

The Mojaloop Ecosystem



Mojaloop is open source software that implements a payments switch with a financial inclusion mission. It supports push payments (so that the payer remains in control) and instant, finalized transactions (so that both payer and payee can see precisely how much money they have at all times, and can spend it straight away).

Further, Mojaloop embodies a risk model that allows financial institutions (FIs) of different natures, different business models, and different sizes to all interconnect in a single platform that balances the risk among all of the participants, in a way that respects the capacity of each. With this approach, the largest commercial bank and the smallest community-based micro-finance institution can interoperate reliably and securely. More importantly, so can their customers.

However, a Mojaloop Hub does not exist in some sort of grand isolation, achieving all of this through some form of digital “glow.” Instead it is at the center of an ecosystem that acts in concert to deliver these benefits – all elements of which must be in place to deliver the service.

The elements of this ecosystem fall into two groups: organization and management, and software and systems.



Principal Organization and Management Elements

- A Hub operator
- A Scheme
- Regulatory/supervisory oversight



Principal Software and Systems Elements

- The Mojaloop Hub itself
- The means of interconnecting each FI to the Hub
- “Oracles,” which serve as directories for routing payments
- Fraud management services
- Settlement services

With the exception of the Mojaloop Hub, which has already been covered extensively, we have outlined each of these elements below.

Hub Operator

Naturally, a Mojaloop Hub does not operate itself. It needs a Hub Operator, an operations-focused organization that carries out basic maintenance, provides first line support to participating FIs, and manages the settlement process.

A Hub Operator is crucial to the success of a Mojaloop deployment. Not only are they responsible for the smooth operation of the service, they are also the face of the service to the connected FIs.

Scheme

The Scheme is the entity that “owns” the service implemented using Mojaloop. It contracts the Hub Operator and defines the Scheme Rules, which all connected FIs subscribe to and abide by.

The Scheme is overseen by the Scheme Council, whose members are selected from the participating FIs and the Hub Operator. The Scheme Rules define the composition of the Scheme Council, as well as a range of other concerns.

Regulatory/Supervisory Oversight

Any Mojaloop deployment is of course subject to regulatory and supervisory oversight, according to the financial regulations of the territory in which it is deployed. Depending on the nature of the deployment, and of the FIs that are connecting to the Mojaloop Hub, this oversight might be provided directly by a country's financial regulator, or indirectly by a commercial bank on behalf of that regulator.

Interconnection

The most basic technical requirement is to interconnect participating FIs to the Hub, in a process known as onboarding. There are a variety of mechanisms available for onboarding FIs, including:

- Using the Mojaloop-defined, open source FSPIOP protocol, an asynchronous protocol that encompasses all phases of a Mojaloop transaction;
- Using a Mojaloop Connector, an open-source component that implements FSPIOP and provides a direct connection to an FI's core banking system. It is available for use with a number of core banking services;
- The open-source Payment Manager provides a self-onboarding capability for FIs, as well as a variety of tools for managing both the connection to the Hub, and the transactions routed through it.

All are available to FIs. Smaller FIs with less developed digital payments capacity are increasingly choosing Payment Manager.

Oracles

In the Mojaloop ecosystem, payments are addressed using an alias. An alias can be anything, such as an email address, a mobile phone number, or any other unique piece of information. An oracle is used to resolve aliases in order to identify the participants to a transaction. For example, a mobile phone number oracle can be used by the Mojaloop Hub to identify which FI is hosting the account for the beneficiary of a transaction. A Mojaloop deployment requires integration with at least one oracle.

Oracles are integrated with the Account Lookup Service (ALS) component of the Mojaloop Hub. When a transaction is initiated, the Mojaloop Hub uses the ALS to query all of the connected oracles to see which can resolve the payee alias (identify the FI hosting the account). Mojaloop then queries the payee's FSP to ask for further details, such as name, account number etc. The necessary details are then returned to the payer FI, in order to allow it to initiate a Mojaloop transaction.



Fraud

In general terms, fraud management, including customer due diligence, remains in the domain of the connected FIs. However, the Mojaloop Hub provides access to the stream of transactions being processed by the Hub, for analysis by an external fraud/AML monitoring service. This is in addition to an internal, case-by-case transaction monitoring capability.

Settlement

The Mojaloop Hub does not transmit money – instead it transmits all of the detail of a transaction, in a highly-secure manner, to all of the participants of that transaction. The money follows on behind, in a process called settlement, using a variety of approaches in order to maximize efficiency and reduce cost. During settlement, funds to cover the transactions that have occurred since the last settlement are transferred from debtors to creditors.

Various settlement models are supported, including gross settlement (settlement on a transaction-by-transaction basis) and net settlement (settlement of the resulting positions – credits minus debits – of all of the participants).

Settlement services are often provided by a country's central bank, but they can also be provided by a commercial bank under the supervision of the appropriate authority, according to the specific regulations of that country and the nature of the service being deployed.

To learn more about the Mojaloop Foundation, visit <http://mojaloop.io>