# **Rapid Data Review Outline**

December 5, 2018

# **Purpose and Introduction**

Over the duration of 9 months, Resonance will be assisting the OpenLMIS Governance Committee in assessing prospective adjacent markets and customers in order to develop a new business model and drive alignment among the Governance Committee. At the outset, we have used a Rapid Data Review to synthesize previous OpenLMIS sustainability work, expand on that work through external research, and provide initial structure for future decision making. This outline presents our initial findings.

The Resonance team has built upon existing research from the OpenLMIS team, as well as independent data collection, and will continue conducting research throughout the engagement. Further, this report presents a framework for analyzing opportunities in adjacent sectors versus expanded opportunities within the health sector. As Resonance undertook the Rapid Data Review, the team kept three main objectives in mind in order to ensure the Rapid Data Review helped to contribute the development of a sustainable business model: a) show our understanding of previously completed assessment while also synthesizing the past sustainability and adjacency studies; b) begin identifying new avenues in which OpenLMIS could sustainability operate in; and c) provide a basic framework for how we will be analyzing different opportunities.

# **Part 1: Synthesis of Previous Sustainability and Adjacency Studies**

Resonance received and reviewed numerous documents provided by the Bill & Melinda Gates Foundation (BMGF) and other OpenLMIS stakeholders. While all of these documents provide important information, this rapid desk review primarily focuses on our analysis and synthesis of the previously developed OpenLMIS sustainability business models and adjacency study. The below tables present a summary of each business model and adjacency, examples of relevant companies, and a high-level and initial analysis of opportunities and challenges. Resonance will continue reverting back to all documents provided, and in particular will further analyze the previously explored sustainability business models.

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| **Overview of Business Models Presented in May 2017** | **Resonance Assessment of Previously Presented Business Models** |
| **Example Companies with Business Model** | **Strength and Opportunities** | **Weakness and Challenges** |
| **Open source core + implementation + cloud + support**“Premium” membership on top of open source code – revenue from premium membership allows for maintenance of software. | Provides a free limited version of services as well as a full version with a subscription fee for electronic medical records.[[1]](#footnote-2)  | Allows for both a stream of revenue and access for all users at no cost. | Would customers pay for a “premium” membership when other open source and off-the-shelf software in healthcare are available? |
| **Licensed software**Current code branched, leaving current release of open source for users. All new code and module development is licensed to a commercial entity**.** | Practice Fusion, an electronic health record platform, transitioned from total free access to a $99 subscription fee in June 2018.[[2]](#footnote-3) | If the customer base is willing to pay for the software, this is the highest possibility for revenue growth.High revenue can allow for the best upkeep of the product. | No updated version of the software available for free to users.Current customer base does not have access to resources to pay for OpenLMIS. |
| **Partner network**Network of partners carry out implementation, support, and hosting. | Multi-institution, non-profit collaborative led by Regenstrief Institute for medical records.[[3]](#footnote-4) | A network allows for drawing upon the knowledge and expertise of a wide range of experiences and skillsets.  | High level of coordination between partners is needed. |
| **Merging software initiatives**OpenLMIS joins forces with similar donor-initiated information systems, allowing for a suite of services under a single umbrella. | Many country-specific eHealth information systems exist: Baobab Health Trust in Malawi, SmartCare in Zambia, and Zimbabwe’s Human Resources Information System (ZHRIS).[[4]](#footnote-5) | When multiple uses are combined into one software, there is more buy-in from stakeholders. | OpenLMIS’ current governance structure loses total discretion in deciding path for the product.When a merge occurs, users could have challenges adopting to changes. |
| **Multi-vertical supply chain core**Expanding customer base to multiple industries to allow project to scale, diversify, and spread out costs across multiple revenue streams. | One of the most well-known information management softwares in the game, Salesforce successfully offers a CRM across many different industries.[[5]](#footnote-6) | Multiple industry revenue streams.Scaling the project may allow for building out more sophisticated and better software.  | Expanding to multiple industries may mean that OpenLMIS loses the ability to address specific needs for the health industry. |
| **Supply chain partners – pay for access**Explore how partners in a particular value chains could pay for OpenLMIS; in a fragmented supply chain OpenLMIS could operate as a delivery company. | DAWAPAP is a drug delivery start-up in Kenya and holds Kenya’s largest drug database.[[6]](#footnote-7) | Involving multiple partners in the supply chain allows for more information and engagement with such partners. Opportunities exist for the supply chain to be more efficient and cost effective. | Businesses and individuals along the supply chain may be reluctant to pay for something they have never paid for before.Delivery services is outside of the OpenLMIS core capabilities. |

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| **Overview of Adjacent Industry Opportunities from past Adjacency Study** | **Resonance Assessment of the Adjacency Study** |
| **Example Company in Adjacent Industry**  | **Strengths and Opportunities** | **Weaknesses and Challenges** |
| **Private Multinational Pharmaceutical Companies**Pharmaceutical companies are interested in data visibility and efficiency of supply chains. Since OpenLMIS manages the supply chain at the national level, opportunities may exist for commercialization through partnerships with pharmaceutical companies. | C:\Users\Patrick Drown\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\52613E9C.tmpNovartis is the 3rd largest multinational pharmaceutical company in Africa and aims to be the largest by 2020. As part of Novartis Africa Health Alliance (NAHA), Novartis is interested in strengthening health systems.[[7]](#footnote-8) | Africa’s pharmaceutical industry is projected to grow to $45bn by 2020.[[8]](#footnote-9) OpenLMIS may be best suited for industries already working in the healthcare and medicine delivery space. | Potential reluctance of current OpenLMIS users to share data with a private multinational company.While targeting multinational pharmaceutical companies may be possible, most Africans receive drugs through a very fragmented drug retail market.[[9]](#footnote-10) |
| **Logistics Companies**As logistics companies in Africa are expected to grow significantly, many will look for software, information, and opportunities to grow their business and make supply chains more efficient and cost-effective. | Siginon Group, based in Kenya, is East Africa’s largest integrated logistics service provider and is a $100 million annual revenue regional leader.[[10]](#footnote-11) | Logisitics companies in Africa are projected to grow.[[11]](#footnote-12) As logistics companies work with different companies with varying technology, interopability is needed. | It may be hard to sell OpenLMIS to logistics companies over logistics-specific information and management software.  |
| **Start-ups addressing last mile challenges**Numerous African startups are addressing specific challenges in the supply chain. It could be worth partnering with these startups when they overlap with the healthcare supply chain space. These startups could be willing to pay for OpenLMIS services.  | Image result for sokowatchSokowatch enables informal retailers to order products via SMS or a mobile app.[[12]](#footnote-13)Zipline uses a drone delivery system to send medicines to hard to reach locations.[[13]](#footnote-14) | Many start-ups in Africa are working in the drug and medicine delivery service area, like Zipline. There is potential for the kind of data and services of OpenLMIS to match the needs of startups working in supply chain, specifically in health related supply chains. | OpenLMIS is not sales/revenue focused, which could result in a miss-match of the needs for these start-ups. |

# **Part 2: Rapid External Research Review**

## *High-Level Trends on Health Supply Chain Systems and Adjacent Use Cases*

A growing healthcare economy, technological change, and improved infrastructure are changing health sector supply chain systems throughout Africa. Below we describe these and other trends within health supply chain systems that have surfaced through research and early interviews, and describe their relevance to OpenLMIS.

* **African governments are slow to privatize health commodity distribution.** Many low- and middle-income countries (LMIC), especially in Africa, transport medicine through government-owned centralized stores as opposed to outsourcing medicine supply chain logistics to private companies. The lack of mechanisms and capacity of LMIC governments for contract management is part of the slow uptake in outsourcing health commodity distribution.[[14]](#footnote-15)
	+ **Opportunity:** Private logistics and health commodity distribution companies may be more willing to pay more for supply chain management software than government entities. The availability of free software, however, always limits this potential.
* **Warehouses are changing in size, number, and function.** In urban centers as demand grows, many distributors and retailers prefer a high number of small warehouses, as opposed to a few large warehouses. Some companies and distributors are also starting to consider warehouses, where different companies share the same warehouse.[[15]](#footnote-16)
	+ **Opportunity:** OpenLMIS could serve African companies requiring additional logistics and information management software. Additionally, companies that use shared economy warehousing will require logistics and information management software that is interoperable, a need OpenLMIS can fill. The shared economy in Africa is a small part of the region’s total economy but shows potential for growth.
* **Open source software is an attractive option for African companies.** Due to the high cost of licensed software, many African companies favor open source software options.[[16]](#footnote-17)
	+ **Opportunity:** An open source solution like OpenLMIS can provide a cost-effective and customizable platform for African companies. However, open source software is often free or very inexpensive thus potentially limiting the revenue potential of OpenLMIS as an open source solution for African companies.
* **Companies increasingly view supply chain analytics as critical to operations**. Companies are interested in gathering increased supply chain data to improve forecast accuracy, optimize transportation performance, improve product tracking and traceability, and analyze product returns.[[17]](#footnote-18)[[18]](#footnote-19)
	+ **Opportunity:** OpenLMIS could potentially sell the data it collects through its source code to interested companies. This fee model can be structured to account for operations and maintenance. However, given OpenLMIS’ function as a public healthcare supply chain solution, host government’s may be reluctant to share the data gathered through OpenLMIS. Further, governments may expect to receive these payments as the data pertains to each country. Finally, companies may have little to no interest in the data OpenLMIS can offer thus eliminating any potential.

## *Initial Sustainability Opportunities*

Through an initial rapid desk review and stakeholder interviews, Resonance has started identifying an initial set of potential sustainability opportunities. These opportunities still need additional vetting to take place through stakeholder interviews, further desk research and market sounding visits. The opportunities identified thus far can be categorized into either healthcare related opportunities or adjacent opportunities. In the healthcare related opportunities Resonance has begun thinking through opportunities in telemedicine, clinical information systems, and also how OpenLMIS can simply extract rents from the supply chain (e.g. charge logistic companies a fee to use OpenLMIS). Sustainability opportunities in adjacent industries included sectors such as agriculture, transportation, and retail.

As Resonance continues to develop sustainable business model hypothesis, we will start doing so in a systematic manner. Resonance will be considering sustainability opportunities through two lenses: 1) business models driven by the sector; and 2) business models driven by revenue models.

## *High-Level Landscape of Key Competitors and Potential Collaborators*

In identifying sustainability opportunities, Resonance and OpenLMIS should understand the potential collaborators and competitors that can either help OpenLMIS achieve sustainability or derail sustainability business models. As Resonance continues its two-phase project to identify and vet sustainable business models for OpenLMIS, Resonance will curate and maintain a repository for: 1) potential partners or collaborators; and 2) potential competitors. These lists will capture information relevant to the identified business models, including those in adjacent sectors. The information below provides an initial list, to be continually updated, of potential collaborators and competitors.

* **Logistimo**[[19]](#footnote-20) provides inclusive value chain support through network-agnostic mobile and web software to establish logistical visibility across all echelons. The abundance of data collected drives predictive analytics and opportunistic decision support empowering stakeholders and beneficiaries to optimally participate in value chains.
	+ **Consideration for OpenLMIS:** Logistimo provides last mile supply chain solutions that could serve as competition to a new OpenLMIS business model.
* **District Health Information System 2 (DHI S2)**[[20]](#footnote-21) is a free and open source health management data platform deployed by more than 50 countries on a national scale for health-related projects, including patient health monitoring, improving disease surveillance and pinpointing outbreaks, and speeding up health data access.
	+ **Consideration for OpenLMIS:** DHI S2 could serve as a partner with OpenLMIS to help facilitate wider adoption among countries where DHI S2 is present.
* **Mojaloop**[[21]](#footnote-22) is an open-source software for financial services companies, government regulators, and others addressing the challenges of interoperability and financial inclusion.
	+ **Consideration for OpenLMIS:** Possible to serve as a partner or collaborator if OpenLMIS seeks to work in the interoperability vertical. Mojaloop is unlikely to be a competitor unless OpenLMIS considers operating in the financial inclusion space.
* **Open Data Kit (ODK)**[[22]](#footnote-23) is a community that produces free and open-source software for collecting, managing, and using data in developing countries. The software allows data collection offline and then uploads the information when internet connectivity is restored. ODK is used in areas where privacy concerns are relevant such as the health field.
	+ **Consideration for OpenLMIS:** Open Data Kit serves as a possible competitor to OpenLMIS in the software space that allows offline data collection.
* **LogiNext Mile**[[23]](#footnote-24) provides dispatch management and delivery management software which automates delivery routes optimization and resource capacity to reduce last mile logistics costs up to 20%. Real-time tracking through mobile apps and cloud-based planning and optimization engine allows LogiNext Mile to keep clients updated with highly accurate real-time tracking, route deviation alerts, and notifications for delivaries.
	+ **Consideration for OpenLMIS:** Similar to Logistimo, LogiNext Mile serves as a possible competitor to OpenLMIS in the last mile logistic software business.
* **Maisha Meds**[[24]](#footnote-25) provides Android-based tools to help small clinics, pharmacies, and drug stores manage their sales and inventory, source medicine, and use evidence-based standard for patient care.
	+ **Consideration for OpenLMIS:** Maisha Meds would be a direct competitor if OpenLMIS pursued opportunities in the private pharmaceutical space.
* **Sokowatch**[[25]](#footnote-26) provides multinational corporations a data-driven distribution network in Africa. Sokowatch allows informal retailers to order products at anytime via SMS or mobile app and receive same-day delivery allowing stores to better manage inventory.
	+ **Consideration for OpenLMIS:** Sokowatch would likely serve as a competitor if OpenLMIS pursued adjacent opportunities in the retail sector or goods distribution vertical.
* **iProcure**[[26]](#footnote-27) is an agriculture supply chain platform for rural Africa that provides complete procurement and last mile distribution services. iProcure also provides business intelligence and data-driven stock management across the supply chains. iProcure works with both suppliers and farmers.
	+ **Consideration for OpenLMIS:** iProcure would likely serve as a competitor if OpenLMIS pursued adjacent opportunities in the agriculture sector.
* **Baobab Health**[[27]](#footnote-28) is a Malawian NGO, providing e-Health solutions to the Ministry of Health, to help improve capturing of data, reporting and healthcare provision in Malawi. At the core of the system is a clinical touchscreen appliance that provides assistance to nurses and clinicians as they treat their patients. The touchscreen application guides healthcare workers through treatment protocol and simultaneously collects data that is needed by the Ministry of Health.
	+ **Consideration for OpenLMIS:** Unclear but likely to be a partner or collaborator given its status as an NGO.
* **Stop the Stock-outs**[[28]](#footnote-29) is a very simple decentralized reporting system. Stop the Stock-outs is an SMS-based crowd-sourcing software and geographical mapping tool that allows patients to send text messages to a server if the drug they had been prescribed was stocked out at the clinic’s pharmacy. The data sent via SMS is linked to mapping software. In Kenya, this data was publicized and led to the Kenya parliament voting for increased funding for drug supply. The system is also being used in Malawi, Zimbabwe, and Uganda.
	+ **Consideration for OpenLMIS:** Unclear but likely to be a partner or collaborator given its mission.

# **Part 3: Proposed Framework and Next Steps**

## *Framework for Analyzing Opportunities*

Along with gathering, fleshing out, and honing opportunities for OpenLMIS sustainability, we will also support the narrowing of opportunities. To structure this thinking, we will create criteria under four key areas that combine to determine opportunity viability. These key areas include:

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| **Customer** | **Product** | **Competition** | **Profitability** |
| * How many potential customers exist?
* What is their willingness to pay?
 | * How much customization is needed?
* What is the estimated lifespan of the product?
 | * Is the market fragmented or concentrated?
* Does OpenLMIS offer an innovation compared to competitors?
 | * What are the estimated fixed and variable costs?
* What are the estimated revenues?
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With our next iteration of this framework, we will add to the list of questions needed to gain a full understanding of the market attributes. Using this framework, we will create a rubric to quantify the strength of each opportunity so that we can compare opportunities. The answers to these questions will be gathered through further desk research, stakeholder interviews, and market sounding visits.

## *Timeline of Next Steps*

* ***December:*** Continue to research initial opportunities presented in this document (and any additional opportunities identified). Continue to flesh out the framework and rubric to support the narrowing of opportunities. Narrow the list of possible opportunities and consolidate
* ***January:*** Further research and flesh out the 3-5 identified opportunities. Conduct market sounding visit to stress-test the identified opportunities and understand the field’s perspective of OpenLMIS and where it can go
* ***January 29:*** Workshop with Governance Committee to discuss and reach 1-2 sustainability opportunities to be expanded upon in Phase Two
1. One Touch EMR. https://www.onetouchemr.com/. [↑](#footnote-ref-2)
2. Farr, Christina. “Practice Fusion Is Scrapping Free Software Model after Agreeing to Sell to Allscripts.” *CNBC*, CNBC, 26 Feb. 2018, www.cnbc.com/2018/02/21/practice-fusion-wants-to-start-charging-doctors-sources-say.html. [↑](#footnote-ref-3)
3. Watkins, Don. “Building an Open Medical Records System for the Developing World.” Opensource.com, 18 Aug. 2016, opensource.com/health/16/8/linuxcon-interview-judy-gichoya-openmrs. [↑](#footnote-ref-4)
4. Moucheraud, Corrina, et al. “Sustainability of Health Information Systems: a Three-Country Qualitative Study in Southern Africa.” BMC Health Services Research, vol. 17, no. 1, 16 June 2015, doi:10.1186/s12913-016-1971-8. [↑](#footnote-ref-5)
5. “How Salesforce Built a $10 Billion Empire from a CRM.” *Product Habits*, 19 Nov. 2017, producthabits.com/salesforce-built-10-billion-empire-crm/. [↑](#footnote-ref-6)
6. “The easiest, fastest, and safest way to get medicine.” DAWAPAP, Bioinformatics Institute of Kenya, https://www.kibs.co.ke/dawa/index.php. [↑](#footnote-ref-7)
7. “Global Novartis Healthcare Work in Africa.” Novartis, Novartis, www.novartis.com/our-company/corporate-responsibility/expanding-access-healthcare/our-work-africa. [↑](#footnote-ref-8)
8. Lo, Chris. “Nurturing an African Pharma Boom.” Pharmaceutical Technology, 25 July 2016, www.pharmaceutical-technology.com/features/featurenurturing-an-african-pharma-boom-4960692/. [↑](#footnote-ref-9)
9. Health Economics. “How Global Pharma Players Can Gain Traction in Africa.” *Knowledge@Wharton*, University of Pennsylvania, 18 Oct. 2017, knowledge.wharton.upenn.edu/article/global-pharma-players-can-gain-traction-africa/. [↑](#footnote-ref-10)
10. Nsehe, Mfonobong. “Meet The $100 Million Logistics Giant Of Kenya, Siginon Group.” Forbes, Forbes Magazine, 6 Dec. 2017, [www.forbes.com/sites/mfonobongnsehe/2017/12/05/meet-the-100-million-logistics-giant-of-kenya-siginon-group/#744707767c84](http://www.forbes.com/sites/mfonobongnsehe/2017/12/05/meet-the-100-million-logistics-giant-of-kenya-siginon-group/#744707767c84). [↑](#footnote-ref-11)
11. Temkin, Sanchia. “Africa Gearing up – Future Prospects in Africa for the Transportation & Logistics Industry, According to PwC Report.” *PwC*, www.pwc.co.za/en/press-room/transport-logistics.html. [↑](#footnote-ref-12)
12. Bright, Jake. “Sokowatch Closes $2 Million Seed Round to Modernize Africa's B2B Retail.” TechCrunch, TechCrunch, 26 July 2018, techcrunch.com/2018/07/26/sokowatch-closes-2-million-seed-round-to-modernize-africas-b2b-retail/. [↑](#footnote-ref-13)
13. Intelligence, Business Insider. “Zipline Has Raised $25 Million for Humanitarian Drone Deliveries.” *Business Insider*, Business Insider, 11 Nov. 2016, www.businessinsider.com/zipline-raises-25-million-for-humanitarian-drone-deliveries-2016-11. [↑](#footnote-ref-14)
14. Agrawal, Priya et al. “Moving Medicine, Moving Minds: Helping Developing Countries Overcome Barriers to Outsourcing Health Commodity Distribution to Boost Supply Chain Performance and Strengthen Health Systems” Global health, science and practice vol. 4,3 359-65. 28 Sep. 2016, doi:10.9745/GHSP-D-16-00130 [↑](#footnote-ref-15)
15. Ibid. [↑](#footnote-ref-16)
16. Matinde, Vincent. “Why African businesses need to embrace open source software.” Open Source, IDG Connect, 8 Jul. 2016, https://www.idgconnect.com/idgconnect/analysis-review/1006474/african-businesses-embrace-source-software. [↑](#footnote-ref-17)
17. “Analytics: Laying the Foundation for Supply Chain Digital Transformation.” The Hackett Group. November 2017. https://www.thehackettgroup.com/wp-content/uploads/2017/12/hackett-analytics-supply-chain-digital-1711.pdf [↑](#footnote-ref-18)
18. https://www.interaction.org/newsroom/blog/health-information-systems-developing-countries [↑](#footnote-ref-19)
19. https://www.logistimo.com/product.html [↑](#footnote-ref-20)
20. “District Health Information System 2 (DHIS2).” Open Health News. http://www.openhealthnews.com/resources/district-health-information-system-2-dhis2 [↑](#footnote-ref-21)
21. http://mojaloop.io/ [↑](#footnote-ref-22)
22. https://opendatakit.org/ [↑](#footnote-ref-23)
23. <https://www.loginextsolutions.com/products/mile> [↑](#footnote-ref-24)
24. https://maishameds.org/ [↑](#footnote-ref-25)
25. <https://sokowatch.com/> [↑](#footnote-ref-26)
26. https://iprocu.re/ [↑](#footnote-ref-27)
27. “e-Health for Development.” Germany Federal Ministry for Economic Cooperation and Development. 29-30 October 2009. https://repository.publisso.de/resource/frl:4430227-1/data [↑](#footnote-ref-28)
28. https://stockouts.org/Home/About [↑](#footnote-ref-29)