Coconut

Coconut enables the efficient development of mobile data collection and management applications for a wide variety of computing devices, including smartphones, tablets, laptops, and desktop computers. Designed for today’s touchscreen mobile devices, Coconut stores data locally on the mobile device. When a network connection is available, data are synchronized automatically with any other Coconut instance. Often, this is to a cloud-hosted instance that combines data from multiple sources. Other times, devices in the field synchronize with each other to pass data to a device that will soon be on the Internet or to ensure data redundancy. Coconut applications can scale from a single mobile device to thousands of devices synchronizing with the same remote database. Updates to a Coconut application, including changes to forms and form fields, can be distributed to users automatically during synchronization. Coconut includes an easy-to-use form builder and with built-in data validation and skip logic.

Coconut includes the following major features:

- Role-based (username and password) security
- Support for mobile phones and tablet computers
- Support for multiple languages
- Integrated form designer
- Offline data collection
- Bidirectional data synchronization with local mobile devices or remote cloud-hosted instances
- Real-time reporting for monitoring and managing the data collection process
- Data sharing using massively scalable, cost-effective cloud storage or private servers
- Scaling from one mobile device to thousands
- Automatic distribution of application updates to remote mobile devices.

RTI is currently using Coconut as the basis for the following mobile applications.

U-Bridge

On December 12, 2011, Kayunga District in Uganda launched Oluntindo, a customer service that enables citizens to notify district officials of concerns with public services in health, education, or public works through

Open Source

- Coconut is licensed under the Apache License 2.0.
- This license grants other software developers the rights to copy and further modify the software.
- Coconut source code is maintained in a public repository on GitHub.
- Coconut is free; there are no software licensing fees.
Short Message Service (SMS) text messaging. Citizens can send an SMS with their location (village, clinic, or school) and problem or message to an SMS short code. This will create a “trouble ticket” that will be routed to a district health, education, or public works official. The district official will acknowledge the ticket and send updates to the citizen as the problem is resolved. Olutindo, renamed “U-Bridge,” is being updated and scaled up in Uganda.

Each district health, education, and public works official is equipped with a small 3G tablet computer and Coconut Oluntindo mobile application. This enables officials to communicate about a problem even when away from the office. District government officials use the mobile application to track and assign incoming requests, respond to citizens, and track the status of citizen requests.

**Coconut Surveillance**

Persistent efforts of the Zanzibar Malaria Elimination Program (ZaMEP) have reduced the incidence of malaria in Zanzibar to levels that suggest the disease could be eliminated through aggressive efforts to respond quickly to new cases. RTI has worked closely with ZaMEP to develop Coconut Surveillance, a mobile application that builds on the Malaria Early Epidemic Detection System (MEEDS), an innovative mobile health system used by facilities to report malaria cases via simple cell phones.

Running on tablet computers, Coconut Surveillance extends the MEEDS system by alerting district malaria officers to new case reports in their respective districts. Coconut Surveillance then guides officers through an active case detection protocol by taking them first to the reporting facility to collect additional case data, and then to the household to collect information from all household members, who are tested for the disease. Built-in Global Positioning System (GPS) features record the location of each household precisely.

Data from the malaria officer’s tablets are synchronized via the mobile network to a web-based database. The household GPS coordinates and interview questions enable program officials to monitor for localized outbreaks in real time. Automated data analysis tools also monitor for issues and alert the relevant public health worker with recommended actions. The system enables a quick and cost-effective response, which is critical for sustained elimination.

**Mobile Midwives**

The Wireless Access for Health (WAH) partnership in the Philippines has achieved remarkable progress in introducing electronic medical records (EMR) into rural health units in Tarlac Province, and is now expanding to other provinces. However, the majority of patient data are collected and managed by mobile midwives working from barangay (neighborhood) health stations. The midwives bring the data on paper to be entered into the EMR system, but the process is slow and introduces errors. Using Coconut, WAH has developed a mobile application to enable mobile midwives to collect and manage data electronically. The data are then synchronized with the EMR system of a rural health unit. Midwives are currently pilot-testing the Mobile Midwives application using Android tablet computers and smartphones in several municipalities.

**More Information**

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Coconut helps identify malaria hot spots and quickly mobilize a response.