MercyCorps

Scope of Work

Consultant:	Individual Consultant
Program:	AgriFin Digital Farmer (ADF II)
Scope of Project:	Senior Technology Architect Consultant - Sprout Platform
Country:	Ethiopia, Kenya, Nigeria
From:	22 July 2022
To:	18 July 2023
Task Manager:	D-CSA Program Director and Sprout Lead
Technical Support:	ADF II Technical Team

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Program Context

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Nearly one and a half billion poor people live on less than US$1.25 a day. One billion of them live in rural areas where agriculture is their main source of livelihood[1]. An estimated 70 million Small Holder Farmers (SHF) live in Sub Saharan Africa, over half of whom are women[2]. Smallholders, who typically farm two hectares or less, provide over 80% of the food consumed in a large part of the developing world, contributing significantly to poverty reduction and food security[3]. However, increasing fragmentation of landholdings, especially in infrastructure, coupled with reduced investment support, growing competition for land and water, rising input prices and climate change threaten this contribution, leaving many smallholders increasingly vulnerable.

> **Transformational Potential of Agriculture**
> Agriculture has been found to play a powerful role in poverty reduction, especially when agricultural development has focused on small farms grow. It is estimated that a 1% increase in crop productivity reduces the number of poor people by 0.72% in Africa.

Given increasing world populations and demand for food, SHFs occupy an important segment of the global agricultural value chain[4]. Multinational buyers will increasingly rely on smallholders to secure their supply of commodities and to help satisfy consumer sustainability preferences[5]. At an estimated $450 billion, the global demand for smallholder agricultural finance is large—and largely unmet. Credit provided by informal and formal financial institutions, as well as value chain actors, currently only meets an estimated USD 50 billion of the more than USD 200 billion need for smallholder finance in the regions of sub-Saharan Africa, Latin America, and South and Southeast Asia[6]. Impact driven smallholder agricultural lenders, such as Root Capital in Kenya and elsewhere, currently satisfy less than two percent of the demand.[7] The volume and value of savings, lending and payment transaction SHFs in most African countries is not specifically measured.

Mobile phones are a powerful tool to access the electronic national retail payments system and enable vast numbers of clients to use a range of financial and informational services at lower cost. In agriculture, progressively more services are being delivered via mobile phone and as it was revealed in the 2015 Farmer Benchmark and Payment Study, 92% of the respondents owned at least one mobile phone.

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[1] IFAD, Smallholders, food security, and the environment, 2013

[2] IFAD, "Sub-Saharan Africa: The state of smallholders in agriculture", Schonberger and Delaney 2011.

[3] Peck, Anderson, "Segmentation of Smallholder Households: Meeting the Range of Financial Needs in Agricultural Families", CGAP Focus Note #85, April 2013.

[4] Dalberg, 2013

[5] Dalberg, 2013

[6] MasterCard Foundation, "Inflection Point: Unlocking growth in the era of farmer finance", April 2016

[7] Dalberg, 2013

Applications such as iShamba and Arifu direct specific, timely information on agricultural production methods to farmers through their mobile phones. Moving beyond one-to-one communication, M-Farm is an Internet- and SMS-based service in Kenya that allows farmers to aggregate; it publishes wholesale price information on 42 crops and provides a platform for smallholders to collectively sell crops and buy inputs, thereby lowering costs and accessing new markets.

The challenges in agriculture in Africa, particularly for the smallholder farmers producing 80% of its' food for consumption, are complex, and no single solution exists to reverse age-old issues around markets, infrastructure, poverty and exclusion. Digital solutions can provide relatively low-cost solutions that reach scale quickly, open new markets, and surpass the traditional brick-and-mortar approach to customer acquisition and the distribution and sales of products and services. Over the past five years, AgriFin has worked both to build capacity of fintech and agtech innovators to scale and also worked to broker partnerships for them onto larger digital platforms, typically hosted by banks, mobile network operators, large agricultural enterprises and government. Digital platforms are evolving as drivers for impact and viability in delivery of key services for agriculture and also for scale up of young, breakthrough technology providers. Digital platforms can host multiple service providers, working to offer "end to end" services to drive transformation in agricultural markets and impact for smallholders, while decreasing risks and increasing revenue models for fintechs, agtechs and other market actors.

Purpose of Engagement

The consultant will support the development and the implementation of the strategy and recommendations for evolution of the technical architecture for Sprout Platform and its related services. Sprout is the open content data portal where global agriculture experts and farmer facing organizations meet to share and discover farmer-friendly, digital ready content and services designed to build smallholder skills, resilience and income earning opportunities.

Scope of Work

Sprout is a **B** (content/service creator) **to B** (content user/farmer facing organizations) **platform**. The Sprout Platform is not primarily intended to serve farmers directly. Currently, Sprout offers a wide range of high quality, digital ready, farmer friendly agriculture and cross cutting content in flat files that can be searched, downloaded and used as is or contextualized by the organization for their farmers. Sprout also offers Sprout Learning, a WhatsApp for Business service that has content available in English that can be copied by the content using organizations to their own WhatsApp platforms.

Sprout is currently built on DKAN, but the project team is in the process of moving to CKAN shortly. Sprout Learning WhatsApp for business service is built on Turn.io.

The Senior Technology Architect will take the lead in designing the new features and the next phase of development of Sprout Platform with the Mercy Corps AgriFin team and the Kenyan Agriculture and Livestock Organization (KALRO). The Senior Technology Architect will also work with the following sets and types of organizations:
- Content creators (KALRO, AGRA, Ethiopian ATA, Ministries of Agriculture, Research Institutes, CIP, and many others.)

- Content/Service Providers (CIAT, CGIAR, CYMMT, Ignitia, aWhere, PlantVillage, Tomorrow.io, and many others)
- content user partners (One Acre, Pula, KALRO, Digifarm, Mshamba, FSPN, CoAmana, and many others)
- digitally enabled farmers

The Senior Technology Architect will be expected to lead and work with the project team on how best to identify and how to best enable Sprout Platform to offer intelligent advisory and marketplace services through the platform. These services will be built upon the existing platform, capabilities and offer:

- platform content /services organizations the ability to connect to the Sprout platform and directly reach farmer facing organizations and their millions of users in a uniform way
- content/service users (farmer facing organizations) who connect into the platform to have the ability for their respective farmer to have access advisory information and services based on the data that farmer facing organizations have about their farmers (i.e. GPS coordinates, plot size, primary and secondary commodities, etc.) in a uniform way

The Senior Technology Architect will be responsible for identifying the technical approach, developing a roadmap for implementing an MVP with 1-2 content providers, 1-2 service providers and 4+ farmer facing organizations.

The Senior Technology Architect will:
- Engage with the AgriFin and KALRO teams to develop the short-term project strategy and longer-term growth strategy for the Sprout Platform to evolve toward a global open access platform for any actor in the digital ecosystem that is intends to support and/or provide services towards smallholder farmers;
- Engage and meet with partners & farmers to further define and understand use cases, prerequisites, and capabilities to design the requirements for the platform.
- Provide recommended specifications around the technology architecture for the pilot MVP delivery, as well as recommendations for its future development.
- Identify potential solution providers and/or technical design partner or skills required for implementation
- Provide advisory and guidance around the MVP product parameters and support testing the newly designed features
- Support the development of the next phase development of this facility with DAA, as well as the longer-term product roadmap for the facility as an AgriFin initiative moving forward.

Deliverables

The consultants will provide the following deliverables, with specific timelines to be agreed in the approved consultant workplan:

1. Weekly check-ins minutes with the Task Managers and Sprout Platform Product Lead
2. Monthly report updating Sprout Platform Project status, potential risks, and any other updates from partnership implementation in the month.
3. Provide support on short/long -term Sprout Platform Strategy and Systems Architecture
4. MVP design, new products, and systems architecture schema

5. Identify and develop list of suppliers and or resources required for the Sprout Platform MVP product development
6. Support implementation of new products and MVPs
7. Develop long term digital technology vision, road map, and systems architecture

Required Qualifications

1. 10 years' experience in system architect roles in medium to large customer environments
2. Experience managing small development teams across different programming disciplines including cloud, mobile, IoT, and AI
3. Experience establishing technology operations and developing technology standards across multiple project teams
4. Ability and experience steering multiple software products and teams simultaneously
5. Experience in, and knowledge of, complex architectural customer, business, applications and, where appropriate, Infrastructure environments.
6. Required deep knowledge of architect processes tools and offering and ability to translate customer requirement into Sprout Platform and services
7. Experience designing and building technology solutions for emerging markets
8. Must be passionate about modern technologies and effectively using them for creating innovative digital solutions
9. Proven experience in tech design for Developing markets
10. Experience developing Platforms/APIs
11. Prior experience with Comprehensive Knowledge Archive Network (CKAN) highly preferred
12. Able to manage team and clients remotely

Project Learning Agenda

The following Key ADF II Learning Agenda questions will be addressed:
1. What financial and value-added products and services do SHFs, including women and youth, value most and why?
2. How does bundling of products and services impact uptake and usage of digital financial services?
3. What capacity building tools have the highest impact on SHFs willingness and ability to use digital financial services?
4. How and to what extent have ADF II partners have been successful to achieve scale and commercial sustainability?
5. What are the main drivers of success and failure of different partnership and bundled approaches?

Ownership/Control of Work Product/Publication

Matters relating to ownership and control of work product and publication of materials produced during course of this engagement are addressed in the main contract agreement entered between Mercy Corps and the Consultant for performance of services for the Sprout Platform.

Authorship and Acknowledgement

Matters relating to authorship and acknowledgment of any materials produced by the Consultant during the course of this engagement are addressed in the main contract agreement entered into between Mercy Corps and the Consultant for performance of services for AgriFin Digital Farmer II.

Task Manager/Coordination/Reporting

The Task Manager for this engagement is the Mercy Corps AgriFin's Program Deputy Director with oversight from Mercy Corps AgriFin's Program Director. The consultant will direct all communications to the Task Manager. All invoices will be received by Task Manager, with final approvals by the program Director.

Endnotes
1. IFAD, Smallholders, food security, and the environment, 2013
2. Peck, Anderson, "Segmentation of Smallholder Households: Meeting the Range of Financial Needs in Agricultural Families", 2013.
3. New Partnership for Africa's Development, & http://www.ipsnews.net/2012/12/the-industrialisation-of-africas-smallholder-agriculture/
4. Peck, Anderson, CGAP 2013
5. AgriFin Facility Strategy. World Bank. 2010.
6. Agriculture sector strategy 2010–2014, African Development Bank; World development report 2008: Agriculture for development, World Bank
7. Dalberg, 2012
8. McKinsey, "Lions Go Digital; The Internet's Transformative Potential in Africa", 2013.
9. McKinsey, "Lions go digital: The internet's transformative potential in Africa", Nov 2013.
10. Schmidhuber, J., Bruinsma, J., and Boedeker, G, "Capital requirements for agriculture in developing countries to 2050," Paper presented at the Expert Meeting on How to Feed the World in 2050 of the Food and Agriculture Organization of the United Nations, Rome, Italy. Retrieved from ftp://ftp.fao.org/docrep/fao/012/ak974e/ak974e00.pdf