

OpenFn as a FOSS microservice: click-to-configure, InstantHIE compatible, supported by OpenFn.org

Two-Sentence Overview

By simplifying setup and expanding access to our open-source tools and deployment strategies, Open Function Group (“OFG”) will drastically expand upon the reach and impact of our sector-leading, open-core, integration platform as a service solution (OpenFn). Using OpenFn, OFG has delivered dozens of at-scale, real-time, integration, interoperability and automation solutions for global public health organizations over the last 6 years, and has developed the required expertise and market position to not only provide robust, enterprise grade, shelf-ready open-source software, **but to provide the shelf itself**, delivering that software to the end users that need it most through a hosted web UI.

Executive Summary

OFG is a team of integration specialists that drives efficiency in the global health sector by helping organizations achieve real-time, enterprise-grade systems interoperability through integration and automation. OFG developed the [OpenFn](#) integration platform to connect *any* application (e.g., DHIS2, OpenMRS, OpenHIM, CommCare, KoboToolbox, legacy MoH systems) and automate critical business processes (e.g., sending real-time SMS/email alerts, uploading health indicator results). OpenFn is open-core and is extending its open source software with support from [DIAL](#) to introduce **OpenFn/microservice**—a robust, fully open source integration solution that can be deployed to connect any digital health system.

As a global digital good, OpenFn has been implemented at-scale for leading health organizations around the world. **OpenFn/microservice** will extend our reach even further, by allowing organizations with “zero proprietary code” requirements to leverage the power of OpenFn. However, the impact of that product is limited because many organizations lack the funding and expertise to design and implement robust integrations, let alone configure and deploy open source software to run on their own servers. OFG therefore seeks funding support to enhance the OpenFn open source software, to develop robust documentation and community support, and to assemble a steering committee that will shape the roadmap for our open source products. The proposed work packages will not only deliver a robust, “click-to-configure”, open source integration solution to the global health sector—but will also save time and money on digital health implementations, and strengthen the Instant OpenHIE project by meeting a critical, and as yet, unmet requirement for real-world deployments.

Critically, we believe that simply making open source software *available* is not enough. Beyond shelf-readiness, OpenFn will provide the shelf itself. We will *deliver* our open-source software through our web UI, so that government ministries, NGOs, or ICT4D consultants can configure OpenFn/microservices online, using our hosted web UI, in a free-forever OpenFn project space, and have the option to “export” their configurations to run as microservices on their own machines.

Consortium Team

OFG does not require a consortium team to deliver the proposed deliverables, but please note that we are **seeking to both leverage existing partnerships and formalize new partnerships as we fill our our open source steering committee** (see *Work Package #5*).

Project Description

Background or problem statement

OFG aims to fundamentally transform the “technology for international development” (ICT4D) sector through integration and automation. Institutions often lack the capacity to design and implement projects that effectively leverage the existing digital ecosystem¹—blocking access to critical, accurate, and timely information, and encouraging wasteful investment in redundant ICT4D application development. They are often locked into slow, error-prone manual processes or they spend thousands of dollars every time they want to move data between different systems. OFG is creating a new paradigm in which NGOs, governments, and social businesses can

¹ USAID Digital Strategy: https://www.usaid.gov/sites/default/files/documents/15396/USAID_Digital_Strategy.pdf

automatically, securely, and cost effectively implement integrations between systems in hours or days, not months, no matter their level of technical expertise, compliance requirements, or budgetary constraints.

First released in 2014, [OpenFn](#) is an enterprise-grade (S²) platform on which organizations can connect technologies and automate critical workflows. OpenFn is flexible, scalable, and connects *any* app. Its configurations can be easily modified, replicated, and re-used—delivering quick, adaptable, and cost-effective integration and automation solutions. OpenFn is used by leading global health organizations worldwide², but it isn't appropriate for some organizations with particular resource or open source requirements. (OpenFn is "open-core", but includes proprietary components.) To ensure these organizations can also achieve robust data integration and automation, OFG has confirmed funding from [DIAL Open Source Center](#) to extend [OpenFn/core](#) and develop the fully open source app **OpenFn/microservice**. This will provide a completely free and open source pathway for users to deploy and run OpenFn *jobs* (or integration/automation "scripts") as web-enabled microservices on any server, harnessing all the power of the core ETL functionality and thousands of existing open source OpenFn *jobs* and *language-packages*. **OpenFn/microservice** will be an immediately useful FOSS option for any organization that already uses the OpenFn iPaaS (openfn.org), such as UNICEF³. However, OFG expects other organizations will struggle to independently leverage **OpenFn/microservice** as is, without further investment in its "shelf-readiness".

Objectives

To provide robust, scalable, secure, and FOSS integration options to *all* digital health implementers, **OFG seeks funding to (1) enhance our current open source software with "click-to-configure" features and InstantHIE compatibility; (2) develop robust product documentation and implementation guidance** that empowers organizations to implement these solutions more efficiently and independently; and **(3) assemble and convene a steering committee** for the open source software. This will deliver the following outcomes:

1. **Provide a robust open source integration solution** that can connect any digital health system and be rapidly implemented on any server, in any country, by any organization.
2. **Reduce the costs and skills required to implement interoperability solutions** by providing point-and-click tools to design and deploy integrations, as well as documentation, real-world examples, and re-usable configurations to facilitate implementations. This will enable organizations to spend time and money where needed most, rather than re-coding the wheel.
3. **Enhance the value of Instant OpenHIE and existing digital health systems** by providing a fully open source integration option that can connect any app, and thereby extend the integration capabilities of any existing digital health systems. Through conversations with our partners at Jembi, it's become clear that integration and complex business process automation is often needed alongside OpenHIM.

Risk Mitigation

One risk to the implementation timeline is an external dependency on the finalization of the open-source microservice functionality, funded by the DIAL Open Source Center. We have conducted an initial design workshop and technical spike and currently estimate, with a fairly high level of certainty, that all work will be completed well before the proposed October 2020 grant start dates.

Another risk is around adoption. For the impact on the community to be realized, we'll need to see organizations and governments choose the OpenFn/microservice route. We're hoping that by reducing the friction to deploy a microservice we'll drive up adoption, but, to date, all of the governments and NGOs that OFG has worked with have, ultimately, chosen our turnkey hosted solution. We are attempting to mitigate this adoption risk by providing the same final outcome (a fully configured **OpenFn/microservice** FOSS deployment) *through* our free, hosted, web UI at [OpenFn.org](#) (see WP4) for users that would prefer to configure their deployment via the web, rather than through **OpenFn/devtools** and the command line. We also hope to ensure continued funding and support for the open source software by making use of it in our hosted platform—this produces a ratchet effect, whereby the success of OpenFn.org strengthens the open source software, but a change in direction at OpenFn.org wouldn't harm the open source offering.

² Learn more about [OpenFn clients](#) and our [impact-driven solutions](#), such as the Lwala project (see [Lwala and decision support for community health workers in western Kenya through OpenFn](#)). OpenFn has also been highlighted as a ICT4SDG "Building Block" ([see demonstration here](#)).

³ UNICEF has developed the open source case management platform [Primerio](#). It plans to embed OpenFn as the middleware in its Primerio SaaS offering to facilitate cross-border data exchanges for case referrals. Leveraging OpenFn Microservices, UNICEF plans to offer a Primerio FOSS-Only option for its partners with particular government/ jurisdiction constraints.

To monitor the success of these efforts, OFG will track the number of OpenFn and open source implementations, and gather feedback from the community before/after individual work packages are released. Under WP #7, OFG has also proposed to pilot the OpenFn/microservice in partnership with UNICEF Cambodia, and to conduct baseline, midline, and endline surveys during this real-world implementation to collect critical feedback for the open source software and its documentation. The creation of a steering committee will also establish an important feedback channel, and allow key organizations in the sector to provide input on the outputs, outcomes, and direction of the open source integration solution.

Deliverables & Schedule

To achieve the envisioned outcomes, OFG proposes the following work packages.

No.	Deliverable	Schedule
WP 1	Instant OpenHIE Compliance	4 weeks
1.1	Possible platform API adjustments to enable InstantHIE compliance. (Awaiting additional tech specs from the InstantHIE team.)	Weeks 1-2 (from kick-off)
1.2.	Development of Docker and Kubernetes scripts for setting up the applications required for this package's use cases and workflows. Configuration scripts to setup required configuration metadata. Extensions to the test harness. QA & Testing.	Weeks 3-4
WP 2	Installation and Deployment	2 weeks
2.1	Build out OpenFn/devtools to include a command that automatically configures OpenFn/microservice based on a selected job, allowing users to convert jobs to a fully-fledged microservice with a single command. QA & Testing.	Weeks 5-6
WP 3	Product Documentation	3 weeks
3.1	Build fully featured-documentation site (modelled after OpenFn/docs) for OpenFn/devtools and OpenFn/microservice . This includes multilingual support. User acceptance testing and surveys to collect feedback will form a critical part of the design.	Weeks 5-7
WP 4	Enhanced Installation Support	2 weeks
4.1	Click a button on OpenFn to prepare a microservice.zip which is this repo with a new Dockerfile, based on the current job's configuration at OpenFn.org (we're not just "shelf ready", we're providing the shelf with a free-forever project on our website). QA & Testing.	Weeks 7-8
WP 5	Development & Convening of Open Source Steering Committee	5 weeks
5.1	Develop roles & responsibilities. Recruitment of committee members. Release of OpenFn/microservice and OpenFn/devtools roadmap for 2021. First meeting & follow-up.	Weeks 1-5
WP 6	Advanced Community Support	8 weeks
6.1	Design and implement a community outreach and participation campaign intended to inform users of, and request their participation in a job sharing initiative which would make all selected jobs (which typically do <i>not</i> contain any sensitive data) available as free templates for the whole ICT4D community.	Week 1-4
6.2	Make architectural changes to securely "open up" the OpenFn.org jobs API, providing a free, public, documented API for viewing jobs that have opted in to the sharing program. Build an extension of OpenFn/docs which consumes job data from the public API, making all opt-in jobs easily searchable. QA & Testing.	Week 9-11
WP 7	Pilot & Impact Evaluation (Timeline has UNICEF Cambodia Dependency)	16 weeks
7.1	Conduct baseline evaluation of OpenFn.org implementation for UNICEF Cambodia.	Week 12-13
7.2	Convert UNICEF Cambodia project from OpenFn.org to OpenFn/microservice .	Week 14-15
7.3	Conduct midline and endline evaluations of OpenFn/microservice in Cambodia.	Week 20, 28