Testsmart Project

Request for Proposals

Table of Contents

RFP for Testsmart Mobile App development

Overview of the Testsmart study

The goal of the Testsmart project is to improve antimalarial stewardship in the private retail sector, which has the largest market share of anti-malarials in sub-Saharan Africa. Specifically, we are testing a policy-relevant strategy that targets antimalarial subsidies in the retail sector to confirmed malaria cases by offering diagnosis-dependent subsidies for mRDT, Malaria Rapid Diagnostic Test (for Malaria Testing) and ACT, Artemisinin-based Combination Therapy (for malaria treatment).

The study has 2 aims. In Aim 1, we consider a scenario where a set amount of public funds is earmarked to provide subsidized malaria commodities in the private retail sector and explore how those funds should be allocated between subsidies for testing versus subsidies for treatment using an individually – randomized experiment. The goal is to identify the combination of mRDT subsidy-level and conditional ACT subsidy level that maximizes uptake of diagnostic testing. In Aim 2, we will scale-up the subsidy combination identified in Aim 1 in Kenya and Nigeria. Using a randomized controlled trial design in which we randomize shops, we will evaluate the impact of the package on a range of outcomes. We will demonstrate the impact of the subsidy package on targeting of ACTs and the cost savings associated with diagnosis-dependent subsidies in these two countries with contrasting public health policies governing malaria case management. By selecting two settings that differ in urbanization, malaria endemicity and median household income, we hope to show that this approach is not only scalable within but also across endemic countries where a significant proportion of fever cases seek care in the private sector.

Summary of Business Problem

- Access and convenience lead patients to seek care outside the public sector – where poor quality diagnostics and treatment are common. Up to 66% of fever cases seek care in the private sector, thus making the private sector a critical player in Malaria case management
- Weak systems of accountability and oversight complicate efforts to regulate and track private sector-based case management encounters
- The private sector is underrepresented in national health management information systems used for malaria surveillance, especially the retail private sector.

Purpose of the Mobile App

The primary purpose of the app is to target ACT subsidies to accurately diagnosed cases and to facilitate RDT subsidies to Private sector providers. The app will also provide a surveillance system to collect routine case management data in the private retail sector to measure disease burden and determine whether interventions are reaching the targeted populations.

This will be actualized through implementation of a mobile app that can be used on any inexpensive smartphone to enable private medicine retailers to record and report individual client case management information which can then be accessed in real-time by supervisors and program managers. An integrated image capture feature on the app will facilitate imaging of mRDT test results which allows us to monitor RDT usage, quality, and interpretation from a remote server. Routine reporting through such an app will not only help us overcome information gaps that currently exist, but can also help promote good practices, improve patient linkage to the formal health, and enhance accountability in medicine sales.

The app is integral to our intervention package in Aim 2. In addition to monitoring RDT and ACT use, it will provide the platform for implementation of the conditional ACT subsidy and all transactions with the enrolled outlets. For example, if a patient receives a positive RDT result, and subsequently purchases a WHO pre-qualified ACT, submission of this data through the app triggers a subsidy payment to the retailer via a mobile money payment system (e.g. Mpesa, Rave by Flutterwave or Paystack). The data reported through the app will be validated by customer exit interviews.

The mobile app solution has a user friendly design and the following features:

- Unique registration of client demographics
- Unique registration of Private Sector Providers demographics, including geo coordinates
- User account creation and privileges
- Form configuration function to allow for add/remove/modify data fields.
- Capture malaria case data (Malaria diagnosis : test result, mRDT photo showing result, Treatment provided, prescription, referral, Date/time of treatment)
- Malaria case Decision support through alerts on Malaria case management best practice and data validation alerts to flag incomplete data entry.
- Image upload of mRDT test results with auto focus to ensure sharp images are captured and a reject function for blurred images.
- Unique identification of each mRDT image uploaded.
- Integrated support for review of uploaded mRDT images through crowd sourcing to validate that the mRDT image is a true positive or true negative as captured in the case management data reported by the Private Sector Provider.
- Generate Malaria surveillance meta-data for reporting and automatic transmission to DHIS2.
- Generate weekly summary report (Identifier of retailer, Total patients reported, Total Tested, Total Tested Positive, Total Tested Negative, Total Tested treated with QAACT, Total mRDT Photos Uploaded, Total mRDT Photos Reviewed, Total mRDT Classification Errors, Total Calculated Reporting Incentive, Total Calculated RDT subsidy, Total Calculated QAACT subsidy)

- Generate Case validation report outlining: Reviewer id, date of review, mRDT Results classified correctly, mRDT Result falsely classified as positive, mRDT Result falsely classified as negative, unreadable mRDT Photos, matched and mismatched mRDT upload date and visit dates, unreadable dates in mRDT photo
- Payment review and authorization function
- Generate a weekly payment report outlining: Retailer ID, name and account number, Total approved payment, Week of payment, ID of authorizing administrator
- Generate weekly payment receipt outlining: Retailer ID, name and account number, Total approved payment amount, Total amount paid, Date/time payment sent, Date/time payment received
- Payment notification for retailers.
- Encryption and decryption feature for data transmission outside the app
- The mobile app should easily integrate with mobile payment platforms in Kenya and Nigeria e.g. Mpesa, Paystack, Rave by Flutterwave to facilitate payments to Private Sector Providers, PSPs.

** Refer to the annex for a detailed requirements document.

Integration

The mobile application should integrate with the following platforms:

1. DHIS2.
2. Mobile payment platforms in Kenya and Nigeria e.g. Mpesa, Paystack, Rave by Flutterwave.
3. A Crowd sourcing platform that will be used for image validation.

Note: The project scope includes server setup and configuration required to integrate the Testsmart server with the above 3rd party platforms and only pass subsets of data to the 3rd party platforms to facilitate Mobile payment and Image validation.

Platform

1. Android
2. Web
3. Windows *
4. IOS *

** Note: In the response, please list cost for IOS and Windows platform separately.

Stakeholders

1. NMCP?
2. Mobile payment partners
3. Private sector providers

Target Mobile App Timeline

The Testsmart App must be completed and ready for rollout by 1st October 2019.

Decision Criteria

1. Proposed Solution and timelines for delivery
2. Helpdesk support
3. Budget
4. Past experience (published application examples only)
5. References
6. Availability to provide on - ground support

RFP Submission and Awarding Timeline

- April 18th 2019 - Initial RFP Announcement
- April 29th 2019 - Final day to submit questions on RFP
- May 10th 2019 - Final day to submit RFP Response
- May 13th 2019 – Evaluation of Responses and interview invitation
- May 17th 2019 – Interview for Top 5 proposals carried out
- May 20th 2019 - Final selection announced.
- June 10th 2019 - Project Start with Kick off
- Oct 7th 2019 – Digital solution Go live

Responses and questions should be submitted in pdf file format to the following email address: modhiambo@clintonhealthaccess.org and CC. tvisser@clintonHealthAccess.org

Part B: Vendor Profile (To be completed by Vendor)

Company Background

How did your company start, who makes up the team, and what is the team's background?

What is the mission of the company?

Portfolio

Please summarize your company's top mobile projects, what problems were they solving?

Provide a link to projects that are publicly available or test instances to the developed solutions.

Design Capabilities

How many full time employees make up the design team? Part time? Subcontractors?

What design tools are they familiar with and use regularly?

Where will these team members be located? Do any employees work remotely?

Are the designers and developers in the same office?

Is there a specific business analyst will oversee and be the direct liaison with the Testsmart team for requirements gathering and product design progress updates? What are his/her qualifications?

Please discuss the design team, make sure to only include team members that will be assigned to the Testsmart mobile app project.

Please include at least one example of where a mobile app design differentiates between a phone and tablet version of an app?

Please include at least one example of where a mobile app design substantially differentiates mobile experiences among iOS, Android, and Windows?

Development Capabilities

How many full time team members will be involved in the Development? Part time? Subcontractors?

Where will these team members be located? Do any employees work remotely?

Is there a specific product manager will oversee and be the direct liaison with the Testsmart team for the development progress updates? What are his/her qualifications?

Please discuss the development team that will be specifically assigned to the Testsmart app project.

What operating systems and development tools are they familiar with and use regularly? What backend/DevOps capabilities do you have? What languages/frameworks do you use?

What approaches does your company use to ensure high quality software, free of malicious code?

QA Process

How many full time team members will be involved in the QA process? Part time? Subcontractors?

Where will these team members be located? Do any employees work remotely?

Is there a specific Quality Assurance manager will oversee and be the direct liaison with the Testsmart team for the testing progress updates? What are his/her qualifications?

Please summarize a typical QA process from start to finish.

Mobile App Platform

Which platform will the Testsmart App be developed on?

Will it have a web version that can be accessed on a mobile device?

Will there be additional costs in making the Testsmart App compatible with IOS and Windows platforms?

Project Approach

Please summarize your company's approach to the project.

Which areas of the project do you foresee will have major variables/risks that will drive success/failure? How can those risks best be managed by the Testsmart project and through the product development side?

Please summarize the typical Digital solution design and development process from start to finish, including the deliverables you will provide along the way.

What will drive user adoption and use?

Project Timeline & Budgets

Please provide a detailed project timeline including estimated start dates, schedule of activities, deliverables and resources to be used.

Provide detailed roadmap illustrating timelines and features to be included in each release.

Please provide an estimated price based on the scope of the project. Please include a fee breakdown in relation to time, scope, and weekly team costs.

Please include an approach to ongoing updates and optimizations.

What update frequency would you suggest?

How will updates be handled?

How will emergency fixes be addressed?

Project scope

Please highlight any concerns or comments about the supplied project scope in relation to the proposed timeline, budget, and project risks.

Measuring, Monitoring and Ongoing App Improvement

How will the mobile app's analytical information be monitored/measured for success and ongoing improvements? What metrics will/should be measured?

What tools would be used to monitor and capture analytical information and measure important mobile app statistics?

Please give two examples of similar projects where the mobile app's analytical and statistical information was captured and used to improve the mobile apps functionality.

Project Concept & Recommendations:

What is most appealing about Testsmart's mobile app concept?

What areas of the mobile app concept invoke concern?

How should these concerns be addressed?

Discuss recommendations for future enhancements that should be made to the Testsmart mobile app should it be scaled up to more PSPs, and why the enhancements should be considered?

Experience in mobile Application development

Please describe at least three mobile applications that your company has designed and developed that include substantially similar functionality to this project.

Describe the problem, the approach taken, and the outcome for each application, stating the major functionality of each project and key features of each app.

Please provide samples/links of previous work for each major functionality of the projects. If such examples do not exist, please explain how your company's plans to develop such major functionality.

Maintenance/Support Plan

Please describe the support structure you intend to offer for this project.

Do you have a helpdesk?

References

Please provide three references of similar digital solutions projects.

Specify the platform used, the sector the solution was developed for e.g. Health sector, private or government e.tc and which setting the solution was implemented in e.g. low resource settings.

These references will be contacted and interviewed about the project you have worked on.

Annex

Business Requirements Document

TESTsmART

1 Introduction

Each year, approximately half of the more than 200 million cases of malaria, and hundreds of millions of cases of non-malaria febrile illness, seek care in the informal or retail health sector. In the mid-2000's, publicly-funded, retail-sector artemisinin-combination therapy (ACT) subsidies were adopted in many malaria-endemic countries, which reduced the retail price of ACTs by as much as 10-fold and have made life-saving, first-line antimalarials available and affordable for the most vulnerable and economically disadvantaged.

Declining prices of ACTs however has increased inappropriate use of ACTs by those without malaria; it is estimated that at least two thirds of ACTs purchased over-the-counter are consumed by individuals without malaria. Inappropriate use leads to wastage of public funds and prime conditions for the spread of drug resistant parasites. As a result, several countries are currently planning to end those subsidies given the high cost and many competing priorities for available funds.

Targeting subsidized ACTs to individuals with parasitologically-confirmed malaria (e.g. with a positive RDT) would be expected to significantly contribute to the sustainability and cost-effectiveness of retail subsidies as well as safeguard the future efficacy of these key drugs. This study proposes an innovative approach that links the ACT subsidy to the results of a diagnostic test (a conditional subsidy), allowing the subsidy to be targeted to only parasitologically-confirmed cases. Undiagnosed and test-negative clients would pay a higher, unsubsidized price while test-positive clients would have access to a discounted ACT. This price differential makes information from a test more valuable and could drive appropriate consumption while reducing costs.

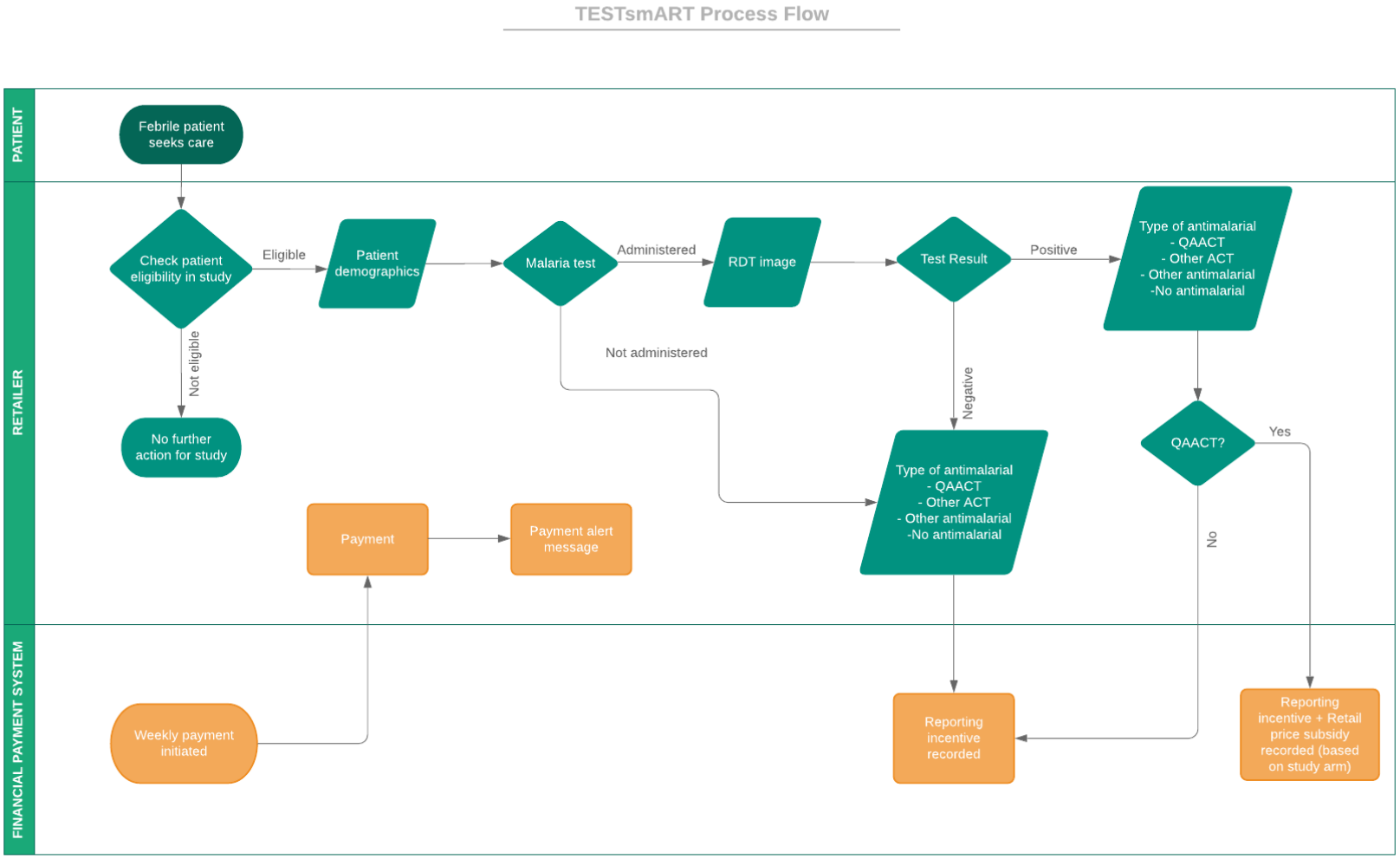
The study will be conducted in Lagos, Nigeria and in western Kenya, two countries where the retail sector is an important source of malaria treatment.

2 Scope

To facilitate the targeting of ACT subsidies to only parasitologically-confirmed cases, this study proposes the use of a mobile sales reporting application, for private medicine retailers to record and report individual client case management information. Data on the result (positive or negative for malaria) of a quality assured malaria rapid diagnostic test (RDT) for each client would determine whether the retailer is eligible for a subsidy. The mobile reporting application would be linked to a financial payment system, to facilitate the periodic payment of subsidies to retailers based on the data submitted.

Routine reporting through such an app will not only help us overcome information gaps that currently exist, but can also help promote good case management practices, incentivizing providers to perform an RDT and upon a positive result, prescribe a quality assured ACT. To promote accountability in medicine sales and validate assumptions around ACT subsidies, the reporting platform would also present simple analytics of the reported data in the form of dashboards and reports.

2.1 Process Flow



2.2 Users and Responsibilities

User	Objectives and Responsibilities	Technology Access Required
Private providers	- Report data for patients seen - Receive subsidy for reporting/performing the test/dispensing ACT for parasitologically-confirmed cases - Receive alerts on data reported, and payment received	- Data collection application - Incoming financial payment (mobile payment or bank account) - View dashboards - Receive alerts

Study administrators	- Review incoming data
	- Monitor RDT images for accuracy
	- Monitor incoming data for outliers and trends, to follow up with and supervise providers
	- Monitor outgoing subsidies
	- Edit questionnaire and analyses
		- Data collection system
		  ○ Download data
		  ○ Edit questionnaires
		  ○ Monitor RDT images and document findings in database
		- Payment system
		  ○ Calculate amount of subsidy
		  ○ Monitor outgoing payments
		  ○ Approve payments
		- View dashboards
		- Edit dashboards
		- Receive alerts

Bank/Mobile payment provider	- Provide payment to private providers based on the reported data, in a timely manner	- API integration to exchange information between the Testsmart App and the mobile payment platforms

3 Requirements

3.1 Functional Requirements

3.1.1 Data Collection Requirements

The reporting platform must include a mobile application that allows for the collection of data.

ID	Title	Description	Priority
1.1.	Data entry form	The mobile application will include a data entry form with the following fields: • RDT test: yes/no • RDT test result: positive/negative/invalid (prompt test again) • RDT test result: image • Antimalarial: (brand options for each country, with option to enter other brand as text)	Must have – High priority

		The full form, along with data validation requirements and skip logic, is attached in Annex below.	
	User Interface	The data entry form must be straightforward to edit. It must be possible to add, edit, or remove questions at a later stage.	Must have – High Priority
	Form editing after upload	In case there is need to edit an uploaded form, the uploaded data must be pulled back to the app for editing. Adequate permissions and privileges must be enabled for this process.	Must have – High Priority
	Auto sync with Testsmart server	Data entered through the form must be pushed to Testsmart server once entry is completed. Partial upload to the server (in a staging table) should also be provided for to cater for App or device crashes and to allow for portability to another device during data collection	Must have – High Priority
	Offline data entry Mode	The mobile application must allow for the collection of data offline, and subsequent syncing of data once the smartphone or tablet has connectivity	Must have – High priority
	Legacy data	Previously uploaded data must be retained in the system in the format and field names with which they were collected, following any changes/updates to the form.	Must have – High Priority

1.2.	Skip logic	The data entry form must allow for question skip logic, i.e. displaying specific questions only if responses to previous questions are relevant. Some examples of skip logic required on the form are: • Inclusion criteria for patients: a set of initial questions will determine whether a patient is eligible for the subsidy and study. The data entry form will end if a patient is ineligible. The full form, along with data validation requirements and skip logic, is attached in Annex below	Must have – High priority
1.3.	Data validation logic	The data entry form must include data validation logic on applicable data entry fields. Some examples of data validations required are: • Responses to question on whether an RDT test was administered can only be Yes or No; to question on RDT test result can only be positive, negative, or invalid; and to question on antimalarial dispensed can only be the list of brand options for that country. • Patient's phone number must conform to the formats for mobile and landline phone numbers in Kenya and Nigeria • Form fields can be marked as required (retailer must respond before proceeding to next question) or not-required (question can be skipped). For instance, patient phone number will be a non-required field. The full form, along with data validation requirements and skip logic, is in Annex below.	Must have – High Priority
1.4.	Image Capture	The data entry form must allow the user to submit an image as part of the form	Must have – High Priority
1.4.1.	Image quality	The application must auto-focus on the item of interest (a Rapid Diagnostic Test) to ensure images submitted by the user are not blurry	Nice to have – Medium priority

		The application must force the user to take an image of the RDT within a specified box, to ensure the image is focused and shows sufficient detail	Must have – High Priority
		The application must reject blurry images and require the user to re-take an image	Nice to have – low priority
1.5.	Quality assurance	The reporting platform must allow study administrators to select and review a sample of the uploaded images for quality assurance (to ensure the test result in the RDT image matches the test result specified in the reporting app)	Must have – High Priority
	Image Selection for review	The reporting platform must automatically select a sample of the uploaded images for study administrators to review	Nice to have – low priority
	Image upload	(Task Rabbit Functionality): The system should automatically send the selected sample of uploaded images for a group of crowd-source platforms to validate	Nice to have – Medium priority
	Image validation	The reporting platform must automatically check RDT images and determine whether the test is positive or negative	Nice to have – low priority
1.6.	Integration	One database for both Kenya and Nigeria data should be created as a separate instance of DHIS2 (separate from national DHIS2). This will facilitate integration of study data with national malaria surveillance system later.	Must Have – High Priority
		Where direct data sync and API-based integration is not possible, the reporting platform must allow for a manual export of data in a format that can be imported by the country's malaria surveillance system (e.g. DHIS2)	Must have – High Priority

3.1.2 Financial Payment Requirements

ID	Title	Description	Priority
2.1.	Payment platform integration	The reporting platform must link to a digital payment platform to facilitate payments to users in Kenya and Nigeria (retailers) e.g. mpesa, flutterwave	Must have – High Priority
	Payment report	The reporting platform must generate a transaction file with the following details every week: • Name of each provider • Account number of each provider • Amount to be paid to each provider	Must have – High Priority
	Payment instruction	The reporting platform must automatically send the transaction file to the digital payment system	Must have – High Priority
	Payment approval	Study administrator must approve transactions before they are sent to the payment platform	Must have – High Priority
2.2.	Payment amount algorithm	The reporting platform must automatically generate the amount to be paid for each provider per week, based on the following algorithm: • We expect this to be a simple formula with basic operators: [x*(# RDTs) + y*(# positives that got ACTs)]. Coefficients "x" and 'y" will be based on a percentage of the median retail prices for RDTs and ACTs—we still need to calculate/decide on those values	Must have – High Priority
	Payment configuration	Administrators must be able to update the algorithm	Nice to have – medium priority

3.1.3 Dashboard, Analysis, and Alerts Requirements

ID	Title	Description	Priority
3.1.	Analysis types	The reporting platform (or separate analysis/dashboard platform) must allow for the basic analysis of the case management data • The platform must allow for basic cross-tables, bar charts, stacked bar charts, pie charts, line charts, and multiple line charts • Allow for export of raw data for further analysis	Must have – High Priority
3.2.	Dashboards	The platform must present a dashboard for study administrators with the following indicators: Patients screened, number eligible, tests performed, number positive/negative, number took ACT by shop etc. The full list of indicators and visuals to be displayed for study administrators is attached in Annex below.	Must have – High Priority
	PSP report	The platform must present a dashboard within the mobile app for retail providers with the following summary indicators on demand (not chart or graph capabilities necessary; lists are fine):	Nice to have - Medium priority

		• # Reports sent • # tests performed • # positive tests • # positives that purchased ACTs • Amount of money earned from incentives Ideal for shop keepers to be able to view all stats above for 1) last day; 2) past week; 3) past month; 4) since study start	
	Dashboard configuration	The platform must allow users to edit their dashboards, to remove or add additional analyses	Nice to have – low priority
3.3.	Reports	The platform must produce periodic reports with pre-configured basic analyses, sent by email to different user types	Nice to have – low priority
3.4.	Alerts	The platform must allow administrators to send SMS messages to retailers on a weekly basis, with the following details: • # Reports sent • # tests performed • # positive tests • # positives that purchased ACTs • # accurate RDT test results - validated • Amount of money earned from incentives This is the minimum for information provided to shopkeepers (not on-demand). The option for an on-demand dashboard option within the app (described above in 3.2)	Must have – High Priority
	SMS Notification	The platform should allow administrators to send SMS messages to patients after their visit, with the following details: - Reminder on dosage instructions - Follow up visit date if any - Referral information if any	Nice to have – low priority
	SMS Configuration	The platform must allow administrators to configure message content, frequency, and recipient of SMS messages	Must have – High Priority

3.1.4 Database Functionality

ID	Title	Description	Priority

4.1.	Connection to Appropriate Master List Data Sources	The system shall be connected to existing master list tables for organizational information including:
		• Retail providers
		• Administrative organization units
		  ○ In Nigeria, this would include LGAs and wards
		  ○ In Kenya, this would include counties and sub counties
			Must have – High Priority

4.2.	User Management	1.Allow administrators to create users for each user role (specified in section 2), with the following information • Name • Phone number • Role/Designation 2.User accounts Different types of users have different access to the database - Providers are able to submit data and view summaries of their submitted data and associated data (e.g. aggregate numbers of cases reported, payments approved, payments dispersed) - Study coordinators are able to submit and view data. - Administrators are able to add, edit, and delete data.	Must have – High Priority
4.3	System administration	Allow administrators to view, edit, delete users	Must have – High Priority

3.1.5 User Interfaces and Usability

ID	Title	Description	Priority
5.1	Decision support	The system (including and especially the mobile app) will include sufficiently descriptive error messages and warnings where needed to provide adequate guidance to the user	Must have – High Priority
5.2	Usability	The mobile app shall be compatible with tablet and smartphone devices.	Must have – High Priority
5.3	Usability	Forms, font and images must render well both on app and web platform	Must have – High Priority
5.4	Help	An offline User guide must be accessible within the digital solution	Must have – High Priority

3.1.6 User Analytics

ID	Title	Description	Priority
6.1	Reports	The system will include indicators to track usage of the system by each type of user. These indicators will be defined during the development process.	Must have – High Priority

6.2	Reports	Crash report outlining which functions the user was performing prior to crash to guide end user training	Nice to have

3.2 Non-Functional Requirements

These are requirements for performance, maintenance, etc.

ID	Title	Description	Priority
3.2.1	Cleaner	The app shall delete images after 30 days	Nice to have – medium priority
3.2.2	Auto backup	The system shall include daily data backup	Must have – High Priority
3.2.3	Data archiving	The system will archive data after 6 months.	Nice to have
3.2.4	Response time	The system shall have a response time of up to 1 minute, with a progress bar and a crash alert for incomplete tasks	Must have – High Priority
3.2.5	Performance	The system shall maintain its performance up to a peak level of at least 5 users	Nice to have
3.2.6	Data security	Encryption and decryption of messages being exchanged between platforms. Personally identifiable data must not be stored in plain text on user device.	Must have – High Priority
3.2.7	Regulations	Auditing information, regulations – The digital solution must conform to Health information Regulations, policies and guidelines in Kenya, Nigeria and the US.	Must have – High Priority
3.2.8	Legacy data migration	Legacy data migration – the app should allow for legacy data entry	Must have – High Priority
3.2.9	Disaster recovery	Disaster recovery plan and step by step process – should be accessible on test smart site.	Must have – High Priority

Annex: Test Smart Case Report

Field	Question	Answer	
entry	Did the client: Select all that apply	1	Request Antimalarial
		2	Request Malaria Test
		3	Describe malaria-like symptoms
Patient_age (required)	What is the patient's age, in years? Please enter a value between 1 and 100 for the patient's age, even if the patient is not present. If age unknown or client does not wish to provide age, please enter your best guess. Response constrained to: (.>=0 and .<=7) or (.=97 or .=98)		
Test_yn (required)	Have you given the patient a malaria diagnostic test?	1	Yes
		0	No

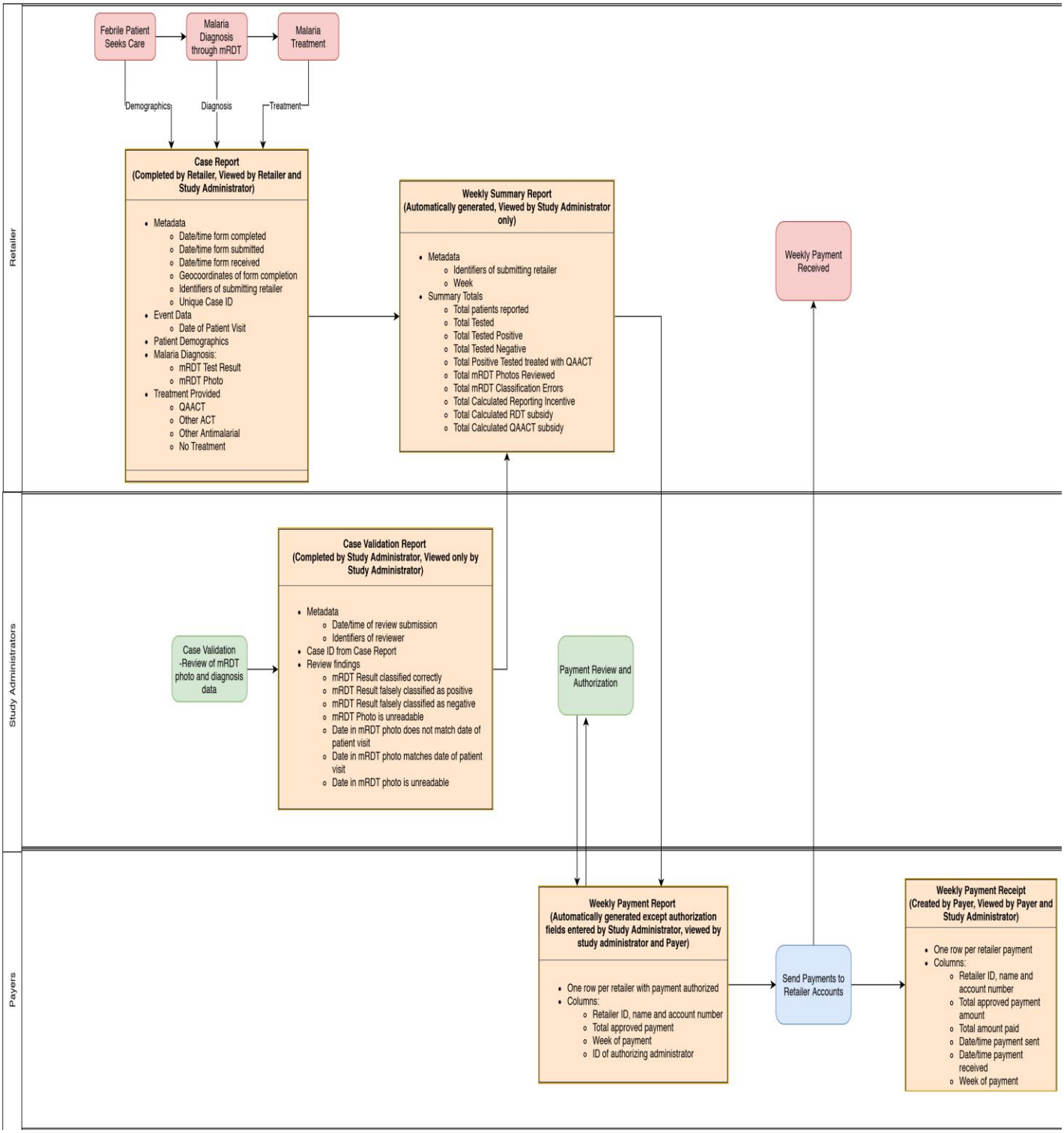
RDT_image (required)	Write down the date and time on the front of the test. Now, please take a clear photo of the test immediately after test result is read. Question relevant when: selected(${Test_yn} , '1')		
Test_result (required)	What was the result of the test? Question relevant when: selected(${Test_yn} , '1')	0	Negative
		1	Positive
		999	Invalid
Test2_yn (required)	Have you repeated the malaria diagnostic test after the invalid result? Question relevant when: selected(${Test_result} , '999')	1	Yes
		0	No
RDT2_image (required)	Write down the date and time on the front of the second test. Now, please take a clear photo of the test immediately after test result is read. Question relevant when: selected(${Test_result} , '999') and selected(${Test2_yn} ,'1')		
Test2_result (required)	What was the result of the second test? Question relevant when: selected(${Test_result} , '999') and selected(${Test2_yn} ,'1')	0	Negative
		1	Positive
		999	Invalid
Test3_yn (required)	Have you repeated the malaria diagnostic test after the second invalid result? Question relevant when: (selected(${Test2_result} , '999'))	1	Yes
		0	No
RDT3_image (required)	Write down the date and time on the front of the third test. Now, please take a clear photo of the test immediately after test result is read. Question relevant when: (selected(${Test2_result} , '999')) and (selected(${Test3_yn} , '1'))		
Test3_result (required)	What was the result of the third test? Question relevant when: (selected(${Test2_result} , '999')) and (selected(${Test3_yn} , '1'))	0	Negative
		1	Positive
		999	Invalid
Why_refused (required)	Please select the primary reason why the patient was not tested If there were multiple reasons, select the most important Question relevant when: (selected(${Test_yn} , '0'))	1	RDTs out of stock at shop today
		2	Client is purchasing treatment for someone else
		3	Client or patient doesn't trust/believe RDTs
		4	Client or patient cannot afford an RDT
		5	Client or patient doesn't believe they have malaria
		6	Patient doesn't have malaria-like symptoms

		7	Staff member trained to do RDTs unavailable
		8	Patient was referred (severe disease)
		9	Patient has a prescription for antimalarial
		10	Patient has proof of another malaria test (record shown)
		11	Patient says they have already had another malaria test (no record shown)
		12	Patient does not have time to be tested now
antimalarial (required)	Have you given the client an antimalarial?	1	Yes
		0	No
antimalarial_type (required)	Which antimalarial have you given to the client? Select all that apply Question relevant when: (selected(${antimalarial} , '1'))	1	Coartem
		2	ACT with Green Leaf Logo
		3	Other ACT
		4	Other antimalarial
antimalarial_price (required)	How much did the patient pay for their antimalarial(s)? Enter the total paid for the antimalarial drugs purchased today, not including other types of medication. Question relevant when: (selected(${antimalarial} , '1')) Response constrained to: (.>=0)		

Field	Question	Answer	
Other_tx (required)	What non-antimalarial treatment did the patient receive? Select all that apply	1	Antibiotic (including flagyl/metronidazole)
		2	Antipyretic/NSAID
		3	Anti-histamine or cold/cough medicine
		4	Other
		5	No non-antimalarial treatment
Phone	What is the client's phone number? Please enter a 9-digit number with no spaces or commas. For instance 777889999.		
note1	Thank you for reporting! Please submit your form on the next screen.		

	Question relevant when: (selected(${Test_yn} , '0'))	
note2	Thank you for reporting and testing with an RDT! Please submit your form on the next screen. Question relevant when: (selected(${Test_yn} ,'1')) and (selected(${antimalarial_type} ,'4'))	
note3	Thank you for reporting, testing with an RDT and providing a quality assured ACT! Please submit your form on the next screen. Question relevant when: (selected(${Test_yn} ,'1')) and ((selected(${antimalarial_type} ,'1')) or (selected(${antimalarial_type} ,'2')) or (selected(${antimalarial_type} ,'3')))	

Annex: Testsmart Data Flow Diagram



Abbreviations:

1. PSPs- Private sector Providers
2. mRDT- Malaria Rapid Deterministic Test
3. ACT – Artemisinin Combined Treatment