U.S. GLOBAL DEVELOPMENT LAB

Powered by **USAID**

THE CATALOG

VERSION 1.5

MoneyMaker Pumps: pg 4; Photo: KickStart International

Photo: Panos Pictures (UK)

INTRODUCTION

For decades, USAID and its partners have successfully tackled some of the world's toughest challenges through such pioneering efforts as the President's Malaria Initiative, the Global Health Initiative, and Feed the Future. Many of the lessons learned and the great leaps in development from these efforts point to the catalytic and transformational potential from sustained investments in science, technology, innovation, and partnership. USAID's legacy of developing and implementing innovative breakthroughs—from the seeds of the green revolution, to microfinance, to oral rehydration therapy—has saved lives, created economic opportunity, and advanced human development.

Building on this legacy, USAID established the U.S. Global Development Lab (The Lab) in early 2014 to lead our efforts in applying science, technology, innovation, and partnerships to solve global development challenges and improve our development impact. The Lab will enable USAID to bring a diverse set of partners - entrepreneurs, world-class experts from corporations, NGOs, universities, science and research institutions, and our Missions around the world - together to discover, incubate, and scale breakthrough development innovations in sectors like water, health, food security and nutrition, energy, and climate change, among others that can reach hundreds of millions of people.

The Lab is an evolution of USAID's Offices of Innovation and Development Alliances (IDEA) and Science and Technology (OST), and it is designed to build off the incredible work USAID is already doing, support the most promising science, technology, innovation, and partnership solutions, and break down barriers to ensure the Agency's success.

This catalog presents select innovations supported by USAID and its partners through open development programs that form the foundation of the Lab. The catalog illustrates a range of cost effective and potentially transformative solutions that are possible when we tap into the energy, commitment, and entrepreneurial and innovative spirit of people around the world.

This is an exciting time, where now more than ever before, ending extreme poverty is within reach. I invite you to take a look at some of these solutions and see what is possible.

Andrew Sisson
Acting Executive Director
U.S. Global Development Lab

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AGRICULTURE

Photo: KickStart International

The Dutyion Root Hydration System

Photo: Desert Technology & Innovation

The Dutyion Root Hydration System (dRHS™) is a subsurface irrigation technology that works by allowing water vapor to permeate through the walls of the pipe. It is installed at root depth and made from a durable material called Dutyion.™ The water supplied to the pipes may be fresh or polluted, i.e. seawater, since only water vapor can escape through the walls of the pipe. The vapor that reaches the roots is fresh water. Gravity is all that is required, since the driving force is the vapor gradient, and the vapor release is directly correlated to level of dryness.

- **Makes valuable use of wastewater** for plant growth where plants cannot normally be grown.
- **Increases carbon capture** while increasing the value of desert land.
- **Uses water efficiently** in places where water is an extremely valuable commodity.

Supported by LAUNCH

Photo: Desert Technology & Innovation

Photo: Desert Technology & Innovation

Photo: @KickStartInternational

KickStart International is a non-profit social enterprise that designs and mass markets low-cost, high-quality irrigation pumps that are appropriately designed for small-scale farmers in Africa. KickStart educates farmers about the benefits of irrigation and enables them to purchase pumps locally through the private sector. MoneyMaker Pumps allow farmers to increase their agricultural productivity and incomes, lifting their families out of poverty.

MoneyMaker Pumps

- **Widespread demand and distribution** for this product is demonstrated by sales of more than 220,000 pumps across Africa to date.
- **Increases agricultural income** by an average of 500% for pump owners switching from subsistence to irrigated farming.
- **Ensures food security** by increasing agricultural output and building resilience to climate-related challenges and poverty.

Photo: KickStart International

MoneyMaker Pumps in Action

KickStart promotes low-cost irrigation pumps to help farmers grow high-value crops throughout the year and sell their crops when prices are high. MoneyMaker Pumps are sold to empower poor families to climb out of poverty. However, despite the benefits and low cost of the pumps, they are beyond the easy reach of many poor farmers. To meet this need, KickStart designed two financing services that are expected to increase access to the products and help break down financial barriers to technology adoption—Mobile Layaway and "Rent-to-Own" services.

Supported by Development Innovation Ventures

Photo: KickStart International

"Buying a pump changed everything for my family in a very short time. I am now the envy of the village, thanks to this amazing pump!"

Mama Edna
Sotik, Kenya

Rapid Milk Chiller

- **Supports rural farmers**, enhancing the livelihood of 6 million in India alone.
- **Cost-effective and sustainable** alternative energy source to capital-intensive diesel generators.

Supported by LAUNCH

"Running of diesel generators is capital-intensive and with prices climbing up, our costs have increased. Since deregulation of diesel will happen in the next year, we have decided to go for an alternative energy option."

Managing Director of Amul
India's largest cooperative dairy

Photo: Promethean Spenta Technologies

Photo: Promethean Spenta Technologies

Photo: Promethean Spenta Technologies

The Rapid Milk Chiller uses the first industrial application of thermal storage batteries to bridge the electricity gap that exists in rural India. Rural dairy farmers are able to chill milk **without a diesel generator** for the first time and sell it into the organized dairy industry without spoilage. The Rapid Milk Chiller is purchased by large dairy processors, and is deployed to villages where small farmers can deposit raw milk, even when there is no power available at the time of milking. Initially, six Rapid Milk Chillers were tested to prove the concept in the field and India's largest private dairy has recently ordered fifty of the Rapid Milk Chillers. This thermal battery technology can also be applied in order to chill other agricultural and medicinal items in need of refrigeration, such as fruits and vegetables, as well as vaccines. Designed to be used with unreliable power supply, the battery can be used with solar or intermittent power from the grid.

EDUCATION

Same Language Subtitling

Same Language Subtitling (SLS) is the idea of subtitling the lyrics of television and video in the same language, providing viewers with both auditory and visual recognition of words to increase reading comprehension. SLS has been implemented on several popular Bollywood films' songs on Indian television in 10 languages: Hindi, Bengali, Gujarati, Marathi, Telugu, Tamil, Kannada, Malayalam, Oriya, and Punjabi. The subtitles are designed to change the color of every word in perfect timing with the song to provide automatic and subconscious reading practice to weak readers.

Photo: PlanetRead and SLS Centre at IIM-Ahmedabad

आँखों में हैं बहारें दिल में फ़िज़ा

"Same Language Subtitling doubles the number of functional readers among primary school children. A small thing that has a staggering impact on people's lives."

President Bill Clinton
September 2009

- **Cost and time effective means** to improve literacy that fits into people's preexisting routines.
- **Large market potential** demonstrated by the more than 300 million weak readers in India alone.
- **Government and private sector support** due to increased television ratings and levels of literacy, resulting in India's Ministry of Information and Broadcasting calling for SLS as a national policy.

Same Language Subtitling in Action

SLS was first implemented on Indian national television in 1999 and currently is used for 10 national languages: Hindi, Telugu, Bengali, Kannada, Tamil, Malayalam, Gujarati, Marathi, Punjabi, and Oriya. SLS reaches more than 200 million weak readers every week in a country with 300 million weak readers and an additional 300 million illiterates. SLS has enormous potential in India, where a booming film industry produces more than 1,000 movies and more than 5,000 music videos every year.

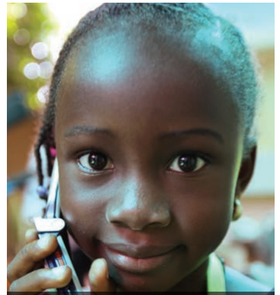
Supported by All Children Reading Grand Challenge for Development

Photo: PlanetRead and SLS Centre at IIM-Ahmedabad

MobiLiteracy

- **Easily accessible** MP4 files provide parents with daily 60-90 second long literacy lessons.
- **Widespread use of mobile phones** in developing countries makes this technology easily deployable, inexpensive, and scalable.
- **Anytime and anywhere learning** increases accessibility of parent-child learning programs.
- **Sustainable and cost-effective** educational program requiring little or no training or data costs.

Photo: Urban Planet



Parental involvement is correlated to children's educational success. In countries with high rates of illiteracy among adults, new solutions such as MobiLiteracy encourage parental engagement for supporting literacy acquisition among their children. MobiLiteracy delivers daily, mother-tongue audio lessons on mobile phones for parents to share with their children.

MobiLiteracy in Action
The pilot program is currently being conducted with 60 Ugandan parents over a 91-day period modeled after the length of a Ugandan school term. The curriculum is divided into five short lessons with two review lessons every seven days progressing through letter recognition and phonetics, vocabulary acquisition, and listening comprehension through storytelling. Participants are assessed on learning via text message.

Supported by All Children Reading Grand Challenge for Development

SMS Data Transmission Technology System

Photo: Education Development Center

The SMS Data Transmission Technology system provides a solution for schools in the Philippines with limited internet connectivity to access and assess students' performance data for the National Achievement Test (NAT). This system allows schools to receive NAT performance data and simple analysis from the Philippines Department of Education via SMS.

Photo: Education Development Center

- **Instantaneous access** to student performance data is made possible via SMS.
- **Cost-effective access** to performance data at approximately $0.03 per text message.
- **Data analysis** for performance data is made easily accessible to teachers and administrators in order to address deficiencies.

SMS Data Transmission Technology System in Action
This product will be tested in September 2013 and has the potential to impact 53 schools, 900 teachers, and 35,000 students in the Mindanao region of the Philippines.

Supported by All Children Reading Grand Challenge for Development

BeLL and Ghana Reads Application

The Basic e-Learning Library (BeLL) and the Ghana Reads Application use interactive pedagogy to engage students and provide teachers with educational resources for use on affordable, modern technology. These technologies improve students' literacy skills by providing tailored educational content for individual student or classroom needs. BeLL provides teachers with lesson plan templates and professional development resources. Student performance feedback is sent to Ghana Reads coaches who assess progress and suggest remedial lessons as needed.

Photo: Open Learning Exchange

Photo: Open Learning Exchange

- **Free, open education resources** cost less than $5 per student per year.
- **Develops local teachers** through interactive teacher coaching.
- **Learning experiences are maximized** for teachers, students, and administrators.

BeLL and Ghana Reads App in Action
The Ghana Reads program is currently being pilot tested in 10 schools, and by September 2013 will be in four districts across two regions, directly affecting 6,000 students and 160 teachers.

Supported by All Children Reading Grand Challenge for Development

Total Reading Approach for Children mLearning Application

Photo: World Education, Inc. in collaboration with Education Technology for Development

The Total Reading Approach for Children mLearning Application teaches Khmer language reading skills through interactive media activities linked to skills required in the national curriculum. Literacy games and stories employ sound, phoneme, consonant, vowel, and word recognition via mobile devices.

- **Developed in collaboration with Cambodia's Ministry of Education, Youth, and Sport,** this application uniquely supports students in reaching national reading benchmarks.
- **The widespread use of mobile phones** makes this technology deployable, inexpensive, and scalable.
- **Accessible learning** increases opportunities for parent-child learning interactions.

Supported by All Children Reading Grand Challenge for Development

Total Reading Approach for Children mLearning Application in Action
World Education, Inc., in partnership with Kampuchean Action for Primary Education, Cambodia's Ministry of Education, Youth, and Sport, and Education Technology for Development, is implementing the Total Reading Approach for Children mLearning Application in eight primary schools. Each school received tablets and smartphones with the mLearning application, which measures student diagnostics against the national curriculum. Literacy coaches tailor students' practice to meet individual learning needs, and parents can check out materials for continued practice at home.

Photo: World Education, Inc. in collaboration with Education Technology for Development

ENVIRONMENT

Photo: James Sundays, Kenya Red Cross Society

Fresh Life Toilet and Sanergy Sanitation Services

Photo: Sanergy

Photo: Sanergy

Photo: Sanergy

Fresh Life Toilets provide a holistic approach to development by addressing the critical need for reliable, hygienic sanitation services, while simultaneously generating jobs and renewable energy. Fresh Life Toilets are small-form, modular, hygienic toilets designed for urban slums and sold as franchises to local residents, who run them as small businesses with the help of Sanergy's business support services – which includes branding, marketing and daily waste collection services.

- **Compact size** of 3'x5' fits well in densely-packed urban slums and its cartridges' 30L capacity ensures easy transport of waste.
- **Water-free collection system** captures urine and feces in separate 30L cartridges, reducing odor and preventing both human-waste contact and groundwater contamination.
- **Pre-fabricated, pre-cast materials** are made in a centrally located, controlled workshop by a trained team.
- **Ferro-cement panels** are highly durable, light, and easy to maintain. These qualities ensure durability, equal to or greater than five years, and reduce transportation costs.
- **Cleanliness** is promoted by an epoxy paint, preventing unit staining, while attached hand washing stations promote patron hygiene.

Fresh Life Toilets in Action

Sanergy makes sanitation sustainable in urban slums with an innovative systems-based approach resulting in a sanitation value chain with three major parts: franchise, collect, and convert. Sanergy's team collects the human waste from its network of low-cost Fresh Life Toilets, takes it to a central processing facility, and then converts it into organic fertilizer and renewable energy, which leads to the model's sustainability. While this product will be initially launched in Kenya with planned expansion to urban slums across East Africa, it presents a valuable integrated sanitation model for application in slums worldwide.

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Development Innovation Ventures

Photo: Nena Terrell/USAID

Holomic Rapid Diagnostic Reader

Photo: UCLA Biophotonics Lab (Inventor) and Holomic LLC

The Holomic Rapid Diagnostic Reader (HRDR) combines the features and the power of today's smartphones with advanced optical and software design to give the user a unique lightweight, handheld, accurate, and economical reader for improved rapid diagnostics with lateral flow immunoassay devices. It captures the image of the rapid diagnostic test (RDT); performs quantitative measurements; provides accurate and robust test results independent of operator skill and external illumination conditions; displays therapeutic information; and stores results for later or real-time transfer to local or remote laboratory information systems or electronic health records. Smart RDT reader applications implemented through Holomic's Cloud information service can provide geo-mapping and real-time monitoring of patients and populations, as well as inventory management and quality tracking.

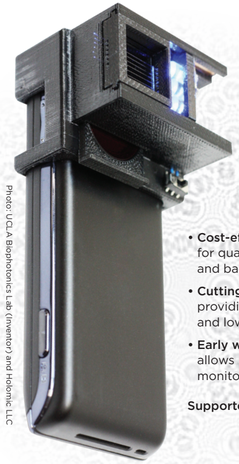

Photo: UCLA Biophotonics Lab (Inventor) and Holomic LLC

- **Cost-effective, lightweight, compact tool** for quality screening for pathogens and bacteria.
- **Cutting-edge tool for telemedicine** providing diagnostics in remote and low-resource areas.
- **Early warning of incipient epidemics** allows public health agencies to monitor spread of diseases.

Supported by LAUNCH

Photo: Nena Terrell/USAID

Photo: Jhpiego

HEALTH

The ePartogram is an affordable, easy-to-use, handheld electronic decision-making tool for preventing and managing complications during labor. The ePartogram aims to decrease maternal and newborn death during labor and delivery. It accomplishes this by putting the validated and data-driven World Health Organization (WHO) paper partograph into an easy-to-use format that uses clinical decision algorithms to predict complications and flash messages and warnings. This device will positively transform safe childbirth by enabling front-line providers to more rapidly assess and respond to labor complications and receive crucial guidance to save the lives of women and newborns.

ePartogram

- **Creates connections** between different levels of healthcare providers and healthcare facilities.
- **Allows easy and efficient** prioritization of patients and interpretation of clinical data.
- **Reduces time and complexity** of graphing by automating the plotting of data.

ePartogram in Action

The ePartogram is designed to be implemented district-wide so that referral centers and their periphery clinics are able to share patient records when transferring a woman or for consultation. In addition to the ePartogram software, there are several core components of a district-wide ePartogram implementation: tablet procurement, internet-network connectivity, identification of a central level clinician for remote support, training sessions for providers, program staffing, and budgeting for tablet repairs and replacements.

Supported by Saving Lives At Birth Grand Challenge for Development

Photo: Jhpiego

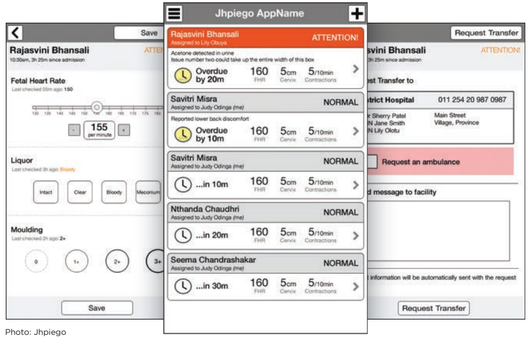

Photo: Jhpiego

Prenatal Sprinkles

- **Substantial market** consisting of millions of women with low calcium dietary intake and for whom both iron and calcium supplements are recommended during pregnancy.
- **Easy to use** in-home fortification option that masks the unpleasant taste of iron and feel of calcium.

Prenatal Sprinkles in Action

Currently the prototype is being tested in Dhaka, Bangladesh. Ideally, the product would be used in populations where pregnant women are known to have low dietary calcium intake, which is frequently observed in low- and middle-income country settings. However, there are necessary steps before scaling up this innovation, such as conducting field trials in various rural settings to assess the effects of Prenatal Sprinkles on hemoglobin and iron status in pregnant women and to assess its acceptability across diverse geographic and cultural settings.

Supported by Saving Lives At Birth Grand Challenge for Development

Photo: Centre for Global Child Health, The Hospital for Sick Children

Photo: Centre for Global Child Health, The Hospital for Sick Children

Photo: Centre for Global Child Health, The Hospital for Sick Children

HEALTH

Prenatal calcium supplementation is recommended by the World Health Organization (WHO) to reduce pregnancy-induced hypertensive disease and related morbidity and mortality in populations with low dietary calcium intake. However, calcium-iron interactions and the size of the recommended calcium dose have served as barriers to the implementation of this strategy. As a potential solution, Prenatal Sprinkles provides a pH-sensitive, differential time-released, microencapsulated prenatal calcium and iron powder for home-based supplementation.

PharmaCheck

- **Incredible accuracy** of greater than 95%.
- **Durability** makes this product ideal for remote settings.
- **Portable** with an easy-to-use customizable, modular platform with minimal power usage.

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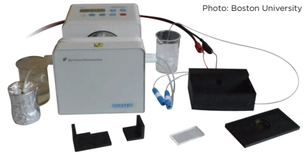

Photo: Boston University

Photo: Boston University

Providing an accuracy of greater than 95%, PharmaCheck offers an easy-to-use, field-ready, customizable platform for improving access to quality medicines in low-resource areas by verifying drug content and timed release. The system uses fluorescent probes and microfluidics to perform analysis in a reproducible, efficient manner, with results consistent with bulk assays. A medicine sample is placed in a chamber connected to the device and a simple readout provides drug information to the end user.

Pratt Pouch

Photo: Duke University

The transmission of HIV from mother to child during the birthing process can be largely prevented by the administration of anti-retroviral drugs. However, the child must receive the medication within 24 hours after birth to be effective. In places where at-home births are common and travel to clinics is difficult, timely delivery poses a substantial problem. The Pratt Pouch, a durable, foilized, polyethylene pouch, is filled and sealed by a local pharmacist and then given to an HIV positive mother at an antenatal visit. If the mother is unable to make it to the hospital to deliver, she can tear open the pouch and provide the drugs to the infant, preventing her newborn from becoming HIV positive.

Photo: Duke University

- **Effective alternative** to conventional containers, such as syringes, cups, and pill bottles, which can destroy the medication's active ingredient.
- **Easy and safe** to store for up to 12 months.
- **Simplifies complicated, multi-drug regimens** for new mothers.

"If I would have the option to choose between using a bottle of medicine with a spoon or dropper or simply using the pouch, I would pick the pouch any day."

Pratt Pouch User

Supported by Saving Lives At Birth Grand Challenge for Development

PIERS on the Move

Photo: University of British Columbia

- **Decreases maternal and perinatal mortality** by predicting the risk of complications of pre-eclampsia.
- **Integrates multiple innovative technologies** for coordinated assessment and treatment of pre-eclampsia in low-resource settings.

PIERS on the Move in Action

PIERS on the Move integrates two previously separate successful innovations: a predictive score, called the miniPIERS score, and a Phone Oximeter, to overcome barriers such as lack of skilled workers, distance, and resources. The prediction of adverse maternal outcomes in pre-eclampsia is based on symptoms and clinical signs, including a low blood oxygen saturation level that can be measured with the Phone Oximeter. By combining these innovations into one platform on a mobile phone application, they will be immediately available in rural, low-resource community settings.

Supported by Saving Lives At Birth Grand Challenge for Development

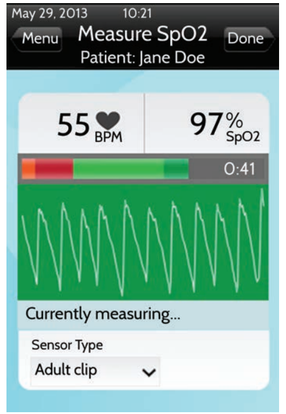

Photo: University of British Columbia

Photo: University of British Columbia

Pre-eclampsia Integrated Estimate of RiSk (PIERS) on the Move is a mobile phone application for local, rapid, and accurate risk assessment, referral, and treatment advice for pre-eclampsia, and the transmission of information to referral centers for coordination of triage, transportation, and treatment. The PIERS on the Move application combines oxygen saturation spot-checks from the Phone Oximeter with clinical data from patient evaluations. It generates a risk score and provides advice to aid in decision making for triage, transport, and treatment of pregnant women with suspected or confirmed pre-eclampsia.

Photo: Rice University

The Pumani bubble continuous positive airway pressure (bCPAP) device provides respiratory support for newborns struggling with severe respiratory illness in low-resource settings. In a clinical study at Queen Elizabeth Central Hospital in Malawi, the device has been shown to significantly improve survival for neonates suffering from respiratory distress.

Pumani Bubble CPAP

- **Highly effective, low-cost solution** for low-resource hospitals, which could save the lives of 178,000 babies across Africa each year.
- **Low-maintenance features** such as no reliance on wall air source, portability, and minimal consumable parts make this a sustainable solution.

Pumani bCPAP in Action

The Pumani bCPAP device is being used in Malawi to treat infants with severe respiratory illness. Rice University, Queen Elizabeth Central Hospital, the Malawi Ministry of Health, 3rd Stone Design, Baylor College of Medicine, and MD Anderson are working in partnership to implement use of the Pumani device in all central and district hospitals in Malawi: training nurses, clinical officers, and electromedical engineers in the use and repair of this device; educating mothers about the safety and efficacy of the device; and performing an economic evaluation to assess whether it is a resource-effective treatment for neonatal respiratory illness.

Supported by Saving Lives At Birth Grand Challenge for Development

Photo: Rice University

"The bCPAP device has improved survival rates for premature babies in our unit. Nurses can easily initiate treatment and provide ongoing care for babies receiving CPAP. With the Ministry of Health, we are now disseminating the device throughout Malawi."

Dr. Elizabeth Molyneux
Professor of Pediatrics, University of Malawi

SafeSnip

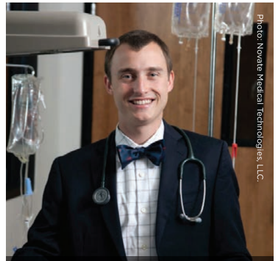

Photo: Novate Medical Technologies, LLC.

SafeSnip is a patented disposable and degradable plastic obstetric device that simultaneously cuts, clamps, and shields the umbilical cord from infection. SafeSnip's symmetric design and multiple safety features prevent misuse and shorten the delivery process by transforming umbilical cord severance into an intuitive one-step procedure.

Photo: Novate Medical Technologies, LLC.

- **Ease of use and cost-effective** nature of this product make it a sustainable alternative.
- **Allows easy and efficient** prioritization of patients and interpretation of clinical data.
- **Disposable** nature of the product prevents infection from reuse and promotes sterility.

SafeSnip in Action

SafeSnip aims to reduce neonatal mortality in developing countries by making the birthing process more efficient, intuitive, and safe. The device utilizes novel locking mechanisms and opposing plastic blades that rely on sheer force to clamp, cut, and shield the umbilical cord, and enclose the umbilical tissue for the first 10-14 days of life. These features allow SafeSnip to safely sever the connection between mother and child while preventing reuse and reducing contamination between deliveries.

Supported by Saving Lives At Birth Grand Challenge for Development

Photo: Novate Medical Technologies, LLC.

Odón Device

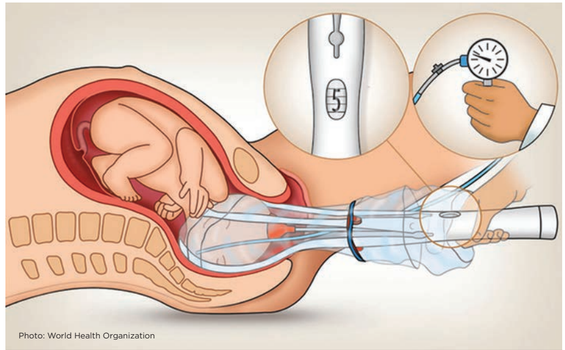

Photo: World Health Organization

The Odón Device is a low-cost, easy-to-use revolutionary development in obstetrics used to facilitate vaginal delivery and designed to minimize trauma to both the mother and baby. The Odón Device is made of film-like polyethylene material and may be potentially safer and easier to apply than forceps and vacuum extractor for assisted deliveries. More than ten percent of deliveries—an estimated 13.7 million births each year—require some form of assistance during the second stage of labor. Access to appropriate care is often limited in developing countries. The Odón Device may be a useful tool for any assisted delivery with a skilled provider: approximately 9 million deliveries each year.

- **Reduces risk of fatal maternal and newborn complications** due to a prolonged second stage of labor.
- **Disposable** nature of the product prevents infection from reuse and promotes sterility.

Odón Device in Action

The Odón Device is being tested in a two-phased study in healthcare facilities in Argentina and rural South Africa. Study results will inform future research to assess effectiveness of the Odón Device in reducing negative obstetrical outcomes, including newborn infections acquired intrapartum.

Supported by Saving Lives At Birth Grand Challenge for Development

Photo: World Health Organization

Bioneedle

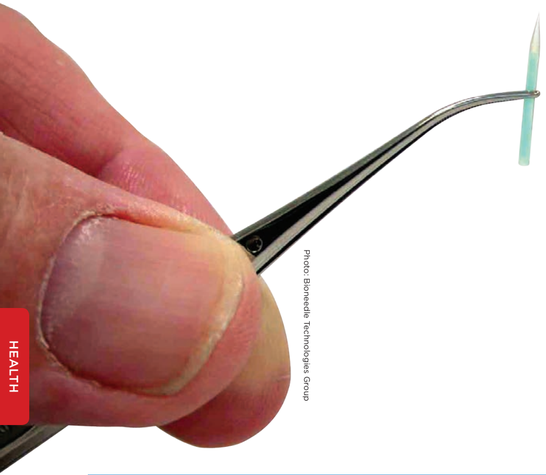

Photo: Bioneedle Technologies Group

Photo: Bioneedle Technologies Group

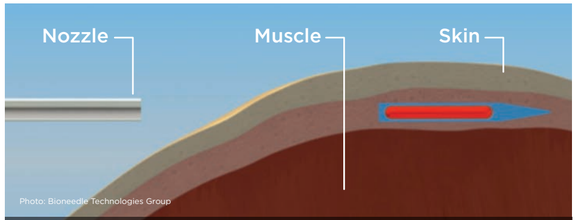

Photo: Bioneedle Technologies Group

A Bioneedle is a biodegradable mini implant, prefilled with a thermo-stabilized vaccine. After pain-free subcutaneous delivery, the polymer starts absorbing body fluids within seconds and is degraded within minutes, thereby releasing the vaccine. The loading capacity suffices for multiple vaccines in just one Bioneedle. Delivery is safe, painless, and leaves no contaminated waste.

There is an urgent need to improve access to safe, affordable and effective vaccines. Bioneedle Technologies Group has developed the Bioneedle as a new vaccination technology, as alternative to the current Syringe/Needle/Vial/Cold-chain technology. A Bioneedle is a biodegradable mini-implant, pre-filled with a thermo-stabilized vaccine. After pain free subcutaneous delivery, the Bioneedle begins absorbing body fluids within seconds and is degraded within minutes, thereby releasing the vaccine.

- **Applicable to all vaccines.**
- **Biodegradable:** Leaves no (contaminated) waste.
- **Eliminates wastage** of vaccines.
- **Enables access** to safe, effective and affordable vaccination anywhere in the world; and because the Bioneedle does not require a cold chain, populations in remote and tropical areas can be reached.
- **Reduces costs of logistics:** The very small size of Bioneedles, their ease of use, and uncomplicated logistics imply that the costs of logistics (transport, storage, distribution, and handling) can be reduced by up to 95% compared to the current Syringe/Needle/Vial/Cold-chain technology.

Supported by LAUNCH

CommCare

- **Proven to improve** access to care, quality of care, and accountability of care.
- **Cost-effective, scalable solution** to building community-based primary care.
- **Facilitates best practice sharing** through built-in application builder in the mHealth system for community health workers.

CommCare in Action

A randomized, controlled trial showed that reminders from CommCare, with eventual escalation to supervisor notification, led to 85% more timely visits compared to community health workers not receiving reminders. In addition, CommCare dramatically improves accountability of care through real-time monitoring of Accredited Social Health Activists' activities. A study in Madhya Pradesh observed an improvement in data completeness from 67% to 84% after introducing CommCare, as well as a reduction in the time it took to transfer data to a program coordinator from 45 days to 8 hours.

Supported by
Development Innovation Ventures

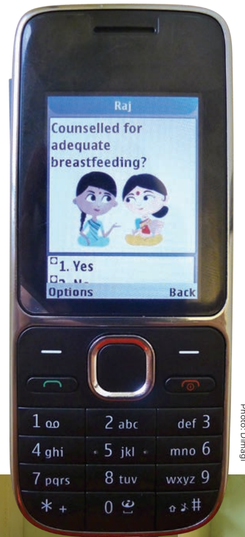

Photo: Dimagi

Photo: Dimagi

Photo: Dimagi

CommCare replaces community health workers' paper registers and flip charts with open-source software that runs on inexpensive phones. During home visits, CommCare aids community health workers in registering clients and provides real-time guidance through key counseling points, decision support, and simple referral algorithms. CommCare also supports images, audio, or video clips to be played to clients and to help low-literate staff use CommCare. CommCare submits visit data in real time to a central cloud server, CommCareHQ, where it is privacy-protected and backed up. Supervisors can log onto CommCareHQ and view each community health worker's performance indicators, including daily activity, number of clients, length of visits, and follow-up rates. By combining at scale an innovative, field-tested mHealth solution, a massive health workforce, a broad base of implementation partners, and rigorous, relevant, and timely research, Dimagi is helping to realize the full potential of community-based primary care as envisioned by the Government of India and globally.

HUMAN RIGHTS

Photo: AFP/Ashraf Shazly

MediCapt

Photo: AFP/Taiseef Mustafa

- **A revolutionary tool** to collect evidence of mass atrocities and bring perpetrators to justice.
- **Combines cutting-edge technology** to effectively document and secure court-admissible evidence.

Supported by
The Tech Challenge for Atrocity Prevention

Photo: AFP/Victor Drachev

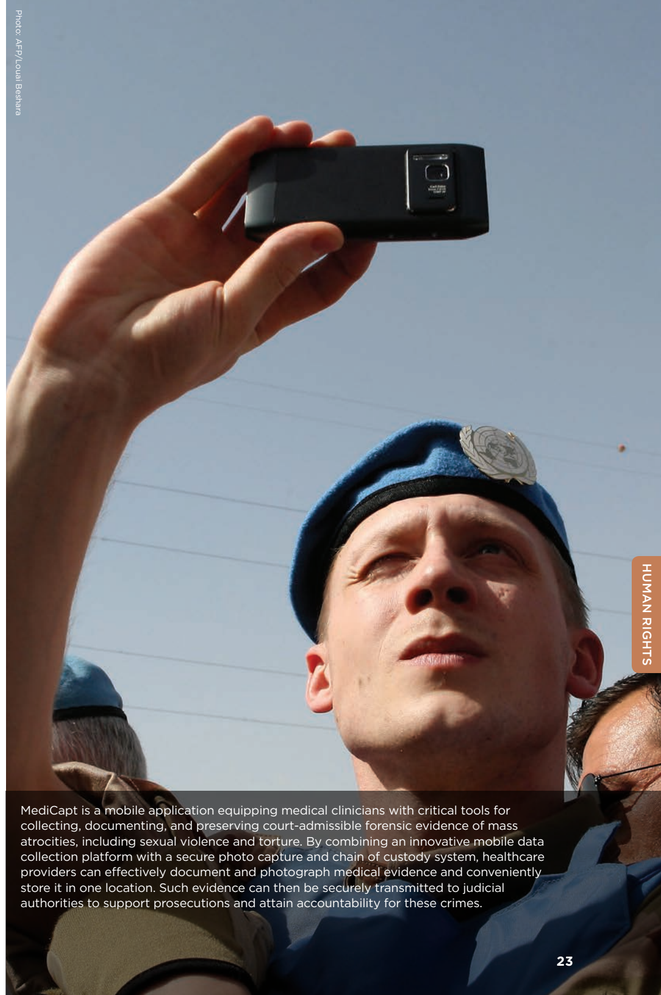

Photo: AFP/Louai Beshara

MediCapt is a mobile application equipping medical clinicians with critical tools for collecting, documenting, and preserving court-admissible forensic evidence of mass atrocities, including sexual violence and torture. By combining an innovative mobile data collection platform with a secure photo capture and chain of custody system, healthcare providers can effectively document and photograph medical evidence and conveniently store it in one location. Such evidence can then be securely transmitted to judicial authorities to support prosecutions and attain accountability for these crimes.

Photo: USAID

Compartment Bag Test

- **Comprehensive, easy-to-use test** containing a compartmentalized bag, fecal indicator bacteria growth medium, water sampling and mixing container, and disinfecting material.
- **Easy-to-score, visual,** color-change results.
- **Ambient temperature incubation** from 25 to 44.5°C.
- **Quantitative, accurate results** for E. coli in 100 mL sample volume. The Hydrogen Sulfide version of the CBT has also been tested and validated.

Compartment Bag Test in Action
The CBT may be used to directly measure microbially safe water access on a global scale in national demographic and health surveys such as the Demographic and Health Survey (DHS) and the Multiple Indicator Cluster Survey (MICS), and in other drinking water quality assessments. The CBT enables the validation and monitoring of existing water safety projects, supports water safety plans, is usable in disaster settings, and can serve as a health behavior education tool. The CBT also provides knowledge directly to households to empower action when unsafe water is found.

Supported by LAUNCH

"I found the CBT to be easy to use and I had no trouble using this test even though this is my first time. The information provided is important. People should know about their water safety."

Mwanza
Tanzania resident

Photo by Aquagenx

Photo by Aquagenx

The Aquagenx Compartment Bag Test (CBT) is an affordable, commercially available microbial water quality test developed by Dr. Mark Sobsey and Dr. Ku McMahan of the University of North Carolina Gillings School of Global Public Health with support from the university and USAID. The CBT quantifies E. coli levels in a 100 mL sample, is portable and self-contained, and does not require electricity, a lab, or special training. It allows for incubation at ambient temperatures and provides built-in decontamination. The CBT can be used by anyone in virtually any setting.

CROSSCUTTING

Photo: Kendra Helmer/USAID

Photo: Human Network International

DataWinners is an online, do-it-yourself data collection service that allows organizations to shorten the time between data collection and better decision making. Organizations use DataWinners to transform inefficient paper forms into digital questionnaires in minutes. Data senders then submit their data using any combination of SMS, smartphone, and web. Incoming data is instantly recorded in a cloud-based database for viewing and analysis. Data administrators can access and analyze data in real time and react rapidly.

"DataWinners modernized our data collection. The Primary School Directors now submit their data more quickly and with fewer errors using their own mobile phones. The Ministry has plans to use DataWinners to collect other education data in Senegal."

Amadou Lamine Ndiaye
Data Administrator
Ministry of Education, Senegal

DataWinners

- **Easy-to-use data collection** with a local telephone number provided for SMS, multilingual support, questionnaire builder, data visualization and export, and unlimited collection potential.
- **Quick collection and analysis** supports better decision making and allows organizations to maximize their resources.
- **Cloud-based technology** allows organizations to access their information in real time.

DataWinners in Action

In Senegal, USAID is supporting the Ministry of Education's use of DataWinners to collect standardized testing results for reading and math from primary schools nationwide. Ministry of Education Data Administrators built their SMS questionnaires in DataWinners and registered more than 9,500 schools and School Directors into the system. Directors were then trained to submit data via SMS using their personal mobile phones. Data is recorded in real time in DataWinners cloud-based database. The standardized test results are easily accessed by data administrators and regional and district officials for verification. Initial results are positive and data collection will be expanded to monitor other Ministry of Education needs, such as quality assurance, teacher absenteeism and student-level data.

Supported by All Children Reading Grand Challenge for Development

Photo: Human Network International

Photo: Human Network International

Photo: Human Network International

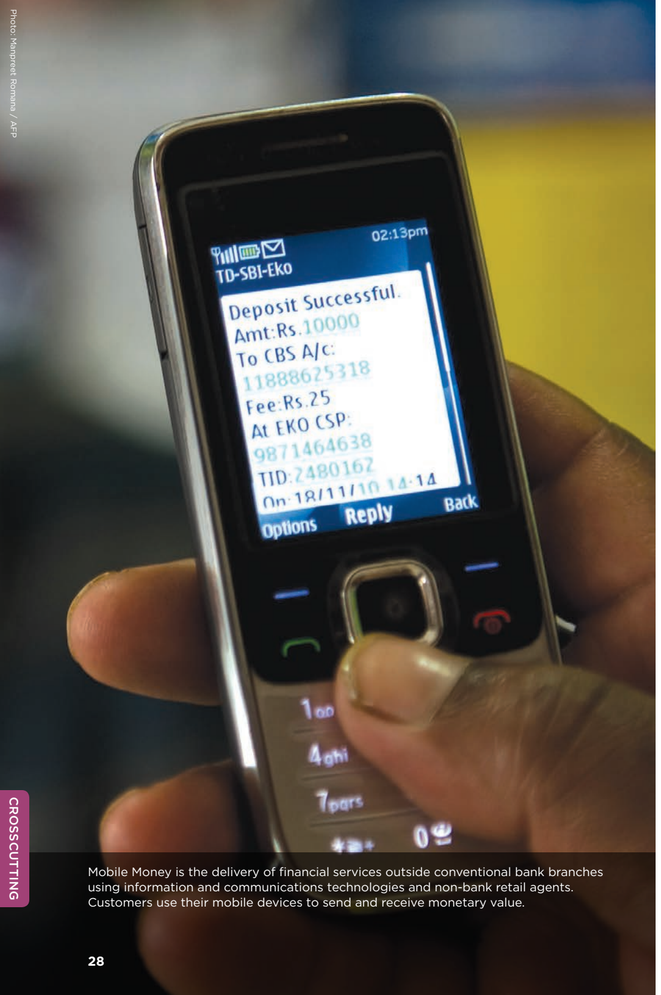

Photo: Manoreet Romana / AFP

Mobile Money is the delivery of financial services outside conventional bank branches using information and communications technologies and non-bank retail agents. Customers use their mobile devices to send and receive monetary value.

Mobile Money

- Accelerate financial inclusion.
- Increase safety of users and payees.
- Underpin good governance.
- Increase transparency.
- Unlock private sector initiatives.

Mobile Money in Action
USAID is scaling mobile money platforms through stand-alone technical assistance (TA) programs; unique partnerships including the Better than Cash and USAID-Citi Mobile Money Accelerator Alliances; and by adopting Mobile Money into the Agency's work, by promoting its use in procurements. TA programs are currently in the Philippines, Bangladesh, Indonesia, Malawi, Afghanistan, and Haiti, with more to come.

Supported by
USAID/Mobile Solutions

"If the money was inside [a bag] they could have taken it from me, but if it's on my phone you can't take from it. It is like a safe for me."

Martine Guerda Blanc
Mobile Money User

CROSSCUTTING

Almas Line of Mobile Products

Photo: Ali Al-Saadi / AFP

- Freedom to choose off-peak hours.
- Discounts on calls longer than three minutes.
- Free service to block any number from calling or texting.
- Other female-focused services.

Almas Line of Mobile Products in Action
Since the product's launch in April 2011, the proportion of Asiacell's female customers has grown from 20% to close to 40%, and about 1.8 million Iraqi women have been connected to friends and family and are becoming more socially and financially independent, thanks to their access to mobile technology.

Supported by
GSMA mWomen

Photo: STR / AFP

In early 2011, Iraqi women represented less than 20% of mobile users for mobile operator Asiacell. A member of the USAID-supported GSMA mWomen Programme Working Group through its parent the Qtel Group (now Ooredoo), Asiacell decided to completely shift its strategy and design a new offering—the Almas line—to have unique features for Iraqi women's needs.

Sahel Shake

Photo: USAID

The GSMA mWomen Design Challenge was launched to simplify the smartphone (Android) user interface to help overcome reading and technical literacy barriers to adoption. Grand prize winner "Sahel Shake" seeks to alleviate barriers to mobile phone ownership and use for women in low and middle-income markets.

- Gives women control over their phone resources.
- Provides prominent airtime and battery management widgets.
- Cost-conscious phone sharing and emergency SMS features.
- Improves usability of complex phone features (for example, through a text-to-voice, voice-to-text function).

Sahel Shake in Action
Drawing from research on interface design for low-literacy contexts, Sahel Shake aims to improve the usability of complex phone features by offering a highly visual contact management system and integrating voice and icons into SMS entry and delivery. The prominent airtime and battery management widgets give women greater control over their phone resources.

Supported by
GSMA mWomen Design Challenge

Photo: Sarah Fathallah

CROSSCUTTING

Annex - Specifications

Agriculture

The Dutyion Root Hydration System

Target Market

Countries with limited supplies of fresh water.

Current Market

Middle East

Development Stage

Pilot testing has been completed and the product will enter the market within the next two years.

Specifications

- Length: 100 meters
- Production Site: Spain

Developer Contact

Design Technology & Innovation
Mark Tonkin
dti@dtigroup.com
+44-1273-857222

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www.launch.org/innovators

MoneyMaker Pumps

Target Market

Subsistence farming families living in rural areas across Sub-Saharan Africa.

Current Market

Kenya, Tanzania, Mali, Burkina Faso, Zambia, and an additional 15 African countries through its Global Institutional Partnerships program.

Development Stage

MoneyMaker Pumps are currently on the market and new financing mechanisms to increase pump affordability are in the "Proof of Concept" stage.

Specifications

- Products: MoneyMaker Hip Pump / MoneyMaker Max
- Unit Price: $60 / $130
- Materials: Plastic and steel
- Weight: 4.5 kilograms / 17 kilograms
- Output: 1.25 acres in 6 hours / 2 acres in 6 hours
- Suction Depth: 8 meters / 8 meters
- Pressure Head: 8 meters / 16 meters
- Production Site: China

Developer Contact

KickStart International
Edward Chan-Lizardo
Chief Development and Partnership Officer
ed.chan-lizardo@kickstart.org
+1-650-704-9133

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www.usaid.gov/div/portfolio

Rapid Milk Chiller

Target Market

Rural farmers living in areas with high sun exposure.

Current Market

Rural India

Development Stage

Entering the market for the first time.

Specifications

- Unit Price: $9,000
- Capacity: 1,000 liters per day
- Production Site: Mumbai, India

Developer Contact

Promethean Spenta Technologies
info@promethean-power.com
617-512-8811

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www.launch.org/innovators

Education

Same Language Subtitling

Target Market

Countries with poor literacy and a strong film industry.

Current Market

India

Development Stage

In use since 1999 and expanding within Indian market.

Specifications

- Unit Price: $1 USD per year per 1,000 viewers
- Platform: Television or film
- Production Site: Mumbai, India

Developer Contact

PlanetRead and SLS Centre at IIM-Ahmedabad

Nirav Shah
COO, PlanetRead
nirav@planetread.org

Parthibhan Amudhan
General Manager, PlanetRead
parthibhan@planetread.org

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Grand Challenge for Development
allchildrenreading.org/innovations

MobiLiteracy

Target Market

Uganda

Current Market

Uganda

Development Stage

Pilot stage

Specifications

- Unit Price: $3 per 91 days of lessons
- MP4 for mobile phones
- Production Site: Durham, North Carolina, USA

Developer Contact

Urban Planet
Catherine Oliver Smith, JD
Chief Operating Officer
catherine@up-me.com
323-871-1646

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Grand Challenge for Development
allchildrenreading.org/innovations

SMS Data Transmission Technology System

Target Market

Schools with little or no internet access.

Current Market

The Philippines

Development Stage

The product is scheduled to be field tested in September 2013.

Specifications

- Unit Price: $0.03 per text message
- Hardware: HP Pavilion P6-2114d PC; APC BE500R-PH BACK-UPS ES, 500VA; GSM modem - iTegno 3800vvv
- Platform: Linux, PHP, MYSQL, Apache, and Gammu
- Production Site: The Philippines

Developer Contact

Education Development Center
William Potter
Senior International Technical Advisor
wpotter@edc.org
541-602-7200

Yvette Tan
Technology Advisor
ytan@edc.org
541-602-7200

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Basic e-Learning Library (BeLL) and Ghana Reads Application

Target Market

Schools in developing countries aiming to increase literacy and acquire basic quality of secondary education.

Current Market

Ghana

Development Stage

Market availability projected for January 2014.

Specifications

- Unit Price: Free, open-source software
- Platform: Raspberry Pi for BeLL; Projector, tablet, or computer for Ghana Reads App
- Production Site: Ghana

Developer Contact

Open Learning Exchange
Kofi Essien
Project Manager Ghana Reads Program, Executive Director OLE Ghana
+233 (0) 208138099
kofi.essien@ole.org

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Grand Challenge for Development
allchildrenreading.org/innovations

Total Reading Approach for Children mLearning Application

Target Market

Cambodia

Current Market

Cambodia

Development Stage

Pilot tested in 2013 and approaching market entry.

Specifications

- Unit Price: Free, open-source software
- Platform: Mobile phones and tablets
- Production Site: Cambodia

Developer Contact

World Education, Inc. in collaboration with Education Technology for Development
Jacole Douglas
Program Officer, World Education, Inc.
jdouglas@worlded.org
617-482-9485

Supported by

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Grand Challenge for Development
allchildrenreading.org/innovations

Environment

Fresh Life Toilet and Sanergy Sanitation Services

Target Market

Residents of highly populated areas with inadequate sanitation services.

Current Market

Kenya

Development Stage

Fresh Life Toilet is currently in the beta testing phase, and Sanergy is approaching completion of a 12-month pilot test with a network of 60 low-cost latrines in a Nairobi slum.

Specifications

- Unit Price: $450
- Materials: Plastic squat pan and thin-shell cement superstructure
- Measurements: 3' x 5'
- Production Site: Mukuru, Nairobi

Developer Contact

Sanergy
David Auerbach
Director of Sales
david@saner.gy
617-543-3022

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www.usaid.gov/div/portfolio

Health

Holomic Rapid Diagnostic Reader

Target Market

Low-resource mobile clinics in developing countries.

Current Market

Private biochemistry and diagnostic companies

Development Stage

The product is currently being commercialized and has been in the market since July 2012.

Specifications

- Unit Price: Available upon request
- Weight: 2 lbs
- Production Site: Los Angeles, California, USA

Inventor and Developer Contact

UCLA Biophotonics Lab (Inventor) and Holomic LLC
Aydogan Ozcan, Ph.D.
Professor, UCLA School of Engineering
ozcan@ucla.edu
310-825-0915
innovate.ee.ucla.edu

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www.launch.org/innovators
(Also by NIH, NSF, ONR, and ARO)

ePartogram

Target Market

Skilled birth attendants at all facilities managing labor and deliveries.

Current Market

Kenya and Nepal

Development Stage

Final stages of product development.

Specifications

- Unit Price: < $5 for the App, market price for the tablet
- Hardware: Tablet
- Size: 7-inch tablet

Developer Contact

Jhpiego
Cyndi Hiner
Technical Development Officer
cyndi.hiner@jhpiego.org
410-537-1898

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Grand Challenge for Development
www.savinglivesatbirth.net/innovatorshome

Prenatal Sprinkles

Target Market

Pregnant women in low- and middle-income countries with low calcium dietary intake.

Current Market

Bangladesh (clinical testing only)

Development Stage

Product is in pilot production for clinical trial use.

Specifications

- Production Site: Ontario, Canada

Developer Contact

Centre for Global Child Health, The Hospital for Sick Children; Ontario, Canada
Dr. Daniel Roth and Dr. Stanley Zlotkin
Co-Principal Investigators
daniel.roth@sickkids.ca
416-813-5795

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Grand Challenge for Development
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PharmaCheck

Target Market

Pharmaceutical quality control in low-resource areas.

Current Market

Ghana

Development Stage

Currently being prototyped.

Specifications

- Unit Price: <$2 per test
- Weight: 5–7 lbs
- Production Site: Boston, Massachusetts, USA

Developer Contact

Boston University
Muhammad Zaman
Associate Professor
Department of Biomedical Engineering
zaman@bu.edu
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Grand Challenge for Development
www.savinglivesatbirth.net/innovatorshome

Pratt Pouch

Target Market

Children born at home to HIV positive mothers in places where at-home births are common.

Current Market

Namibia, Tanzania, Ecuador, and Zambia

Development Stage

Product is in pilot production for clinical trial use.

Specifications

- Unit Price: $0.04 per pouch
- Material: Polyethylene and aluminum composite
- Size: 2" x 3"
- Production Site: China

Developer Contact

Duke University
Robert Malkin
Professor of the Practice
of Biomedical Engineering
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Pre-eclampsia Integrated Estimate of RiSk on the Move

Target Market

Community health workers in rural, low-resource settings.

Current Market

South Africa

Development Stage

The prototype is currently undergoing clinical testing.

Specifications

- Unit Price: $150
- Platform: iOS and Android
- Length: 16 mm
- Production Site: China

Developer Contact

University of British Columbia
Mark Ansermino
Research Team Director, LGTmedical
part@cw.bc.ca
604-875-2711

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Grand Challenge for Development
www.savinglivesatbirth.net/innovatorshome

Pumani Bubble CPAP

Target Market

Countries throughout Africa with low-resource hospitals.

Current Market

Malawi

Development Stage

Product is in the pilot production stage for clinical trial use.

Specifications

- Production Cost: $400
- Replacement part price: $1 per diaphragm pump every 2 years
- Weight: 14.2 lbs
- Size: 7.25" x 9.5" x 14.25"
- Power: 220 V
- Production Site: California, USA

Developer Contact

Rice University
Rebecca Richards-Kortum
Stanley C. Moore Professor and
Chair of Bioengineering Department
rkortum@rice.edu
713-348-3823

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Grand Challenge for Development
www.savinglivesatbirth.net/innovatorshome

SafeSnip

Target Market

For birthing attendants in both emerging and developed markets.

Current Market

India

Development Stage

Prototype is about to begin first round of production manufacturing.

Specifications

- Material: Lustran ABS 348 medical grade plastic
- Size: 1.03 cubic inches
- Weight: 0.4 lbs
- Production Site: USA

Developer Contact

Novate Medical Technologies, LLC.
William Strobel, CEO
bstrobel@novatemedical.com
504-909-8102

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Grand Challenge for Development
www.savinglivesatbirth.net/innovatorshome

Odón Device

Target Market

Health facilities in developed and developing countries.

Current Market

Argentina

Development Stage

Safety and feasibility testing. Prototype development stage.

Specifications

N/A

Developer Contact

World Health Organization
Dr. Ana Pilar Betran, Medical Officer
betrana@who.int

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Grand Challenge for Development
www.savinglivesatbirth.net/innovatorshome

Bioneedle

Target Market

People in need of vaccinations worldwide, especially in low-resource settings.

Current Market

N/A

Development Stage

The product is currently being prepared for clinical studies.

Specifications

- Unit Price: Comparable to syringe needle
- Length: 16 mm
- Diameter: 1 mm

Developer Contact

Bioneedle Technologies Group
www.bioneedle.com
Gijsbert van de Wijdeven, DVM, MSc
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+31 62 88 45525

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www.launch.org/innovators

CommCare

Target Market

India

Current Market

India

Development Stage

This program is currently being used by nearly 50 organizations in India, with ambitions to nationally scale the program.

Specifications

- Materials: Open-license software for use on mobile phones

Developer Contact

Dimagi
information@dimagi.com
617-649-2214

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www.usaid.gov/div/portfolio

Human Rights

MediCapt

Target Market

Worldwide, particularly conflict zones where crimes against humanity and mass atrocities (including sexual violence and torture) may occur.

Current Market

Countries where mass atrocities (including sexual violence and torture) have occurred.

Development Stage

The prototype is currently being developed.

Specifications

- Platform: Smartphone, tablet
- Production Site: Cambridge, MA

Developer Contact

Physicians for Human Rights,
Datadyne, and InformaCam
Karen Naimer
Director, Program on Sexual Violence in Conflict Zones, Physicians for Human Rights
knaimer@phrusa.org
617-301-4234

Supported by

The Tech Challenge for Atrocity Prevention
www.thetechchallenge.org/winners/capture.html

Water

Compartment Bag Test

Target Market

Populations seeking clean drinking water in low-resource settings.

Current Market

The CBT has been used extensively throughout the world and is available globally.

Development Stage

Currently available in the market.

Specifications

- Unit Price: $5-$10 per test, depending on order quantity
- Material: Clear polyethylene, nylon, E. coli growth medium and substrate, chlorine tablets
- Size (for a package of 10 CBT's): 7.5 inches by 8 inches by 4.5 inches
- Weight (for a package of 10 CBT's): 2 lbs
- Capacity: 100 mL per test
- Company Location: North Carolina, USA

Developer Contact

Aquagenx
Dr. Mark D. Sobsey
Kenan Distinguished Professor of Environmental Sciences and Engineering, UNC at Chapel Hill
Mark_Sobsey@unc.edu
919-906-2740
Website: www.aquagenx.com
Twitter: @Aquagenx
Sales: info@aquagenx.com

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Crosscutting

DataWinners

Target Market

Organizations interested in modernizing their data collection efforts in the education, public health, food security, early warning, agriculture, environment, water and sanitation, and other sectors.

Current Market

More than 1,000 organizations in more than 80 countries use DataWinners.com to collect data to improve their decision-making processes.

Development Stage

Currently available at www.datawinners.com.

Specifications

- Unit Price: $359/month with six month subscription or $299/month with a one year subscription
- Platform: SMS, smartphone, internet
- Production Site: Washington, DC, USA

Developer Contact

Human Network International
David McAfee, CEO
dmcafee@hni.org
1-240-838-9577

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Grand Challenge for Development
allchildrenreading.org/innovations

Mobile Money

Target Market

Approximately 2.37 billion adults in developing economies who do not have access to formal financial services.

Current Market

Those seeking access to safe, secure, and accessible methods of payment, including those without access to formal financial services.

Development Stage

Available in several markets. There are at least 191 live deployments of services around the world, many of which are in developing markets.

Specifications

N/A

Developer

Various

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http://www.usaid.gov/mobile-solutions

Almas Line of Mobile Products

Target Market
Iraqi women

Current Market
Iraqi women

Development Stage
In market

Specifications
N/A

Developer
Asiacell

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GSMA mWomen
www.gsma.com/mobilefordevelopment/programmes/mwomen

Sahel Shake

Target Market
Women in the developing world (particularly Sub-Saharan Africa, Middle East, and South/Southeast Asia).

Current Market
N/A

Development Stage
Prototype

Specifications
- Platform: New user interface for the Android OS

Developer
Sahel Shake, in conjunction with Ooredoo

Supported by
GSMA mWomen Design Challenge
designchallenge.mwomen.org

The Catalog: Version 1.5 (2014)

PUBLISHER

U.S. Agency for International Development
Office of Science and Technology
1300 Pennsylvania Ave, NW, Washington, DC 20523

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