/ user blog	■		■		
Youtube channel	■	■	■		■
Other Channels (webinars, Wiki Treads, etc)		■	■	■	■
User support media:					
Knowledge center (website)	■	■	■	■	■
Email/ phone/ Skype support	■	■	■	■	■
Online Forum			■	■	
Developers/ user blog	■		■		
Youtube channel	■	■	■		■
Other Channels (webinars, Wiki Treads, etc)		■	■	■	■

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ASSESSMENT CRITERIA

Assesment Variables	TELERIVET	TEXTIT	FRONTLINE CLOUD	VOTO MOBILE	ECHO MOBILE	COMM CONNECT
USABILITY (50%)						
SMS gateway connections:						
Local mobile number running on an Android app	■	■	■		■	■
Local mobile number connecting via offline USB dongle			■			
Shared number operated by tech developer				■		
Virtual phone number operated by third-party aggregator	■	■	■	■	■	■
Outgoing message/ poll contents						
Alphanumeric characters	■	■	■	■	■	■
Template messages	■	■	■			
Contact variables (name, or other custom fields)	■	■	■	■	■	■
Voice messages		■		■		■
Survey/ poll inputs:						
SMS inputs:						
Free-form text	■	■	■	■	■	■
Numeric	■	■	■	■	■	■
Boolean comparison logic	■	■			■	■
Integer (automatically drop leading zeros)					■	■
Single-answer multiple choice	■	■	■	■	■	■
Alternative responses for an option	■	■	■	■	■	■
Error replies for incorrect reponses	■	■	■		■	■
Text comparison for incomplete responses (has word/ contains/ starts with)	■	■			■	■
Numeric boolean comparison logic	■	■			■	■
Date boolean comparison logic						
Multi-answer multiple choice, i.e.: checboxes			■			■
Date (inputs automatically converted to standard computer date format)	■	■				■
IVR (Interactive Voice Response) using keypads		■		■		■
Missed calls (miss-call one number for one option and another for the other option)	■	■	■			

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SMS PLATFORMS

Assesment Variables	TELERIVET	TEXTIT	FRONTLINE CLOUD	VOTO MOBILE	ECHO MOBILE	COMM CONNECT
Prompts to trigger SMS services:						
Self-subscription						
By keyword(s)	■	■	■	■	■	■
Automatic replies:						
By keyword(s)						
All of the words	■	■	■		■	■
Any of the words	■	■	■			
Boolean comparison logic (for numeric inputs)	■	■				
By contact variables:						
Name	■	■			■	■
Custom fields	■	■			■	■
Contact group membership	■	■			■	
Surveys/ Polls						
By keywords(s)	■	■	■	■	■	■
By missed calls	■	■		■		
Actions that can be prompted:						
Surveys/ polls						
Skip to question	■	■	■	■	■	■
Repeat question	■	■	■	■	■	
End question	■	■	■	■	■	
Messaging						
Send SMS reply	■	■	■	■	■	■
Send SMS to another individual	■	■	■		■	■
Send SMS to a group	■	■	■			■
Send USSD request	■	■				
Send email	■	■			■	
Contact management						
Add contact to a group	■	■	■	■	■	
Remove contact from a group	■	■	■		■	
Set contact name	■	■			■	■
Set other contact fields	■	■			■	■

Last updated in October 2014

ASSESSMENT CRITERIA

Assesment Variables	TELERIVET	TEXTIT	FRONTLINE CLOUD	VOTO MOBILE	ECHO MOBILE	COMM CONNECT
Advanced functionality						
Calculation logic (use message contents as calculation inputs)	■	■				■
Submit API request	■	■	■	■	■	■
Contact management features:						
Import/ export contacts from/ to a spreadsheet	■	■	■	■	■	■
Multiple group membership	■	■	■	■		
Custom contact fields	■	■	■		■	■
Integration with mobile data collection platform					■	■
Scheduling:						
For bulk messages	■	■		■	■	■
For surveys/ polls	■	■		■	■	■
Schedule types:						
Set time	■	■		■	■	■
Recurring (daily/ weekly/ monthly/ yearly)	■	■		■	■	■
Relative timing, based on specified message/ contact variables	■	■		■	■	■
Auto reminders to non-respondents				■	■	■
Key activity statistics dashboard	■	■	■	■	■	■
Free desktop simulator	■	■				■
API functionality	■	■	■	■	■	■
Platform instances						■
Open-source modifications		■				■
User interface - ease of use, logical navigation, etc	Ratings based on Kopernik's own user experience					
AFFORDABILITY (20%)						
SMS gateway connections						
Shared number operated by tech developer				■	■	■
Local or virtual number acquires by users	■	■	■			

SMS PLATFORMS

Assesment Variables	TELERIVET	TEXTIT	FRONTLINE CLOUD	VOTO MOBILE	ECHO MOBILE	COMM CONNECT
Number of developing countries a shared number is available in:						
>=4						■
3				■		
2					■	
Not available anywhere	■	■	■			
Structured SMS with custom delimiters and question identifiers (users can skip questions/ answer questions in a different order by assigning a unique identifier to each answer)						■
Rate to send and receive 1,000 text messages using cheapest gateway connection available						
<US$ 5			■			
US$ 5 - 10	■	■				
US$ 11 - 15					■	
>US$ 20				■		■
SCALABILITY (15%) All variables are assessed based on the platform's most applicable pricing plan according to Kopernik's user persona, with following requirements: 32 text messages per month (2 polls @ 6 questions and 8 notices a month), 150 respondents per poll						
Custom message routing (multi-number connection to increase messaging capacity and leverage cheap in-network rates)	■	■	■			
Bulk messaging	■	■	■	■	■	
Max number of contacts in storage*						
Unlimited		■	■	■	■	■
<10,000 contacts	■					
Max number of messages sent and received						
No daily limit		■	■	■	■	■
Daily limit	■					
Project-based service and data management	■	■			■	
User-level access permission settings (using different log-in credentials	■	■		■	■	■

SMS PLATFORMS

Assesment Variables	TELERIVET	TEXTIT	FRONTLINE CLOUD	VOTO MOBILE	ECHO MOBILE	COMM CONNECT
RAPIDITY (5%)						
Data export formats:						
Spreadhsheet (csv./xls.)	■	■	■	■	■	■
Report (pdf)			■			
Real-time SMS response monitoring	■	■	■	■	■	■
Automatic data aggregation and analysis	■	■	■	■	■	
TRANSFERABILITY (10%)						
Offline capacity			■			
Number of interface languages:						
Open-source (anyone can contribute to translation)	■	■	■			■
English ONLY				■	■	
Number of two-way virtual number providers integrated with, excluding of shared gateways:						
Clickatell			■		■	■
txtNation			■			
World-text			■			
Developing country-based aggregator(s)		■				
Nexmo/ Twilio/ IntelliSMS	■	■	■	■	■	■
Non-latin fonts as inputs/ outputs	■	■	■	■	■	■
Archive for past SMS services	■	■	■	■	■	■
Number of website aggregators ready to use:						
(Universal) virtual numbers	■	■	■	■	■	■
Local private/ shared number						
User support media:						
Knowledge center (website)	■	■	■	■	■	■
Email support	■	■	■	■	■	■
Phone support	■	■	■	■	■	
Online Forum			■		■	■
Workshops (where they have country presence)	■	■	■	■	■	■

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Nexleaf (Cookstove Usage Sensor, Black Carbon Filter Analyser, Cold Chain Monitor)
http://nexleaf.org/

Rainforest Connection
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SweetSense Sensors (Stove, Water, Flow, Air, Structure)
http://www.sweetsensors.com/about/