



**MODUSBOX**

ModusBox Update  
September 2019

# ModusBox Updates

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- mojaloop SDK
- ModusBox Connection Manager (MCM)
- Open Source Mapper
- Simulator UI

# MCM Current Functionality

## End Point Management

Hub Ingress and Egress Entry  
DFSP Ingress and Egress Entry  
Entry Progress Monitoring and Updating

## Certificate Management

TLS (Client + Server) Certificate Hub and DFSP  
JWS Certificate upload and sharing  
Role Based Authentication  
Certificate Validation  
Certificate Signing (local CA)  
CSR Creation or upload  
CSR Progress Monitoring + Updating

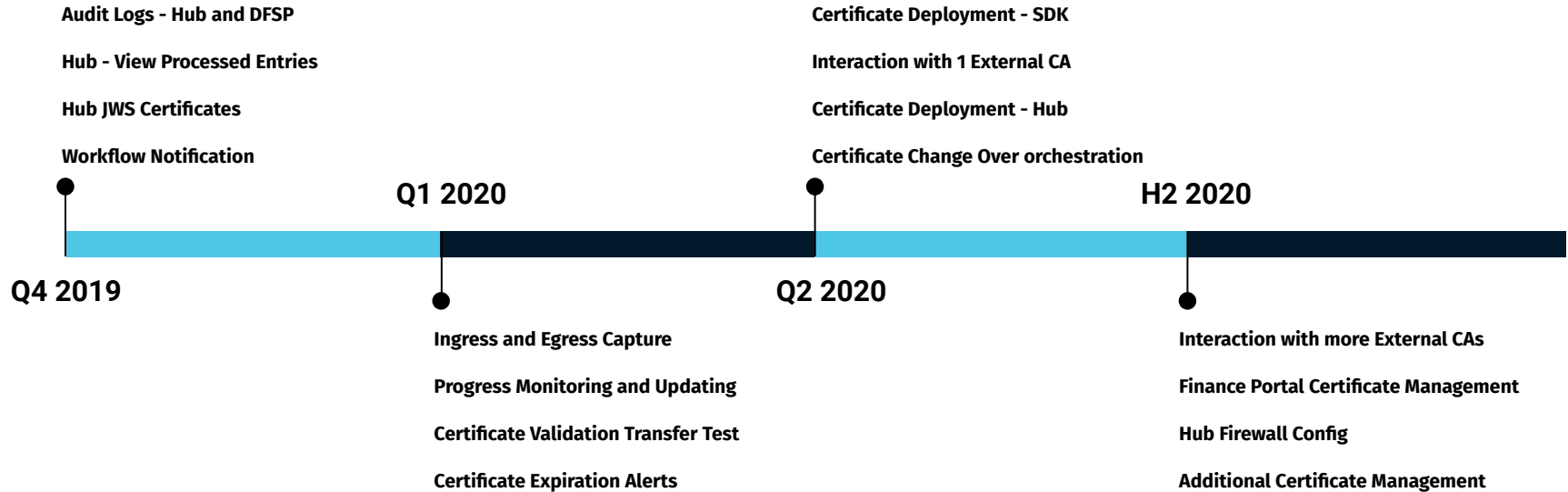
## Deployment Management

Docker Container for Portal and Server  
Helm Charts for CI/CD  
Release Management Scripting  
**WSO2 + 2FA integration + Password Reset**  
**Web Page to Add DFSP**

<https://github.com/modusbox/connection-manager-api>

<https://github.com/modusbox/connection-manager-ui>

# MCM Roadmap



## Open Source Mapper - why a mapper?

- Externalize message transformation from the code
- Normalizing data formats
  - “Canonical” or “domain” messaging pattern
  - “Standards” that allow variation with multiple external partners/system
- Customize without recompiling
- Better suited language for transformation than raw code
  - Functional Programming Model
  - Function libraries that simplify common scenarios
- Approachable for non-developers
  - Don't need typical developer IDE/tools
  - Can provide easy-to-use UI Mapper
  - Scripting language for advanced scenarios

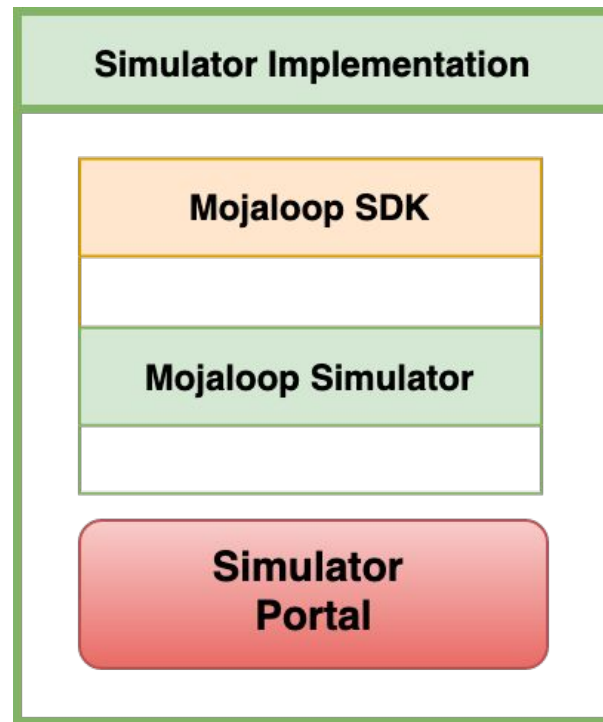
# Open Source Mapper

- Free, vendor-neutral (no lock-in!) mapper solution
  - Think like the modern XSLT
- Extends JSonnet, a templating language for generating config files.
  - Easy to use
    - JSON-like syntax (similar to Dataweave)
    - Can embed unit tests for validation
  - Rigorous Language design (designed and sponsored by Google)
    - Formal syntax, semantics, and type system
    - Highly modular
    - Predictable Performance
  - Broad Adoption and Use
- Will be released as Open Source (Apache 2) in the next few weeks

# Enhancing the Mojaloop Simulator

Making the Simulator more accessible at early stages and for those without a detailed understanding of Postman or CURL

<https://github.com/modusbox/mojaloop-simulator-ui>



# Mojaloop Simulator UI

Simulator Lab

Config Inbound

Outbound Send

Settings

Simulator Lab

Config Inbound

Outbound Send

Settings

Send

Simple Mode Advanced Mode

	Amount Type	Amount	Currency	To ID Type	To ID Value
Amounts	body.amountType Send	body.amount 100	body.currency USD	body.to.idType MSISDN	body.to.idValue 07394709063

Randomize

Send Transfer ↗

Response

General	Home Transaction ID homeTransactionId 7864d170-cfee-11e9-9da5-07b4727bce2a	Note note this is a test
From	Display Name from.displayName John Johnson	ID Type from.idType MSISDN
To	FSP ID to.fspId dfsp	ID Type to.idType MSISDN
	First name to.firstName Rob	Date Of Birth to.dateOfBirth 1971-05-02
Amount	Amount Type amountType SEND	Transaction Type transactionType TRANSFER
Transfer	Current State currentState WAITING_FOR_QUOTE_ACCEPTANCE	Transfer ID transferId 5d206023-6036-4d37-a93b-35191c2f1a89
Quote	Payee FSP Fee Amount quoteResponse.payeeFspFeeAmount 5	Payee FSP Fee Currency quoteResponse.payeeFspFeeCurrency USD
	Quote Amount quoteResponse.transferAmount 100	Quote Currency quoteResponse.transferAmountCurrency USD
	Payee FSP Commission quoteResponse.payeeFspCommissionAmount 5	Payee FSP Commission quoteResponse.payeeFspCommissionCurrency USD
	Quote ID quoteId d3bf6e72-0261-4781-8257-881678eace47	Expiration quoteResponse.expiration 2019-09-05T15:33:41.443Z
	IP Packet quoteResponse.ipPacket AYIDEAAAAAACCG...	Condition quoteResponse.condition 3e549WachzQJTKgA...

Send

Simple Mode Advanced Mode

General	Name name Test	Operation operation Post Transfers
Transfer	Home Transaction ID homeTransactionId 7864d170-cfee-11e9-9da5-07b4727bce2a	Note note this is a test
Amounts	Amount Type body.amountType Send	Amount body.amount 100
	Currency body.currency USD	Transaction Type body.transactionType TRANSFER
From	From ID Type body.fromIdType MSISDN	From ID Value body.fromIdValue 123456
	From Display Name body.fromDisplayName John Johnson	
To	To ID Type body.toIdType MSISDN	To ID Value body.toIdValue 07394709063

Randomize

Send Transfer ↗

Response

General	Home Transaction ID homeTransactionId 7864d170-cfee-11e9-9da5-07b4727bce2a	Note note this is a test
From	Display Name from.displayName John Johnson	ID Type from.idType MSISDN
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Amount	Amount Type amountType SEND	Transaction Type transactionType TRANSFER
Transfer	Current State currentState WAITING_FOR_QUOTE_ACCEPTANCE	Transfer ID transferId 5d206023-6036-4d37-a93b-35191c2f1a89
Quote	Payee FSP Fee Amount quoteResponse.payeeFspFeeAmount 5	Payee FSP Fee Currency quoteResponse.payeeFspFeeCurrency USD
	Quote Amount quoteResponse.transferAmount 100	Quote Currency quoteResponse.transferAmountCurrency USD
	Payee FSP Commission quoteResponse.payeeFspCommissionAmount 5	Payee FSP Commission quoteResponse.payeeFspCommissionCurrency USD
	Quote ID quoteId d3bf6e72-0261-4781-8257-881678eace47	Expiration quoteResponse.expiration 2019-09-05T15:33:41.443Z
	IP Packet quoteResponse.ipPacket AYIDEAAAAAACCG...	Condition quoteResponse.condition 3e549WachzQJTKgA...





# Lessons from Onboarding DFSPs

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6 steps to Technical onboarding

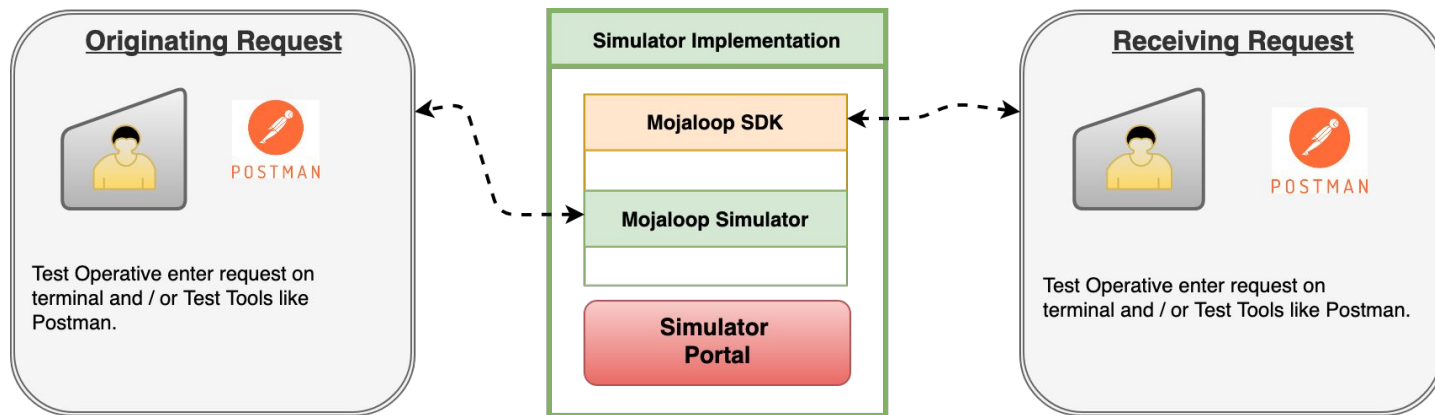
# Testing Implementation Environment

## Step 1

Local Simulator implementation.

## Objective

Prove that the local environment is capable of running the Simulator in a Docker container, which is verifiable via Postman.



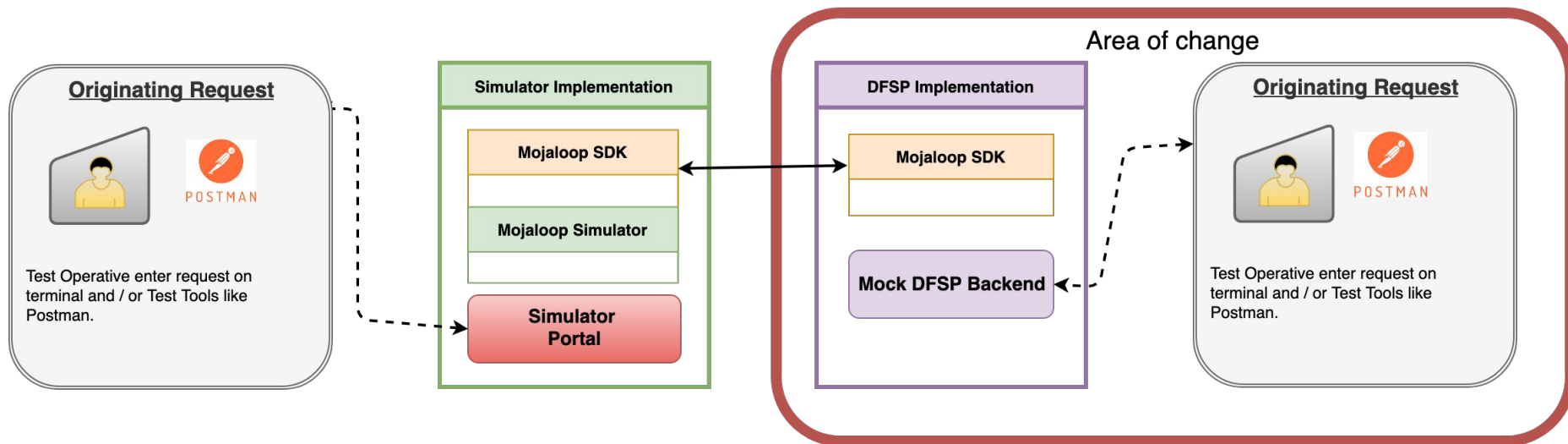
# Exploring Capabilities of Scheme Adapter

## Step 2

Single Simulator implementation with SDK.  
Mock DFSP Backend with SDK.

## Objective

Prove that by processing requests via the Simulator, through the SDK, the DFSP has a local SDK working properly



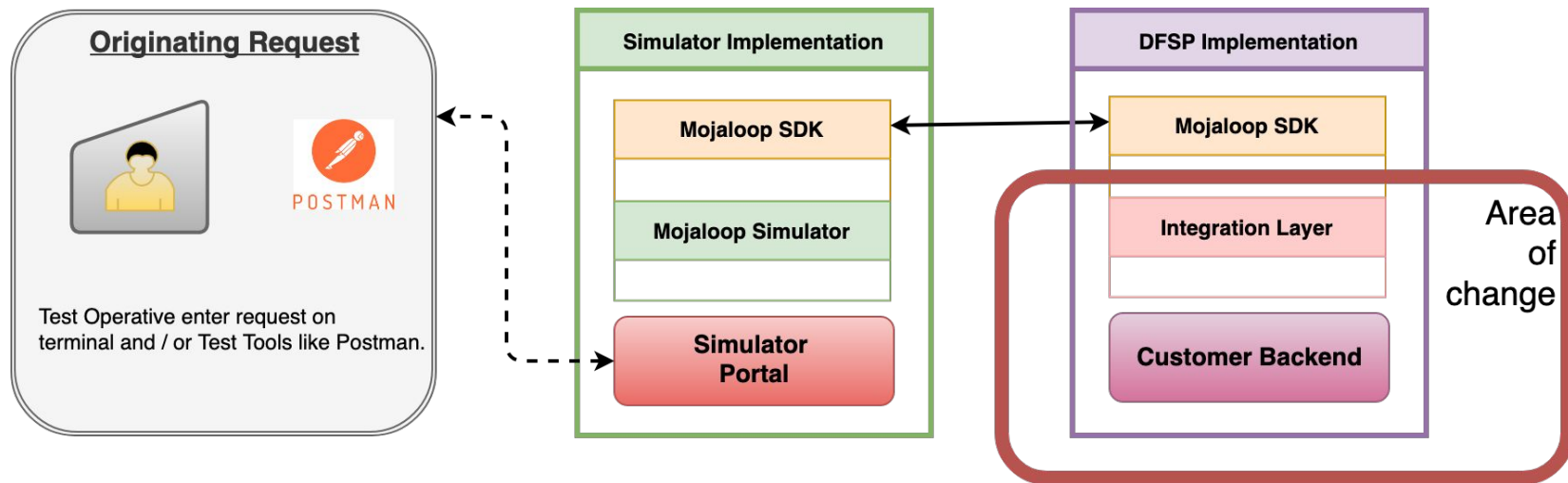
# Interacting with a DFSP Backend

## Step 3

Single Simulator implementation with SDK.  
DFSP with SDK, Integration Layer and Customer Backend.

## Objective

Prove that by processing requests via the Simulator, we can demonstrate a full end to end scenario - completing a payment via the Customer Backend.



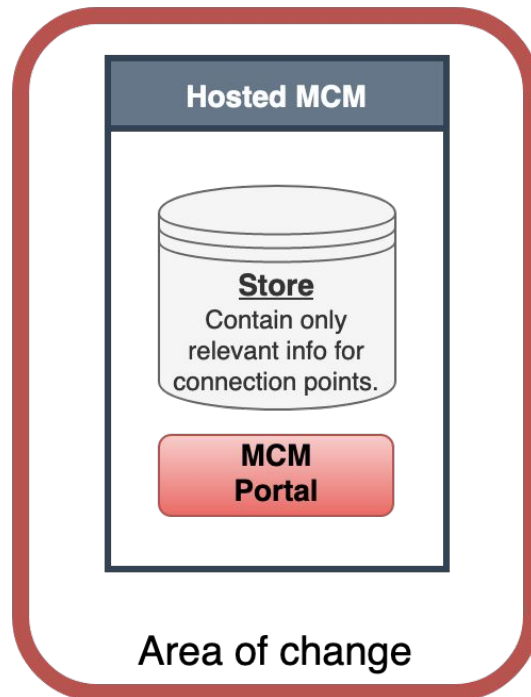
# Securing the Connection with ModusBox Connection Manager

## Step 4

Implementing the Connection Manager functionality. Connection Manager is maintained manually via a Web Portal.

## Objective

FSP Provides their Security Information



# Moving to Cloud-Hosted Environment

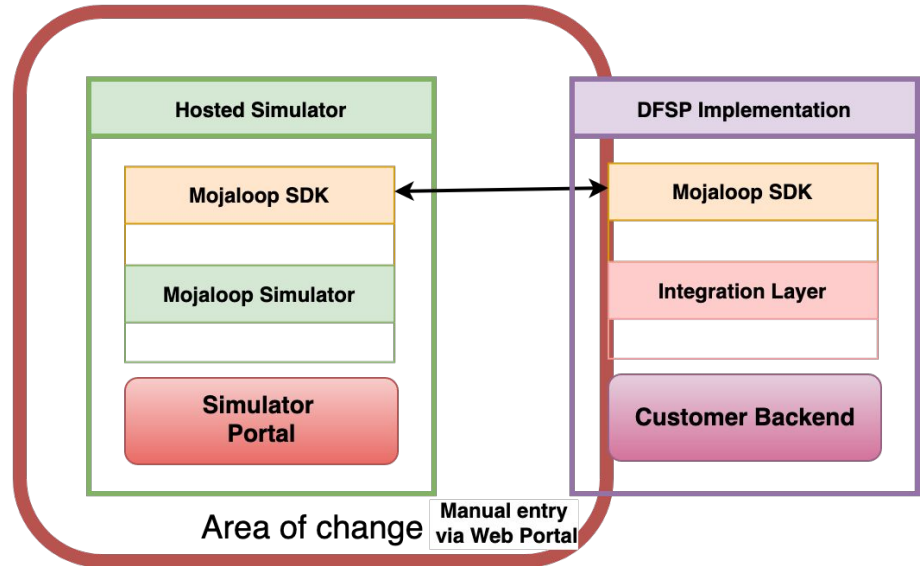
## Step 5

Hosted Simulator workbench.

DFSP implementation with Customer Backend integration.  
Connection Manager functionality enabled. Connection Manager is maintained manually via a Web Portal.

## Objective

Prove that the local environment is capable of connecting to the Hosted Simulator  
FSP Provides their Security Information  
Hub Operator can observe testing



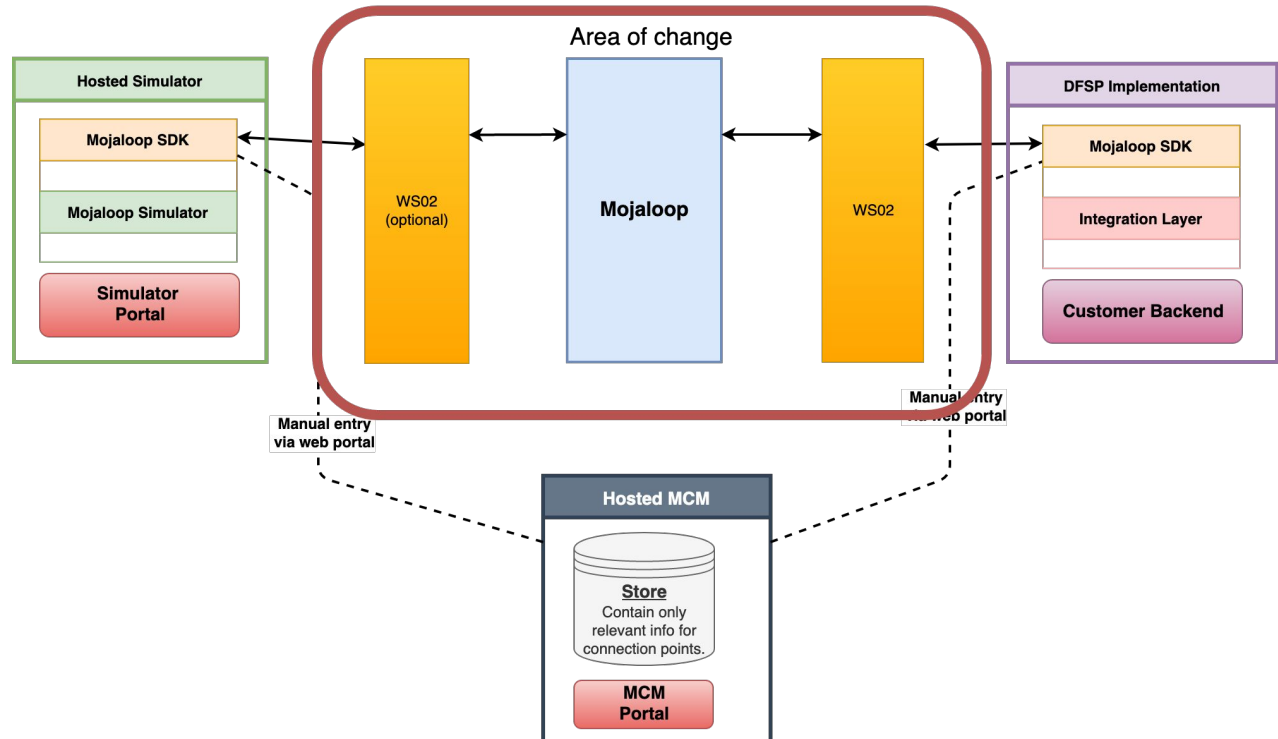
# End to End Testing

## Step 6

Complete Hosted workbench.

## Objective

Introduce WS02 and Mojaloop on the hosted environment to provide a complete production ready experience.



1. A Hosted Environment to allow a DFSP to test integrating with Mojaloop
2. Currently being tested with a number of Partners
3. Being Used to Support the Include Everyone Hackathon
4. Due for Public release later this year

*Contact us if you need early access*





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Thank You