mojaloop

Mojaloop – ISO 8583 ecosystem Integration- Part II

Sending payments from ISO Payments Network to Mojaloop systems

Payment Switch Adaptor (PSA)

Proof of Concept

Abidjan September 2019

Agenda

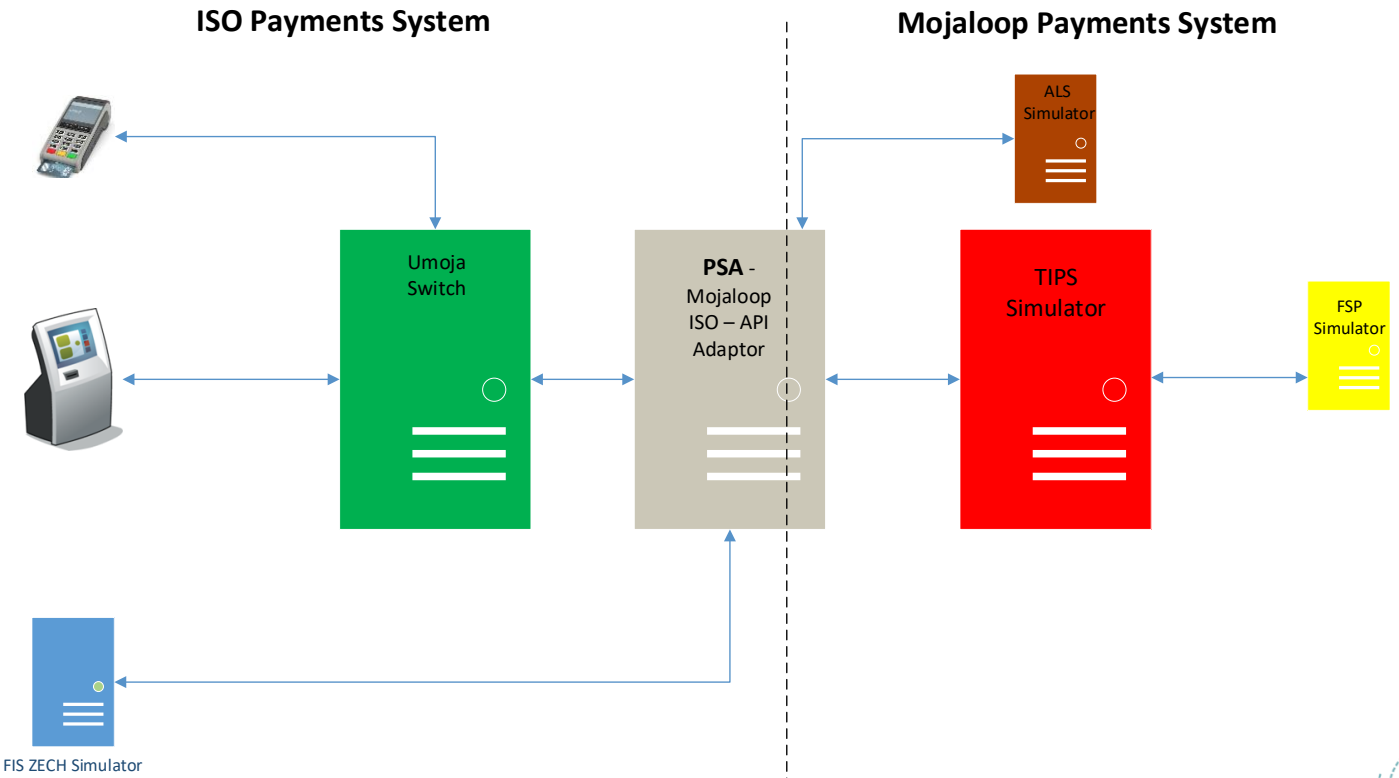
- Goals
- Ecosystem
- Scope
- Design Decisions
- Current Design
- How It Works
- Demonstration
- Community Contributions
- Next Steps

Goals of the POC

Demonstrate that integration of ISO 8583 based systems with Mojaloop could be done, based on the use cases as per below:

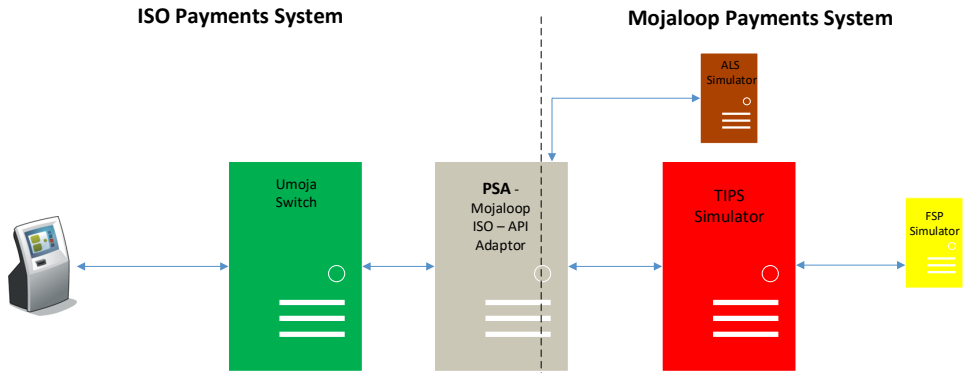
- **ATM-Initiated Cash-Out – Umoja Switch ISO8583-87**
- **POS – Merchant Pay Out – Umoja Switch ISO8583-87**
- **FIS/ZECH – ISO8583-93 Support**
- **OTP generation and validation**
- **ISO 8583 to Open API conversion**
  - **Added completion message to carry fulfilment**
- **ALS Integration**

Ecosystem


ISO Payments System
Mojaloop Payments System
ALS Simulator
Umoja Switch
PSA - Mojaloop ISO – API Adaptor
TIPS Simulator
FSP Simulator
FIS ZECH Simulator

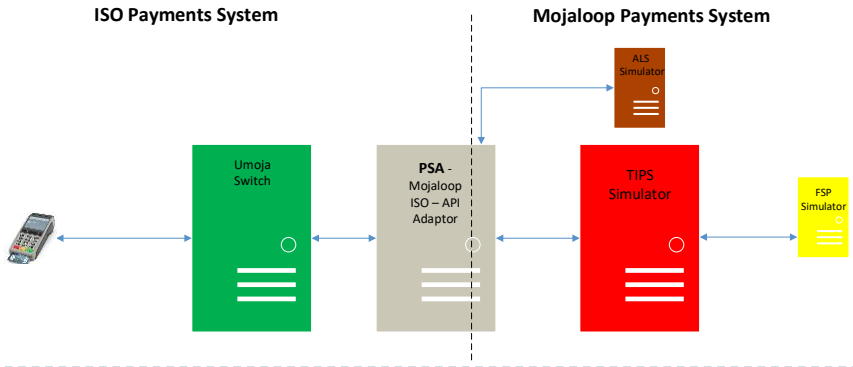
Scope - **ATM-Initiated Cash-Out**

1. Customer initiates a Cash-Out request through Umoja ATM from the customer account using MSISDN and the customer confirms the request by providing authentication (OTP) on ATM.
    - The customer pre-generates an OTP for cash-out and uses this OTP on ATM device to initiate ATM Cash-out.
2. Umoja Switch sends the transaction to ISO-OpenAPI adapter.
3. ISO-OpenAPI adapter converts the ISO message to Open API, performs account look up and sends the transaction to TIPS, which is sent to Payer FSP for authentication, validation and approval.
4. If the customer authentication is successful; then the customer's account will be debited at Payer FSP and Umoja account maintained at Payee FSP will be credited.
5. As a result, the customer receives cash from ATM.



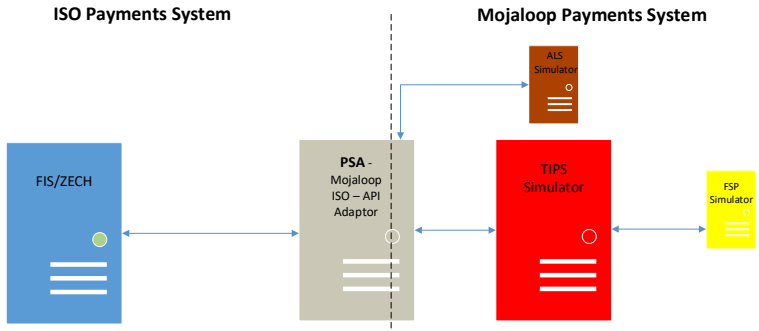
Scope – **Merchant -Initiated Pay-Out**

1. Customer initiates a Cash-Out request through Umoja ATM from the customer account using MSISDN and the customer confirms the request by providing authentication (OTP) on ATM.
    - The customer pre-generates an OTP for cash-out and uses this OTP on POS device to initiate Merchant Pay-out.
2. Umoja Switch sends the transaction to ISO-OpenAPI adapter.
3. ISO-OpenAPI adapter converts the ISO message to Open API, performs account look up and sends the transaction to TIPS, which is sent to Payer FSP for authentication, validation and approval.
4. If the customer authentication is successful; then the customer's account will be debited at Payer FSP and Umoja account maintained at Payee FSP will be credited.
5. As a result, the customer receives cash from the Merchant.



Scope – **FIS ZECH Initiated Transactions**

1. Customer initiates a Cash-Out request through the ZECH switch from the customer account using MSISDN and the customer confirms the request by providing authentication (OTP) on ATM.
    - The customer pre-generates an OTP for cash-out and uses this OTP on ATM device to initiate ATM Cash-out.
2. ZECH sends the transaction to ISO-OpenAPI adapter.
3. ISO-OpenAPI adapter converts the ISO message to Open API, performs account look up and sends the transaction to TIPS, which is sent to Payer FSP for authentication, validation and approval.
4. If the customer authentication is successful; then the customer's account will be debited at Payer FSP and ZECH account maintained at Payee FSP will be credited.
5. As a result, the customer receives cash from ATM.



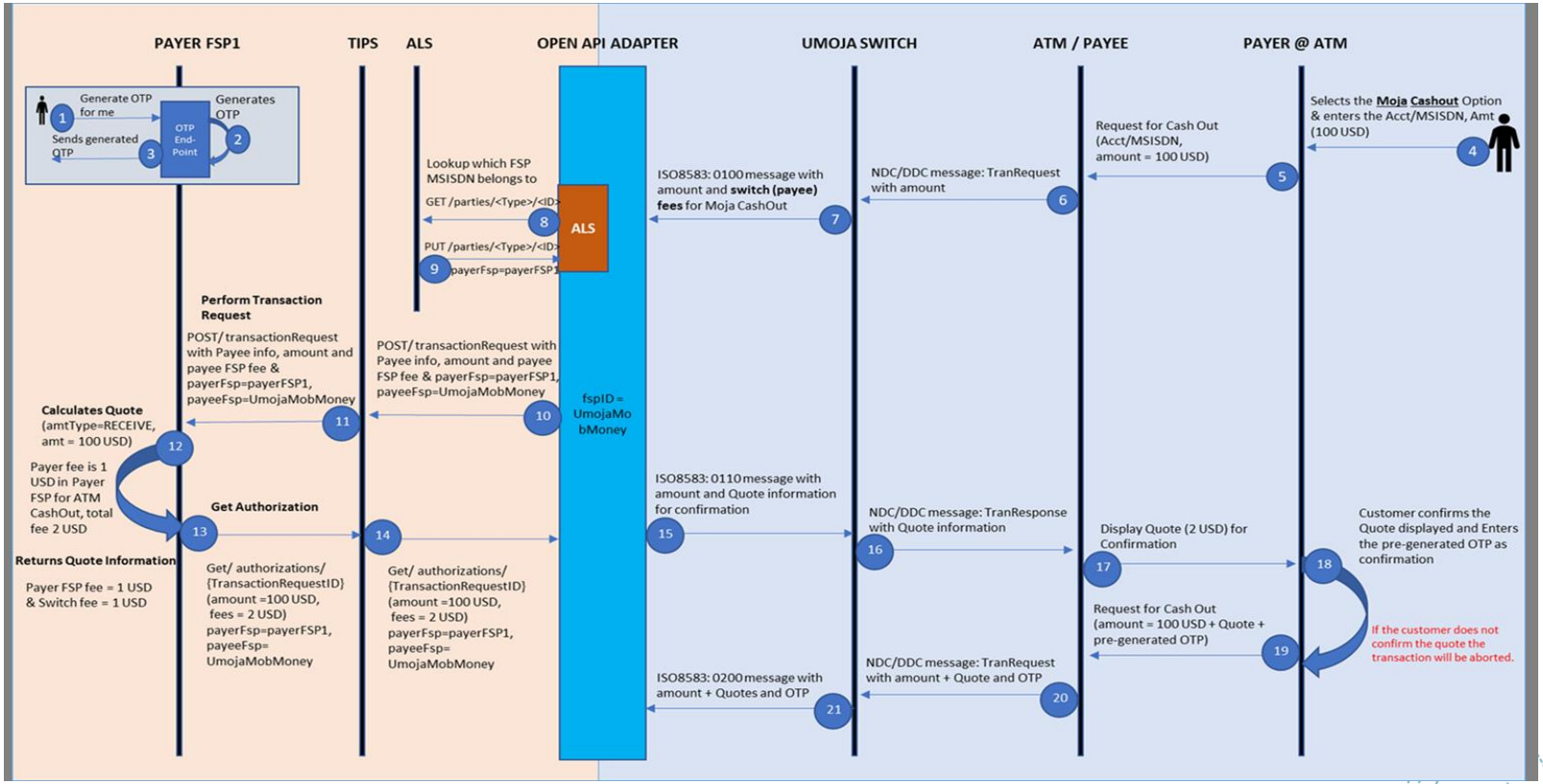
Design Decisions

- Use the FSP Simulator for Payer FSP.
- Umoja (Postilion) and ZECH (FIS) switches used for Payee
- ISO - Open API PSA to convert ISO to Open API.
- OTP Endpoint implemented on the Payer FSP Sim.
- PSA to integrate with ALS to lookup Payer FSP ID

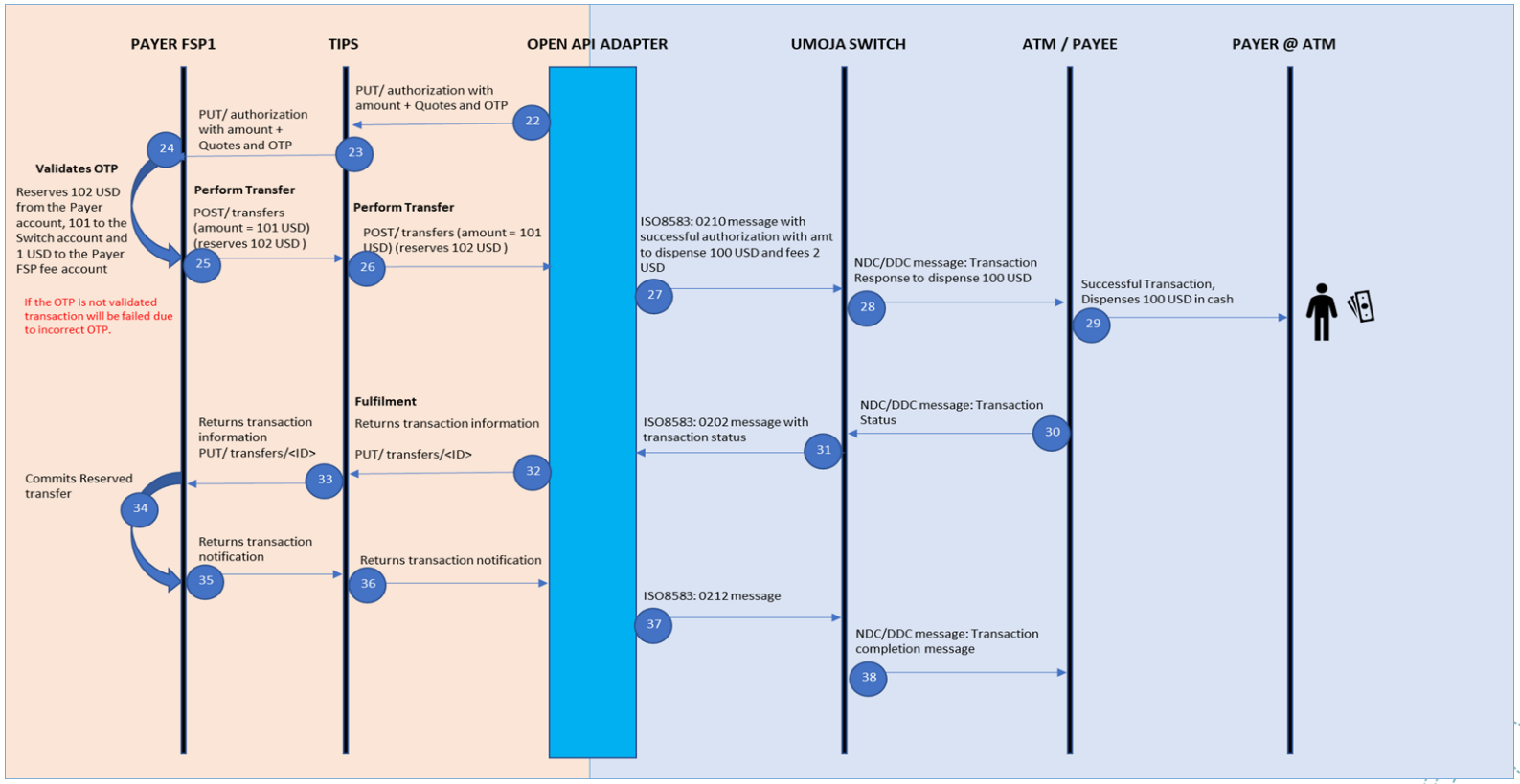
Current Design

- ISO - Open API PSA developed and implemented.
  - 8583-87 support
  - 8583-93 support
  - ALS lookup support
- OTP Endpoint to generate and validate OTP as per request from Originators.

How It Works - **ATM Initiated Cash Out - Request Leg**



How It Works - **ATM Initiated Cash Out - Authorization Leg**



How It Works - Steps

- Customer generates an OTP before initiating the transaction request from ATM/POS.
- The customer initiates Mojaloop transaction on the ATM/POS by entering their Mobile number and amount.
- The Customer will authenticate the transaction by entering pre-generated OTP
- Cash Out Request will be generated by ATM/POS and sent to Switch as 0100 message
- Switch sends the 0100/1100 transaction to the PSA.
- PSA converts 0100/1100 to Open API and performs the account look-up with ALS.
- After the Account lookup, the transaction request will be sent to TIPS and henceforth to the Payer FSP for authentication.
- The Payer FSP validates the transaction request and also calculate the Quote for the transaction.
- The calculated Quote will be sent back to the switch as a 0110/1110 and displayed on the ATM/POS for confirmation by the customer.
- Once confirmed by the customer, the switch sends the transaction to the PSA as a 0200/1200 message
- The PSA maps 0200/1200 message to Open API format and sends the transaction request to TIPS for authorization.
- TIPS forwards this to the Payer FSP and the successful response is returned to TIPS and back to the PSA.
- Adapter maps the successful response to ISO (DE 39=00/000) and returns the 0210/1210 to the switch.
- ATM dispenses the cash or the merchant pays out the cash, completion (0202/1220) is sent to the PSA, converts to fulfilment and hence commits the transfer.
- PayerFSP returns transfer notification, which is converted to 0212/1230 and back to the switch.

Demonstration

ATM Cash Out

- ATM transaction through the Umoja Switch – ISO8583-87

Merchant Pay Out

- Pay out by a merchant using a POS device – ISO8583-87

Zambian Electronic Clearing House

- ZECH initiated transaction – ISO8583-93

Community Contributions

ISO-Open API Adapter

- An adapter to process and convert ISO 8583 messages from ISO networks to Open API.
- ALS lookup functionality

OTP Endpoint

- An Endpoint to generate and validate OTP as per request from Originators.

Discussions board

- Documentation initiated with ISO to Open API mapping
- Explore the various integration scenarios & possibilities

Candidate Future Work

- Reconciliation Files
- Alternative settlement models
- Monitoring
- Documentation
- Reversals/Refund
- Produce production ready code for contribution to OSS

Candidate Future Work (Continued)

- OTP Security
- Integration into a hardware security device
- Fee and Quote configuration
- PSA integration into the Mojaloop project

  Load balancing and redundancy

https://github.com/mojaloop/**terminal-integration/ISO-OpenAPI**