



Proposal to Digital Square

Notice E0: Shelf Readiness

“Improving the Automated Testing, Interoperability, and Privacy of the Open Smart Register Platform (OpenSRP)”

Bidder Information

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Date submitted	23 July 2020

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Two-Sentence Overview

The goal of this project is to improve the automated testing, interoperability, and privacy of the Open Smart Register Platform (OpenSRP) as a point-of-service application in alignment with the OpenHIE architecture. We propose a series of individual work packages that will improve test automation, support mobile Care Services Discovery (mCSD), and mask personally identifiable information.

High-Level Budget Summary

Work Package 1 Improving QA by Adding an automated testing framework and improving modular test coverage to 80%.	Work Package 2 Establishing OpenHIE interoperability by improving mobile Care Services Discovery (mCSD) support.	Work Package 3: Add Personally Identifiable Information masking across all OpenSRP APIs.	Total Cost (USD)
\$10,175.00	\$20,963.50	\$15,462.50	\$46,600.00

Executive Summary

The Open Smart Register Platform (OpenSRP) was recognized as a global good in 2018 and has progressively improved in maturity through support of consortium members, implementing partners, and donors. OpenSRP is a person-centered digital register and point-of-care software system for frontline workers that offers a suite of customizable features for countries wanting to digitize their legacy paper registers, which complements and integrates with common national-level digital systems (HMIS, EMR, LMIS). A committed collective of technology, research, and implementation partners have evolved the software to a point of maturity characterized by multiple national deployments, high performing technology at scale, and emerging documentation around specific use cases for RMNCAH, TB, HIV, Malaria and Early Childhood Development. OpenSRP is seeking investment to improve the shelf readiness as a feature-rich service used by health workers at the point-of-service so it can be more easily deployed and supported in our current and future deployments. Funding would help OpenSRP overcome identified constraints associated with more broad adoption and interoperability aligned with the OpenHIE architecture.

We propose three work packages which can be independently funded:

Work Package 1: Improving QA by adding an automated testing framework and improving modular test coverage to 80%.

Work Package 2: Establishing OpenHIE interoperability by improving mobile Care Services Discovery (mCSD) support.

Work Package 3: Add Personally Identifiable Information (PII) masking across all OpenSRP APIs.

Consortium Team

Ona is a technical social enterprise focused on global health and data solutions, based in the United States & Nairobi, Kenya. The company was founded in late 2013 by 3 Americans and a Kenyan. All of our founders are still employed and fulfill leadership roles in the organisation, 7 years later.

Ona has a flat organisational structure. The company is led by a leadership team that consists of the 4 founders and 3 additional members. This team consists of 5 males and 2 females. The work of the

organisation is supported cross-functionally by an operations team, that includes HR, finance, and operations experts. We also have 2 core functional teams: Data Solutions and Global Health. These teams are led by our middle management layer. Both of these functional teams have mini-teams of people specialising in either global health or data solutions, but they may comprise roles such as data science, analytics, software engineering, design and project/program management.

Our team consists of approximately 70 full time staff - 60 of whom are based in our Nairobi, Kenya head office. About 10 members of the team work remotely from different locations in the USA and South Africa. Our team has vast work experience in terms of the past work experience in other geographies. Collectively the team at Ona has lived and worked in over 50 countries globally.

Ona has extensive experience designing, developing and implementing health information systems that are used at national scale and integrate with existing government health information systems and open standards. Ona has developed numerous open source standard tools and libraries in the space that are used by mobile teams to add functionality to their existing technologies. Ona serves as the technical lead for global goods product, [OpenSRP](#), having co-created the platform with the World Health Organization and various partners between 2014 and 2018 in the THRIVE Consortium study that ran in India, Bangladesh and Indonesia.

Ona's key team members working on this proposed project include our OpenSRP engineering leads Martin Ndegwa and Samuel Githengi who each have years of experience developing OpenSRP. The project will be led by our technical project manager Hildah Ngondoki and advised by our health technical lead Craig Appl.. This team combined has decades of experience in implementing platforms at scale across a wide range of industries including telecommunications, banking, and health. We lead a team of 20 OpenSRP engineers as well as the global OpenSRP Technical community. All software development will take place in our Kenyan office in Nairobi with support from US and South Africa based team members.

Background or Problem Statement

The Open Smart Register Platform, OpenSRP, is a mobile-first platform, built to enable data-driven decision making at all levels of the health system. It is a digital global good that was designed to address the problem with existing technology solutions that are fragmented, unscalable, functionally limited, and are not interoperable with national-level information systems. It connects frontline health workers with their constituencies and the health system at large. It supports the health worker in doing point-of-care prioritization of tasks, tracking service delivery and greatly simplifies reporting from the field. Once installed on an android device using a data connection, the tool can work completely offline to accommodate low bandwidth constraints - in even the most remote locations on earth.

OpenSRP is deployed at scale across multiple countries and covering a broad range of health challenges. Beyond immunization (one of the first use cases of the app), OpenSRP is currently deployed and live in 6 countries with different donors, implementing partners and stakeholders. Another 9 country programs are in progress or planned for roll-out by the end of 2020. The longest-running deployments to date are in Pakistan, Bangladesh, Indonesia, and Zambia, where the tool enjoys great buy-in from Ministries of Health and local implementing partners.

The goal of this proposed project is to **improve the shelf readiness of OpenSRP by improving the quality assurance and testing, interoperability, and privacy as a point-of-service application in alignment with the OpenHIE architecture.** We propose a series of individual work packages that will improve test automation, integration with health worker - and facility registries, and mask personally identifiable information. These work packages will allow implementing partners to ensure a higher level of platform resiliency and interoperability in current and future deployments.

Digital Health Technologies Overview

OpenSRP has three core technical components, the native Android client, Java server, and a data warehouse. We propose to develop on all three components for each of these independent work packages. We intend to improve unit -, functional -, and integration tests in the Android client and Java server, improve the REST Application Programming Interfaces (API) in the Java server, and improve the Extract, Transform, Load (ETL) process that moves data from the OpenSRP server to the data warehouse so we can protect personally identifiable information.

The target of this proposal is to define three distinct work packages that could be independently funded by Digital Square. We have restructured the standard template into three distinct sections for ease of comparison.

Work Package 1: Improving QA by Adding an automated testing framework and improving modular test coverage to 80%

Work Package #1: Digital Health Technologies

OpenSRP is a modular platform that allows implementing partners to select and deselect features that they wish to deploy in their context. More than a dozen modules are available across the OpenSRP server, Android client, and web interface. The target of this work package is to implement a unified automated QA and testing framework across these multiple technical components so that we can build standardized unit, functional, and integration tests.

OpenSRP's Continuous Integration/Continuous Deployment (CI/CD) process includes automated testing of all modules that are compiled and deployed using Travis CI. Additionally, each repository is linked to coveralls.io, which analyzes test coverage across each module across the platform. Finally, we utilize popular test libraries in Java and our Android development environments.

Work Package #1: Use Cases and User Stories

This work package will systematically improve all testing across the platform by increasing test coverage, automating many manual steps, and systematically improving the quality assurance process for all implementing organizations. Ultimately, this will enable Ona and our technical collaborators to deliver a better product across the globe and set us up to maintain that quality for the future. Technically, we will need to adjust our human and user acceptance testing workflows that are performed by our Quality Assurance team and ministries implementing OpenSRP.

Work Package #1: Objectives and Activities

Improved test coverage is critical to ensure that the platform functions in production environments. However, our test coverage across the platform is between 0% and 85%. With this funding we will formalize and implement the testing framework and improve test coverage across the platform with a target of reaching 80% as measured on our Coveralls test coverage platform.

Objective 1.1: Add an automated testing framework and improve modular test coverage to 80%

- *Activity 1.1.1: Adding the automated test framework to the Android client, data warehouse, and server libraries*
- *Activity 1.1.2: Updating test coverage across 12 modules to reach 80%*

Work Package #1: Schedule

The following is a high-level work plan.

Activity	Team	Month				
		M	M	M	M	
	Location	Month	1	2	3	4
Activity 1.1.1: Adding the automated test framework to the Android client, data warehouse, and server libraries	Kenya		x			
Activity 1.1.2: Updating test coverage across 12 modules to reach 80%	Kenya		x	x	x	x

Work Package #1: Deliverables

Deliverable	Month
Activity 1.1.1: Demonstration of automated test framework across the platform and link to GitHub code	1
Activity 1.1.2: Report of test coverage progression from start to end of project.	4

Work Package 2: Establishing OpenHIE interoperability by improving mobile Care Services Discovery (mCSD) support.

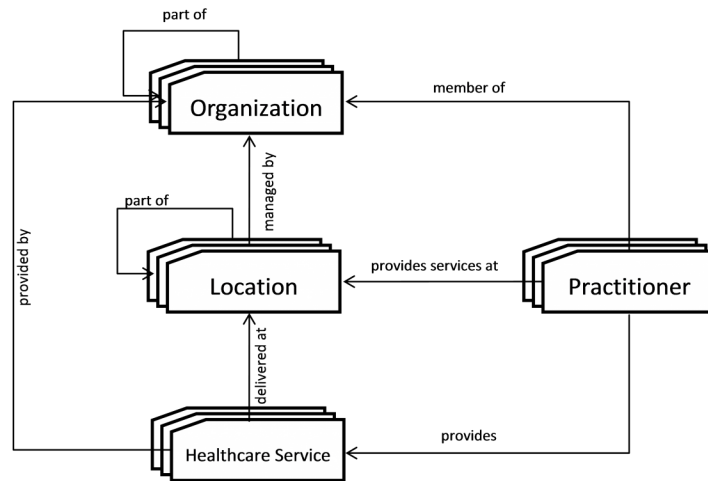
Work Package #2: Digital Health Technologies

OpenSRP supports FHIR Organizations, Locations, Practitioners, and PractitionerRoles modeled off of the mCSD profile. We use these data elements to manage where work is being performed and linking teams to the appropriate information. We believe these data elements are foundational for information exchange. This work package focuses on improving the OpenSRP REST API for Locations, Organizations, Practitioners, and PractitionerRoles so that we fully support the FHIR API patterns for searching, creating and updating each resource in accordance with the IHE supplement. Additionally, we will add support for HealthcareService, OperationOutcome and Bundle in order to achieve full compliance. Ultimately, this will allow OpenSRP to pull in master lists from OpenHIE infrastructure systems that manage locations and the health workforce.

Work Package #2: Use Cases and User Stories

The [mobile Care Services Discovery profile](#) by the Integrating the Health Enterprise (IHE) organization defines a process for standardizing and accessing information about health care provided within a

geographic area. The standard defines the locations, healthcare services provided, practitioners responsible for providing care, and organizations who are responsible for managing the locations and practitioners. mCSD defines specific domain objects and workflows that must be supported. Implementation of this standard allows OpenSRP to interact with a health worker registry and facility registry in order to standardize information exchange across the geographic area.



Our team has implemented GET and POST API endpoints that conform to the mCSD standards for organizations, locations and practitioners. We have also implemented practitionerRoles. However, we have not fully implemented the other endpoints that are required by the IHE profile for these endpoints, nor implemented the Healthcare Service endpoints.

Work Package #2: Objectives and Activities

Objective 2.1: Establishing OpenHIE interoperability by improving mobile Care Services Discovery (mCSD) support.

- *Activity 2.1.1: Improve and demonstrate that the OpenSRP REST API offers a FHIR compliant pattern for Locations, Organizations, Practitioners, and PractitionerRoles*
- *Activity 2.1.2: Build and demonstrate that the OpenSRP REST API can support HealthcareService, OperationOutcome, and Bundle*
- *Activity 2.1.3: Perform integration testing with Instant OpenHIE*

Work Package #2: Schedule

The following is a high-level work plan.

Activity	Team	Month		
	Location	M	M	M
	Month	1	2	3
Activity 2.1.1: Improve and demonstrate that the OpenSRP REST API offers a FHIR compliant pattern for Locations, Organizations, Practitioners, and PractitionerRoles	Kenya, US (scoping)	x		
Activity 2.1.2: Build and demonstrate that the OpenSRP REST API can support HealthcareService, OperationOutcome, and Bundle	Kenya, US (scoping)		x	x
Activity 2.1.3: Perform integration testing with Instant OpenHIE	Kenya			x

Work Package #2: Deliverables

Deliverable	Month Due
Activity 2.1.1: Gap analysis report, link to source code, report of work completed	1
Activity 2.1.2: Link to source code, demonstration of features, documentation on OpenSRP wiki	3
Activity 2.1.3: Demonstration of integration with Instant OpenHIE	3

Work Package 3: Add Personally Identifiable Information (PII) masking across all OpenSRP APIs.

Work Package #3: Digital Health Technologies

OpenSRP stores personally identifiable information (PII), which is any data collected that can be used to identify a person. This allows frontline health workers to be able to identify individuals in their communities and health facilities and better perform their job duties. PII is centrally stored with access managed by OpenSRP's role-based access control. However, our REST APIs do not mask personally identifiable information. This becomes problematic when moving information from the transactional database to third party applications and the data warehouse because our APIs return all information regardless of the sensitivity of the underlying information. This exposes PII to any middleware or software systems that have access to the REST APIs when it isn't necessarily needed. For example, a customer may need access to the APIs to store information in PowerBI. The middleware that performs the ETL will have access to PII, even though information, like patient names, don't need to be extracted to fully perform the ETL process.

Work Package #3: Use Cases and User Stories

E.McCallister (2010) defines PII as “any information about an individual that is maintained by an agency that can be used to distinguish or trace a person’s identity”. De identification is the process of masking, obscuring, or removing PII data such that the information cannot be used to identify an individual. The systems would be in a position to use algorithms to re-identify a person when needed.

Third party applications have a need to access information so that we can report on activities that are captured by the platform. We actively support integrations with data warehousing technologies, large data extracts, and Monitoring and Evaluation teams. We wish to streamline this process by offering de-identification of information as a service by hashing or removing PII based on permissions established in the system. Additionally, we aim to provide an internal process available to system administrators on the OpenSRP server to re-identify PII so we can continue to support troubleshooting.

Work Package #3: Objectives and Activities

The target of this work package is to build a templated pattern in the application to identify which fields should be considered sensitive at varying levels. Once we identify which fields should be masked, the team will implement masking across all REST APIs by default and implement role-based access controls to unmask PII only for frontline health workers and those users who need access to the PII.

Objective 3.1: Add Personally Identifiable Information masking across all OpenSRP APIs.

- *Activity 3.1.1: Build and demonstrate the process for identifying which fields should be masked from the moment data is collected.*
- *Activity 3.1.2: Build and demonstrate that all APIs that include PII are masked by default unless the user accessing the API has the appropriate permissions*

Work Package #3: Schedule

The following is a high-level work plan.

Activity	Team	Month		
	Location	M	M	M
	Month	1	2	3
Activity 3.1.1: Build and demonstrate the process for identifying which fields should be masked from the moment data is collected.	Kenya	x		
Activity 3.1.2: Build and demonstrate that all APIs that include PII are masked by default unless the user accessing the API has the appropriate permissions	Kenya		x	x

Work Package #3: Deliverables

Deliverable	Month Due
Activity 3.1.1: Scoping document, link to source code, demonstration of feature	1
Activity 3.1.2: Link to source code, demonstration of features of all APIs	3

Community Feedback

Ona regularly contributes to multiple open source communities including the World Health Organization's Computable Guidelines working groups and OpenHIE. Our team has contributed to numerous OpenHIE communities and works to actively build shared understanding of best in practice work in our space. We will continue these efforts and contribute any content, workflows and documentation to the OpenHIE communities as we develop these work packages.

Global Good Maturity Model Assessment

Ona has recently updated this model for OpenSRP for another PATH engagement, in June 2020. We have kept here the assessments as in June 2019, so that you can see progress made in the past year.

Category	Sub-Category	Score as at June 2019	Score as at June 2020	Comments as at June 2019	Comments as at June 2020
Global Utility	Country Utilization	Medium	High	At least four countries or states actively use the tool for use as part of their health information system with at least 20% of total nation-wide or state-wide target users routinely using product/service as intended.	The following 15 countries currently have 24 active / or pending in 2020 implementations of OpenSRP based apps underway: 1) Bangladesh (3 separate projects / implementations), 2) Thailand, 3) Namibia, 4) Zambia (4 separate projects / implementations), 5) Tanzania (2 separate implementations), 6) Vietnam 7) Malawi 8) Togo 9) Guinea 10) Liberia (2 separate implementations), 11) Mauritania 12) Tunisia 13) Rwanda ((2 separate implementations), 14) Kenya 15) Indonesia ((2 separate implementations),
	Country Strategy	Medium	High	Three or less countries have integrated the tool or included it as part of their ehealth strategies	Moved to High
	Digital Health Interventions	High	High	The tool does fully meets digital functional requirements (as defined by WHO's Classification of Digital Health Interventions) without	Still high

				significant customization or configuration	
	Source Code Accessibility	High	High	Source code exists on a publicly accessible repository and licensed under an Open Source Initiative approved license. Software is structured to allow local customization and new modules and functionality without requiring forking of main code	Still high
	Funding and Revenue	Medium	Medium	Multiple revenue streams/donors exist across project implementations	Kept at Medium as although the number of donor-funding projects did increase in the last year, we still do not have much institutional / product funding that helps us to build out the core product, and that is not tied to a project deliverable.
Community	Developer, Contributor and Implementer Community Engagement	High	High	At least 30% of estimated total developers, contributors and implementers are engaged on a communication platform. community leadership includes representation from countries where the tool is deployed	Still high
	Community Governance	Medium	Medium	Some informal processes for community management exist to direct continued development of the digital health tool	We are on track to formally launch the governance structure and underlying Tech / Product and Strategy / Advisory Committees by the end of Sept 2020
	Software Roadmap	High	High	New features and functionality are documented as part of a software roadmap as part of a release cycle. There are forums for community members to discuss new feature requests. A clear prioritization process exists and is utilized for the development of new features and functionality as part of a product backlog	Still high
	User Documentation	Medium	High	Some user documentation exists (training manual, demo videos) but only addresses a limited subset of common functionality	We have made good progress over the past year and have created various types of guides - i.e. user guides, training guides, trouble shooting guides, set up and deployment guides for various program deployments. All of these can be adapted with little effort for new deployments. We have created (and in some cases translated) approximately xxx new guides and therefore feel that the rating can increase from Medium to High
	Multi-Lingual Support	High	High	Software has been translated into multiple languages and fully supports internationalization requirements. There is an easy tool for new translations to be added. Significant parts of user	Still high

				and implementer documentation has been translated into at least one other language.	
Software	Technical Documentation	Medium	Medium	Some technical documentation exists of the source code, use cases and functional requirements	Even though there has been a great increase in the amount of documentation being churned by projects with more descriptive user requirements being turned into technical specifications, we have kept this at "medium" as new adopters still need help from one of the OpenSRP core developers to customize and add new functionality to the app
	Software Productization	Low	Medium	No documentation available for deployment and configuration	We have the following documentation that covers deployment and configuration. Progress has been made with more information being recorded in the Wiki pages. https://smartregister.atlassian.net/wiki/spaces/Documentation/pages/6619236/OpenSRP+android+client+app+build https://smartregister.atlassian.net/wiki/spaces/Documentation/pages/540901377/Ansible+Playbooks https://smartregister.atlassian.net/wiki/spaces/Documentation/pages/1649639425/Upgrade+of+Spring+to+version+5 https://smartregister.atlassian.net/wiki/spaces/Documentation/pages/1669267465/OpenSRP+Server+API+Documentation https://smartregister.atlassian.net/wiki/spaces/Documentation/pages/1143210091/OpenSRP+Web+APIs https://smartregister.atlassian.net/wiki/spaces/Documentation/pages/1082654721/Transifex%3A+Adding+GitHub+Repositories
	Interoperability and Data Accessibility	Medium	Medium	Some APIs are available for accessing and managing data. there are user facing interfaces to export core data and metadata in the system (e.g. in CSV format) for further analysis and data transfer purposes	We have have added APIs for managing locations, organizations, unique_id gen, all the API support JSON format. So even though progress has been made, the API endpoints do not fully conform to standards-based API endpoints.
	Security	Medium	Medium	Role based authorization exists, if appropriate. Guidance on encrypting all remote access (web interface, APIs) is available to implementers.	We are wrapping up role based access controls. Encryption is configured in transport via TLS for web API access. Access to database is also via encrypted connections. So even though these improvements have been made, we do not have robust role-based authorization. We switched to KeyCloak and need to build these out now. We have therefore kept this at "medium"
	Scalability	Medium	High	There is at least one jurisdiction (e.g. country, state) deployment for which 20% of all "entities" are managed within the software. There has been at least one evaluation of software performance / load testing	We have load testing scripts for testing performance or load. OpenSRP now supports horizontal scaling and adding more nodes support higher loads

ANNEX A: CVs of Core Staff

MATT BERG

Ona

Co-Founder and Chief Executive Officer

Oct 2013-Present

Nairobi & NYC

- Co-Founder of a software engineering and design firm that develops open source tools to help organizations make smarter use of data to address important global challenges.

The Earth Institute at Columbia University

ICT Director for the Modi Research Group & Millennium Villages Project

July 2007-Sept 2013

New York, NY

- Implement and provide strategic oversight of the Information & Communication Technology (ICT) sector for the Earth Institute.
- Led NYC and field based engineering team consisting of African regional and site based programming and technical staff
- Technical lead of the development of the Smart Registry platform for the NRHM in Karnataka, India. • Led design and development of open source mobile data collection platform Formhub
- Design, develop and implement innovative mobile platforms including ChildCount+ - a mHealth platform that uses SMS text messages to monitor the health of women and children
- Development of a national scale SMS based clinic based monitoring system in Uganda
- Coordinate with field staff to design and implement ICT interventions in the Millennium Villages including the establishment of community radios, wifi-networks, school computer labs, medical record systems in clinics, ICT kiosks, phone charging booths and mobile phone application pilots

IESC Geekcorps Mali

Country Director

Oct 2005-July 2007

Bamako, Mali

- Chief of Party for a \$2.6 million dollar USAID Mali Communications for Development and Last Mile Initiative grant program
- Management of program office in French with 13 local staff and volunteer program with 10 international volunteers
- Implemented and developed appropriate technology solutions: LTSP Linux thin clients and multiterminal computers, asynchronous Internet via USB key, low-power Geekcorps Desert PC, video-overWi-Fi CanTV, bandwidth limiting RGBAN remote networking system, Wikipedia CD, Solar/LED lighting systems and low-cost solar FM Transmitter and studio

IESC Geekcorps & Digital Freedom Initiative in Senegal

Geekcorps Volunteer

May-August 2005

Chicago, IL

- Developed/implemented a web/paper based accounting system for African merchants and women groups (www.baolbaol.com)

Inspidered, Inc – Web Development Firm

Co-founder

2003-2005

Chicago, IL

- Provided web programming and design and database development services for non-profits in the Chicago

Meritum Corporation – Internet Startup

2002-2003

Chief Technology Officer

Chicago, IL

- Oversaw the system design, programming, and billing support for a web-system built on open source standards that created a turnkey solution that allowed clients to sell self-replicating websites to over 20,000 paying members

2000-2002

Infocast Community – ISP & Internet Services Startup

Director of Creative Services

Tucson,
AZ

- Managed creative service team: 5 programmers, 2 designers and 2 support staff
- Oversaw the system design, programming, and billing support for a web-systems built on open source standards

EDUCATION

Thunderbird, School of International Management

MBA in International Management, GPA 3.80

**Spring
2005**

- Ambassador Assistantship (1/3 tuition)
- Beta Gamma Sigma Business Honor Society

Glendale,
AZ

Knox College

Bachelor of Science Computer Science & Bachelor of Arts Integrated

International Studies

Spring 2000

- Lincoln Scholar (full tuition) Galesburg, IL
- Honors Dissertation: The State of Computer Education in Zimbabwe
- University of Zimbabwe: 8 month academic and cultural exchange (Harare, Zimbabwe, 1999)

AWARDS & HONORS

- 2010 Time 100 List of the World’s Most Influential People
- 2010 PopTech Social Innovation Fellow
- 2010 Knox College Young Alumni Award
- 2006 Tech Museum Award Laureate

Publications

- Caroline Asimwe, David Gelvin, Evan Lee, Yanis Ben Amor, Ebony Quinto, Charles Katureebe, Lakshmi Sundaram, David Bell, and Matt Berg. “Use of an Innovative, Affordable, and Open-Source Short Message ServiceBased Tool to Monitor Malaria in Remote Areas of Uganda”. The American Journal of Tropical Medicine and Hygiene. 2011 July 1; 85(1): 2633.
- Matt Berg. “Components of SMS Based Data Collection and Service Delivery”. White paper, unpublished.

Activities

- Thunderbird Global Council Member (2012-Present)
- WHO mHealth Technical Advisory Group (mTag) (2012-Present)

LANGUAGES

English (Native), French (Fluent), Spanish (Basic)

GEOGRAPHIC WORK EXPERIENCE

Ethiopia, Ghana, India, Kenya, Malawi, Mali, Nigeria, Rwanda, South Africa, Tanzania, Uganda, Rwanda, Zimbabwe

PETER B. LUBELL-DOUGHTIE

PROFESSIONAL EXPERIENCE

Ona

Nov 2013 — Present

Founder and Chief Technology Officer

New York, NY

- Led technology strategy and grew the technology team as we built a SaaS product that doubled total and recurring company revenue year-over-year.
- Lead architect on voting software for the Libyan national election, global data collection products and deployments, technology used in the Ebola response.
- Managed general operations and team resources, negotiated contracts, and led financial management. Programmed in Clojure, ClojureScript, Om, Python, and R. Managed our global real time platform deployment on AWS and orchestration scripts in Ansible.

Intent Media

Nov 2012 — Nov 2013

Lead Data Engineer

New York, NY

- Led the data engineering team in building a data platform for ETL (Extract Transform Load), analysis, and modeling at scale.
- Communicated the data teams roles, needs, and accomplishments to the executive team and the company.
- Programmed in Clojure, Cascalog, Java, Pig, and Ruby. Created distributed algorithms and models using Hadoop and Amazon Web Services.

Columbia University, Modi Research Group

Dec 2011 — Oct 2013

Senior Software Engineer

New York, NY

- Built semi-automated data analysis and management tools for energy infrastructure and development planning in Python and R. Developed web sites and web services in Python using Django for mobile (Android) data collection and management. Project managed remote teams and coordinated with corporate, non-profit, and government project partners.

Helioid, Inc

April 2008 — Oct 2013

Founder

New York, NY

- Developed and integrated internet facing learning algorithms in Ruby.
- Responsible for business development and administration.
- Researched and implemented technologies in information retrieval, text analysis, statistics, and machine learning. Developed web applications, including REST-based API, in Ruby on Rails.
- Administered Linux server.

Princeton University

Oct 2008 — July 2009, 2011 — April 2012

Consultant

Princeton, New Jersey

- Member of the CITP, reported to Edward Felton and Matthew Salganik.
- Collaborated with graduate students to create an online sociology laboratory.

- Developed a REST and XML based web service, as well as Ruby on Rails and Javascript web applications and plugins.
- Analyzed data using Ruby, Python, and R. Wrote algorithms for data processing in Ruby and C.
- Researched and created pairwise algorithms for processing large amounts of vote data to determine user preferences.

Hall International Partners, LLC

Chief Technology Officer

Jan 2008-Jan 2010

West Tisbury, Massachusetts

- Hall International Partners offered financial advisory services, specializing in wealth management. Managed technology assets and asset acquisition. Led strategy for information security and internet presence, including web application development in Ruby on Rails.

Mobile Input Devices and systems, Inc

Managing Engineer

April, 2008 — June 2009

Alameda, CA

- Participated in strategic planning and business development.
- Managed software development of chorded typing glove and typing pad, written in C and Assembly. Implemented and maintained website in Ruby on Rails.

Self Employed

Consultant

May 2006— May 2008

New York, NY

- Advised on requirements for secure web applications.
- Maintained web applications in Ruby on Rails. Wrote programmer evaluation tests for Ruby, Ruby on Rails, and JavaScript and recommended additions and modifications to existing internet products and services.
- Developed and implemented websites and content management systems in PHP and Ruby, often with custom SQL. Edited graphics and layouts using Adobe Photoshop and Adobe Illustrator..

Netsprout, Inc

Lead Developer

May 2006 — Nov 2007

San Francisco, CA

- Team management, client interaction, individual and collaborative development.
- Developed high availability internet applications in Ruby on Rails, AJAX, Actionscript, PHP, and JSP.
- Developed client side applications in Java and designed, tested, and implemented databases.
- Administered re-dundant Linux servers and developed transcoding systems using FFMPEG. Developed Ruby on Rails plug-ins. Performed code and performance testing. Developed XML API and RSS feeds.

The Gnostic Magazine

Founder

Jan 2006 — June 2007

San Francisco, CA

- Founded philosophy and arts magazine.
- Managed the release of issues and business development.
- Developed a collaborative community based website with active discussion groups and online upload capabilities. Created online magazine issues using Flash, Adobe Illustrator, Adobe Photoshop, and Adobe InDesign.

Stanford University

Research Assistant

June 2006 — Dec 2006

Stanford, CA

Compiled summaries and distilled relevant information from academic papers and relevant books. Organized this information in databases, flow charts, and text summaries. Presented and reported the information.

EDUCATION

University of Amsterdam

2011

MSc, Artificial intelligence, Cum Laude
Netherlands

Amsterdam,

Track: Learning Systems, Thesis: Learning to Rank from Relevance Feedback

Stanford University

BS, Symbolic Systems

Concentration: Decision Making and Rationality

2006

Stanford, CA

RECENT PROJECTS

- ADMM: <https://github.com/intentmedia/admm>
- Bamboo: <https://github.com/pld/bamboo>
- Helioid: <http://www.helioid.com/>
- All Our Ideas: <http://www.allourideas.org/>

ACADEMIC EXPERIENCE

- IEEE Transactions on Neural Networks and Learning Systems March 2014-Present Reviewer
 - Reviewed 3 manuscripts for 2014 and so far 1 for 2015.
- Stanford University Jan 2006 — June 2007
 - Undergraduate Research Grant Recipient
 - Developed a genetic programming based algorithm that evolved agent communication systems.
 - Reviewed literature on multi-agent communication and evolutionary computation.
 - Wrote paper detailing results. Primary advisor Nils Nilsson. Secondary advisor John Koza.

PUBLICATIONS

- Lubell-Doughtie, P. and Sondag, J. Practical Distributed Classification using the Alternating Direction Method of Multipliers Algorithm. IEEE BigData, 2013.
- Lubell-Doughtie, P. et al. Improving Data Collection and Monitoring through Real-time Data Analysis. ACM DEV, 2013..
- Lubell-Doughtie, P. and Hamilton, K. Helioid at TREC-Legal 2011: Learning to Rank from Relevance Feedback for e-Discovery. Proceedings of the 2011 Text REtrieval Conference, 2012.
- Lubell-Doughtie, P. and Hofmann, K. Learning to Rank from Relevance Feedback for e-Discovery. ECIR 2012 - 34th European Conference on Information Retrieval, 2012.
- Lubell-Doughtie, P. and Hofmann, K. Improving Result Diversity using Probabilistic Latent Semantic Analysis. DIR 2011 - Dutch-Belgian Information Retrieval Workshop, 2011.
- Lubell-Doughtie, P.B. Using Genetic Programming to Evolve a General Purpose Sorting Network for Comparable Data Sets. Genetic Algorithms and Genetic Programming at Stanford 2003, 2003.

PRESENTATIONS

- Geo for Good User Summit 2015, Google Headquarters, Mountain View, California, USA.
- PyConZA 2014, First Keynote, Writing Python Code to Decide an Election, Johannesburg, South Africa.
- Mobile Technologies and their Intersection with Global Health, Mount Sinai Global Health Program 2014, New York, USA.
- IEEE Big Data 2013, Industry Track, Santa Clara, USA.
- Startup Track at the Society of Scholarly Publishers (SSP) 2012, Washington D.C., USA.
- DataDev Workshop at Mobila Data Management 2012, Bangalore, India.

COMPUTER SKILLS

- Programming Languages:C, C++, Clojure(Script), Java, JavaScript, Lisp, Perl, PHP, Pig,Python, Ruby, SH, SQL. Some use of ASM, Awk, Objective C, Smalltalk.
- Statistical Packages:iPython, Matlab, Pandas, R. Some use of Mathematica, RPy, RSRuby.

- Software: Ansible, Apache, AWS, Cascalog, Django, EMR, Hadoop, ImageMagick, Lemur (In-dri), Lucene, Mahout, Mongrel, Monit, MySQL, Nginx, Om, React, RoR, Sqlite, Thin, Unicorn, VCS.
- Operating Systems: Android, Linux, Mac OS, Solaris, UNIX, Windows

LANGUAGES

English (Native), Spanish (Advanced), French (Fluent), Arabic (Intermediate), Chinese (Mandarin) (Basic), Dutch (Basic)

GEOGRAPHIC WORK EXPERIENCE

Haiti, Kenya, India, Libya, Netherlands, South Africa, Nigeria, Somalia, Syria, Tunisia, Turkey, USA

CRAIG APPL

SUMMARY STATEMENT

- Craig Appl, MPH, is the mHealth Technical Lead for Ona Systems Inc. As the mHealth technical Lead, he provides technical leadership for the overall design, development, and implementation of the mHealth platforms managed by Ona systems across multiple country programs and awards.
- Mr. Appl works closely with the global OpenSRP teams and partners on the design, development and implementation of OpenSRP and other systems. He has a wealth of experience in field implementation, solution architecture and project management.
- Prior to his work at Ona, Craig was the Senior Technical Advisor for Health Information Systems at I-TECH where he designed and lead a team that implemented the national scale OpenHIE platform and iSantéPlus clinic application. His experience ranges from managing global software development teams to small scale implementations in Nepal and Uganda. He has an MPH from Johns Hopkins University with a certificate in Public Health Informatics.

PROFESSIONAL EXPERIENCE

Ona

Jan 2018 -

Present

mHealth Technical Lead

- Providing technical oversight, management and strategic leadership related to the development and maintenance of Ona's mHealth technologies.
- Translating functional requirements across projects to technical requirements for OpenSRP and related platforms.
- Managing the technical roadmap for numerous platforms and working with the engineering teams to ensure their success
- Integrating, communicating and building the global OpenSRP technology community

**International Training and Education Center for Health (I-TECH) Center,
2016 – Jan 2018**

Sep

University of Washington (UW),

Department of Global Health, Seattle, WA,

Senior Technical Advisor for Health Informatics

- Planned, developed, supported and delivered a nationwide transition from the legacy iSanté clinic EMR to iSantéPlus (OpenMRS) in Haiti.
- In partnership with SolDevelo and I-TECH Haiti, developed core integrations on the OpenMRS platform that were globally functional including, integration with a local and national fingerprint server, integration with OpenHIE, integration with Mirth for automated retries when the internet becomes available.
- Planned, developed and implemented OpenHIE in Haiti to support the exchange of information from each iSantéPlus clinic to other clinics and stakeholders.
- Defined requirements, developed and implemented a national laboratory order and result exchange with multiple national and regional laboratories in Haiti using IHE profiles.
- Managed multiple development teams and contracts in Haiti and Poland.
- Planned, architected and piloted an electronic immunisation system (Kenya Immunisation Platform) in Kenya using OpenSRP
- Defined patient record interoperability standards in both Kenya and Haiti to ensure patient records are available at all levels of the health ecosystem, including automatic retries when internet becomes available at the point of service
- Liaise with local and government officials in both Kenya and Haiti to support ministry of health and CDC initiatives.
- Developed online content related to Health Information Systems in conjunction with the UW Department of Global Health E-Learning program.
- Supported national health information system strategic planning in partnership with the CDC and Guyana Ministry of Public Health.
- Developed technical proposals, supported grant development and provided deep technical expertise across I-TECH's global portfolio.

**Grameen Foundation
Washington**

Lead Technical Program Manager

US, Seattle,

June 2015 – Sep 2016

- Proactively managed the full development pipeline from defining end user requirements, scoping technical needs, managing distributed software development teams, delivering the solution and supporting field implementations.
- Defined the MOTECH program and product strategy within the global health field, which required an assessment of functions, limitations, challenges and opportunities when connecting deployed technologies in the field. This resulted in shifting MOTECH from a developer platform to an end user configurable platform.
- Advised donors, partners and other stakeholders on technical strategies, architectures and applicability of open source technologies to solve real world problems in field implementations.
- Supported in country capacity building for field deployments in Nepal and Mozambique, ensuring the continued use of the MOTECH platform by local team members.
- Wrote detailed grant proposals and participated in co-creation groups with other organizations who aim to support point of service interoperability.
- Championed the use of interoperable health information systems including identifying appropriate point-to-point (API) and standards based connections.
- Engaged with the OpenHIE implementer community to provide an implementers perspective when connecting the point of service to high level infrastructure systems.
- Scoped, developed and delivered robust connections to CommCare, ODK, Ona.io, KoboToolbox, OpenMRS/Bahmni, RapidPro, OpenLMIS, DHIS2 and numerous reporting systems.

- Connected individuals from the diverse disciplines of computer science, IT services, subject matter experts, logisticians and behavior change experts.
- Actively managed vendor contracts in the US, Poland and India, ensured the appropriate level of support, performed due diligence and provided actionable feedback across multiple cultures.

Deerwalk Institute of Technology

Nepal Adjunct Professor

April 2015

Kathmandu,

June 2014 –

- Created and executed a project management curriculum that spans four years to supplement the BSc in Computer Science and Information Technology curriculum taught at DWIT.
- Mentored the Information Technology club that is responsible for the IT infrastructure of the school. This team is actively developed networking services for the student body including a file sharing system and 24 PC computer lab.
- Taught project management an average of 10 teaching hours per week.
- Helped individual students improve entrepreneurial ideas in my office hours (5 hours per week).

Deerwalk Inc.

Nepal Data Analyst

2015

Kathmandu,

Jun 2014 – Apr

- Analyzed the time differences of big data analytical processes with MSSQL, Hadoop and R.
- Manipulated 40+GB of customer data to prepare it to be entered into a Hadoop environment.
- Evaluated Amazon Web Services solutions to identify the best scalable environment to process big data with R including EC2 clustering, S3 and Elastic Map Reduce.
- Gained experience with data manipulation using R's data frames, data.table package, ff and ffbase packages.

Friends of Maiti

IT Projects Manager

Nepal Kathmandu, Nepal

July 2013 – June 2015

- Assisted in the development, pretesting and implementation of multiple data collection tools.
- Created the first open source human trafficking concept dictionary that allows organizations to share a common definition of trafficking related data ([SurvivorMIS](#))
- Digitized a paper based system by implementing OpenMRS to track rehabilitation outcomes and standardize workflows.
- Proposed, scoped and implemented a missing person system in CommCare that reduced a paper based process from one week to a matter of minutes.
- Deployed 43 CommCare handsets across 15 field offices, 12 surveillance posts and 16 outreach workers that allowed for the collection and retrieval of missing person information across the country.
- Ensured compliance with local laws and regulations when collecting survivor information.
- Designed and implemented capacity building and quality improvement activities internally at Maiti Nepal.
- Provided guidance and discovered system constraints that addressed the ethical challenges when collecting information on survivors and missing persons.
- Actively interacted with numerous levels of team members (from the executive to the frontline worker) to ensure my projects continually progressed and were supported by the team.

JHU Global mHealth Initiative

Public Health Informatician

Baltimore, Maryland

Dec 2012 – June 2013

- Documented the flow of information and core business of Maiti Nepal, an organization that combats sex trafficking of girls across Nepal.
- Identified literature and conducted literature reviews to support the project.
- Created and reported use cases, swim lane charts and other visual aids which clearly describe the movement of clients and girls through Maiti Nepal's service offerings.
- Identified and documented areas of improvement at the organizational level that could immediately streamline business processes and use information to improve the efficiency of the organization.
- Reported my findings to my academic advisor, and the executive officers of Maiti Nepal and Friends of Maiti Nepal.
- Managed data processing of collected data. Transformed, cleaned and analyzed the entire Management Information System (300,000 rows in a SQL database), ultimately suggesting technical solutions that could improve the depth and breadth of the system which translated into a full time position at Friends of Maiti Nepal for implementation of the recommendations.

Defense Threat Reduction Agency

Fort Belvoir, Virginia

Budget Analyst

Mar 2009 – Mar 2012

- Identified and improved financial team business processes and inefficiencies with available technical solutions.
- Created numerous algorithms and solutions using MS Excel, MS Access, SharePoint and Visual Basic programming that reduced contractor costs, input time and government manpower to accomplish standardized business processes.
- As a team leader, created training materials and trained team members in new business processes as the government transitioned from legacy accounting systems to the DAI.
- Supported and participated in programmatic reviews with senior management and external partners who were responsible for the appropriate allocation of resources of our organization.
- Interacted with financial managers in numerous government agencies, universities and businesses to ensure the funding was being spent as forecasted.

Integrated Data Services

April 2008 – March 2009

Business Analyst

Fort Belvoir, Virginia

- Participated in focus group efforts to conduct data quality assessments to determine the health and quality of data in the core financial system and data coming from feeder systems into the core system, which collectively mapped workflows and data definitions as well as timelines, deadline dates, and the necessary resources required to accurately improve the automated software system.
- Scoped functional and technical requirements for the CCaR project management system and managed their development from idea to customer implementation.
- Created step-by-step training manuals and taught monthly user-centered functional system courses.

Hope Clinic Lukuli 2008

Sep 2007 – Feb

Clinic Administrator

Kampala,

Uganda

- Front line manager of clinic operations for a non-profit organization with 17 team members.
- Managed employees, daily accounting and community programs organized through the clinic.
- Ensured the onsite dispensary was accurately managed and stocked to meet patient demands.
- Planned, procured and tracked commodities for the clinic including program specific commodities.
- Helped secure a grant from the US Embassy Small Grants Department that sustained the clinic's HIV community programs.

Reach Out Mbuya

International Volunteer

Jun 2006 – Aug 2007

Kampala, Uganda

- Lead organization wide restructure of approximately 125 staff including personnel allocation, records management, and Information Technology procurement.
- Assisted in determining methodologies for collecting information and standardization of data for two research studies:
 - “The Effects of Food Aid on HIV-Infected Patients in Kampala, Uganda” by Matthew Burkey, Johns Hopkins University
 - “Validation of the new WHO Diagnostic Algorithm for Pulmonary Tuberculosis in HIV prevalent settings” by Dr. Janine Thoullass, Department of Medicine, Makerere University, Uganda
- Supervised, managed and reported monthly World Food Programme food subsistence distribution program to 1000+ recipients.
- Compiled and edited correspondence for quarterly donor reports that consolidated information from multiple input sources.

EDUCATION

- 2013- MPH (Public Health Informatics); Johns Hopkins University Bloomberg School of Public Health, Baltimore, MD
- 2006- BS in Economics; George Mason University, Fairfax, VA

SAMUEL GITHENGI WAWERU

CAREER OBJECTIVE

To be a leading professional with strong analytical skills, problem solving skills, competent, upholding high moral standards and professional ethics, and always to continuously improve. Work in a dynamic environment where I will utilize my broad technical knowledge, excellent communication skills and team player skills to create innovative solutions to business challenges.

PROFESSIONAL EXPERIENCE**Ona***Senior Software Engineer***Oct 2017 – Present**

Nairobi, Kenya

- Problem definition, analysis, requirement gathering, solutions development, solutions proposal for the company
- Developing with APIs and service based architectures
- Experience with databases and their integration into web and Android applications
- Develop proper documentation on solutions, user guides, processes and procedures during development and deployment

Verve K.O*Head of Technical Hyperion P2B***2015 – 2017**

Nairobi, Kenya

- Responsible for providing gap analysis, developing system architecture and design, and integrations between Hyperion P2B and other systems

- Provide solutions to technical issues whenever they arise and making the system more stable, faster and user friendly to users.
- Involved in the upgrade of Hyperion Plan to budget system from version 11.1.2.1 to 11.1.2.4
- Designed and implemented an ASO reporting cube to allow detailed reports.
- Customizations by developing a custom application developed using J2EE for capturing textual information for use in programme based budget.
- Performed integrations between Hyperion and other systems using FMEE and ODI

Verve K.O

Oracle Technical Consultant

2013—2017

Nairobi,
Kenya

- Support in the deployment of Plan to budget system at National treasury
- Supporting and troubleshooting and resolution of technical issues
- Monitor backup and recovery procedures for the Oracle Essbase and Oracle 11g RDBMS databases for the budgeting System
- Monitor and maintain uptime of the system
- Set up and manage the work flow module for budget approval and promotion
- Configuring budget writeback to E Business General Ledger (GL) after the budget has been approved and also data loading of the actual expenditure from GL to Hyperion planning for performance comparison
- Configuring and development of Web Analysis dashboards and ad hoc grids
- Setting up User productivity Kit(UPK) for developing of interactive learning material for end users
- Installation, configuration and development of OBIEE 11g Dashboards and Analyses for top level executives

Real Dynamics LTD

Software and Database consultant

Feb 2014 — Dec 2016

Nairobi, Kenya

- Implemented application customization for TALO system which is a sales and logistics system for Toyota Kenya which was developed in Japan to adapt it to Kenya business process. I did the implementation and integration to SAP which hosts their financials.
- Implemented a body building module on TALO for the Hino department
- Role out of TALO application for the Toyota other brands CASE and YAMAHA

Trademark East Africa

Consultant

Nov 2014 — Dec 2016

Nairobi, Kenya

- I was involved in developing a solution for Drug regulation for East Africa. The solution is for regulating premises, products, professionals, trade (internal, import and export) practicing in the medical industry in the region. This solution was developed using JBoss Seam Framework, Rich faces, JPA, Hibernate, EJB 3.0, Postgress database and runs on JBoss Application Server 6.0 and Apache 2.0 webserver. The portal which exposes the application to end users on the internet was done using LifeRay enterprise portal.

Cellulant Kenya Ltd

Implementation Engineer

March 2012 — April 2013

Nairobi, Kenya

- CIC Mobile development and implementation
- IM bank Mobile banking stabilization after an upgrade and migration

- IM merchant Aggregation solution design, integrations and deployment, this was a solution for the Banks Corporate Clients so that their customers could pay for good via the Banks Paybill number and the amount would be credited real time to their bank Account, the solution would then post the payment details to the Corporate Financial system.
- Airtel Kenya airtime Integration for IM Bank and Barclays Kenya, where the bank customers could be able to top up Airtime from Mobile and Internet banking

Oracle technologies

April 2011 — June 2011

Software Developer

Nairobi, Kenya

- Migration of Sacco banking system (Front Office Sacco Activities-FOSA) from Oracle 6i forms to PHP
- Design and development of the dynamic Web User Interface for the application
- Database administration and performance tuning for the application

EDUCATION

BSc. Computer Science, Kenyatta University

2011

K.C.S.E , Menengai High School

2005

DEVELOPMENT TOOLS

Eclipse IDE, Netbeans IDE, Oracle Jdeveloper, Visual Studio, PL/SQL developer, Oracle Forms Developer

LANGUAGES

English (Advanced), Swahili (Native)

GEOGRAPHIC WORK EXPERIENCE

Kenya

MARTIN W. NDEGWA

PERSONAL SUMMARY

A dedicated professional software developer with over 5 years of experience with an urge to learn more and versatility to adapt to any technology required to achieve a particular objective. Having acquired commercial experience after university. I'm equipped with skills pertaining to different aspects of the software development life cycle including Analysis, Design, Development, Testing and Deployment.

PROFESSIONAL EXPERIENCE

Ona

June 2017 — Present

Software Engineering Manager: OpenSRP Team

Nairobi, Kenya

- Android and Java web applications
- Developing with APIs and service based architectures

- Experience with databases and their integration into web and Android applications
- Develop proper documentation on solutions, user guides, processes and procedures during development and deployment

Allied Technique Inc

Software Engineer

2011 – 2017

Nairobi, Kenya

- A social marketing web platform concept system that involved customized promotional coupons that can be distributed via user browsed content e.g. Usually blogs, sports, news websites e.t.c. It utilized social media marketing.
- A Music oriented system that spans mobile(iOS, Android) and web that streams music using the popular spotify API, echonest, 7digital API
- Ecommerce online catalog project built on Laravel 5
- Backend web portals for product catalog and fleet management systems.
- Been part of a team of developers involved in agile projects revolving around web and mobile applications.

EDUCATION

BSc. Computer Science, University of Nairobi

2004-2010

K.C.S.E , Nyeri High School

2002

DEVELOPER TOOLS

Versioning on Git, Build and Test Tools: Gradle, Maven, Gulp, Composer, Bower, Eclipse, STS , Android Studio, Jira, Confluence, Bamboo Clf, Travis CI and Drone CI and correct Bamboo CI theres an f

2012 Present

LANGUAGES

English (Advanced), Swahili (Native)

GEOGRAPHIC WORK EXPERIENCE

Kenya

HILDAH NGONDOKI

PROFESSIONAL EXPERIENCE

Ona

Technical Project Manager

April 2019-Present

Nairobi

- Problem definition, analysis, requirements gathering, solutions development, solutions proposal for the company
- Develop proper documentation on solutions, user guides, processes and procedures during development and deployment of solutions
- Knowledge transfer and training:

- Provide training to clients and/or colleagues and/or in events or exhibitions where you are representing the company in any capacity
- Help coordinate day to day technical management of the Ona projects assigned to you. This will include working with members of the engineering team assigned to those projects.
- Assist in training workshops for technical partners and stakeholders.
- As needed, demo Ona solutions to potential technical partners and stakeholders, describing the platform architecture, current development efforts, strategy, and potential linkages to other platforms and tools;
- Help provide technical and coordination support to Ona potential partners/ Clients;
- Conduct on-site visits to potential partner sites to meet with local technical partners to assess their technical capacities, expose them to the platform architecture, and assess technical needs for the project site;
- Communicate regularly to Ona management about projects development progress and any issues that arise.
- Provide project management support on other projects when requested.
- Assist in grant and proposal writing and other business development efforts.
- Assist in organizing and cleaning data for client dashboard projects.
- Assist in the development of a support strategy and help with support requests when needed.

Safaricom PLC

August 2017-March 2019

Project Quality Governance, Testing & Management of Releases, Demand & Resource planning Nairobi

- Achieve the overall integrated project quality assurance by reviewing and providing technical analysis on projects with classification on complexity and resource requirements.
- Effective communication with the ability to add value in the customer chain and challenge different personalities with respect and flexible firmness in order to achieve a positive outcome that is in the best interest of all stakeholders
- Perform an ongoing analysis and review of engagements between stakeholders and project managers and make changes where necessary in order to manage the overall project delivery
- Engagement with the project managers, Business Analysts, Architects and Developers to understand recurrent issues and provide insight to unlock any issues and risks that can be mitigated or de-escalated
- Metrics and KPI formulation to determine and measure KPIs to help track and report on the demand pipeline and resource utilization to achieve efficiency
- Testing of APIs, both performance and functional for the release management process, including quality assurance and enforcement of documentation governance
- ISO process release quality governance champion with measured KPIs and spear head Amdocs quality assurance and testing engagement leadership for quality processes and best practice cascade within the organization
- Overseeing the management of Project Manager's project change management and plans for assignments
- Demand and resource planning functions, reporting and formulation of dashboard metrics

Safaricom PLC

November 2012-July 2017

Senior Engineer, Subscriber Data Management in Support Operations

Nairobi

- Testing of software and hardware during system changes including upgrades and fixes. In addition to this, perform end user device testing in support of retail and customer care mainly to check on simcard incompatibility and end device standards
- System and service assurance using daily reports, implementation and automation of tools for monitoring to ensure system and service availability

- Perform test analysis with test cases scenarios for projects that have various touch points within the core networks and touching various customer profiles and product portfolios to enable a systemic co-ordination of testing effort to achieve the overall outcome.
- Analysis of customer issues and investigate root causes
- Managing, maintaining and reporting on the Common Subscriber Database including provisioning of subscribers and management of the subscriber lifecycle.
- Providing technical information for integration, third party , governance and change management teams including implementation of changes and security policies

Safaricom PLC

August 2005

Architect, Solutions designer and Architect for the Enterprise

Nairobi

- Gained experience in sales and customer service with clear communication and ability multi-task under tight deadlines.
- Worked in collaboration with the sales team to create and execute business plans to accelerate the adoption of Enterprise services, exceed revenue goals, and drive customer satisfaction
- Built and maintained technical relationships with customers, account managers, business development, engineering, and product teams to craft scalable, flexible and resilient architectures
- Managing and transforming customer business requirements into logical and physical design for prospective clients, outlining solution architecture descriptions and governing their implementation.
- Helping clients implement services and plan projects effectively all the while handling constant change of scope and displaying leadership in the conversion to a sale
- Identify upselling and cross-selling opportunities with an objective of addressing customer issues with speed and efficiency

EDUCATION

University of Nairobi,

MBA. Operations Management

Ongoing - Masters of Business Administration in Operations Management

Ongoing

Nairobi

Jomo Kenyatta University

BSc. Computer Science

Attained a Computer Science degree with Second Upper Class Honors

June 2007

Nairobi

Alliance Girls' High School,

Kenya Certification of Secondary Education

Nairobi

Attained an overall A Plain in the K.C.S.E exams

Dec 2000

Certifications:

PMP Certified, Oracle Database,, Microsoft Navision ERP

AWARDS & HONORS

- 2017 -Awarded HERO's awards for automation of Safaricom Foundation processes.
- 2016-Awarded by Techies Circuit for best revolutionary innovation.

- 2015-Awarded CSR of choice as winners of curtain raisers for Chapa Dimba by Safaricom
- 2012-Awarded for loss recovery worth 70m.

Activities

- Usamaria for Safaricom Foundation (2015 -2019)
- Operational and Logistics Support for UON Tandaza Football Club(2016- present)

LANGUAGES

Swahili (Native), English (Fluent), French (Basic)