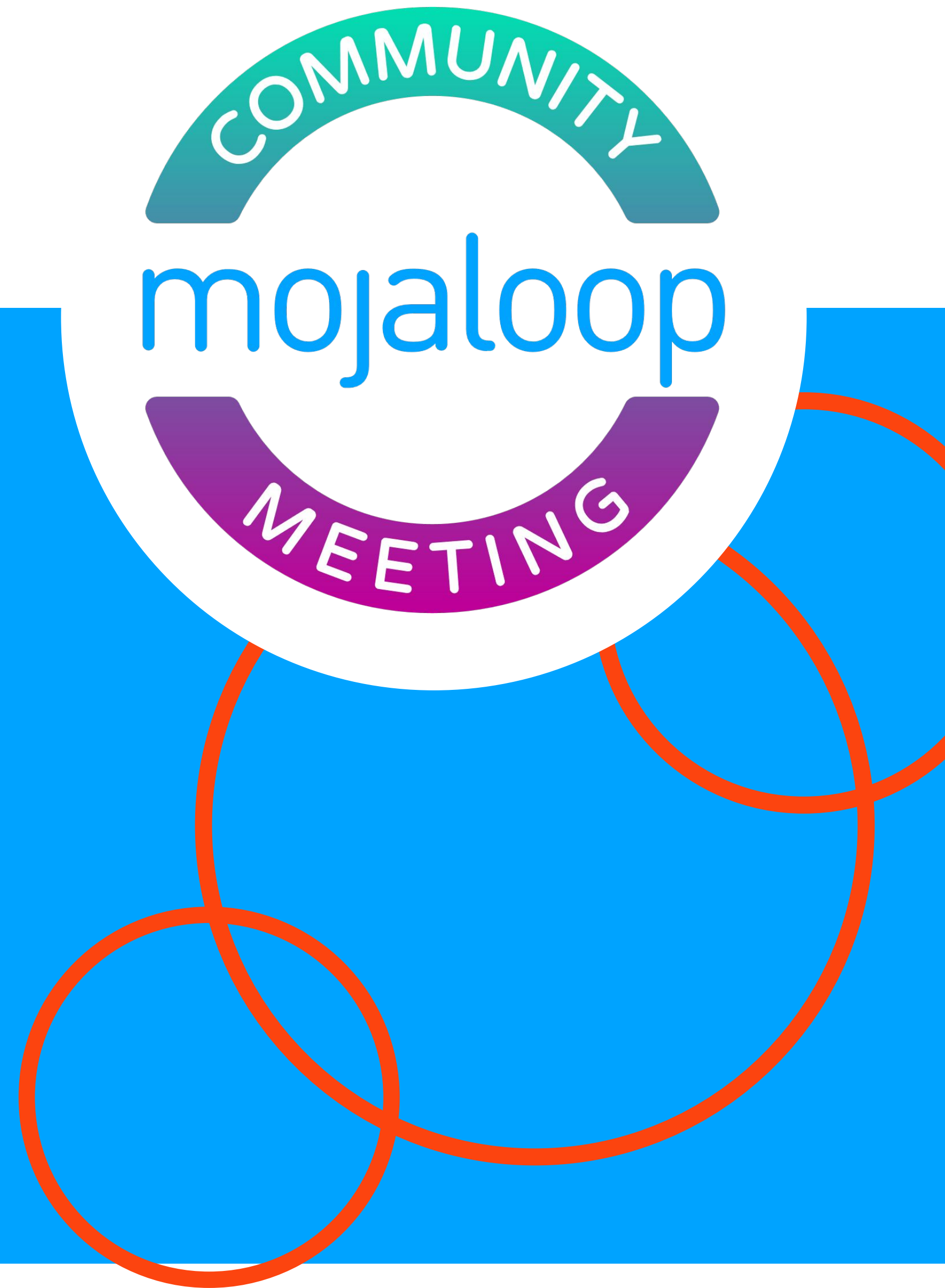


Currency conversion in Mojaloop

Progress report and review

Aung Thaw Aye, Paul Baker, Michael Richards





Introduction

Problem statement

We want a solution which will:

- Support either wholesale or PVP conversion
- Support conversion initiated by either the creditor or the debtor party
- Allow participants to indicate to each other which currencies their customers' accounts are denominated in.
- Allow transfers which do not include currency conversion to work as they do now.

Support wholesale or PVP conversion

- For wholesale conversion:
 - The conversion process itself results in the assignment of funds:
 - A transfer from the requesting DFSP to the FXP in the source currency.
 - A transfer from the FXP to the requesting DFSP in the target currency.
- For PVP conversion:
 - Funds are not reserved or assigned unless and until the associated transfer completes successfully.
 - Funds are assigned as follows:
 - A transfer from the debtor DFSP in the associated transfer to the FXP in the source currency.
 - A transfer from the FXP to the creditor DFSP in the associated transfer in the target currency.
- So we might see them as related to each other by using the following formula:
 - *If the conversion is a PVP conversion, then replace the requesting DFSP with the debtor and creditor DFSP for the associated transfer.*

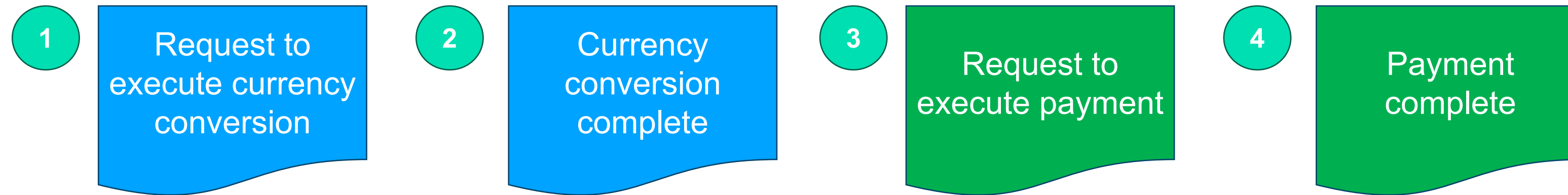
FX Messages

- Currency conversion will result in the hub receiving two sets of messages:
 - One set relates to the currency conversion
 - One set relates to the payment itself
- In the case of conversion via a reference currency, there will be three sets of messages:
 - One set relates to the first currency conversion (from sending currency to reference currency)
 - One set relates to the second currency conversion (from reference currency to receiving currency)
 - One set relates to the payment itself (in the reference currency)
- These messages are received in *different sequences* depending on which party is requesting the currency conversion.
- Each currency conversion will contain a *determiningTransferId* field.
 - This field contains the transaction ID of the payment for which it is a currency conversion

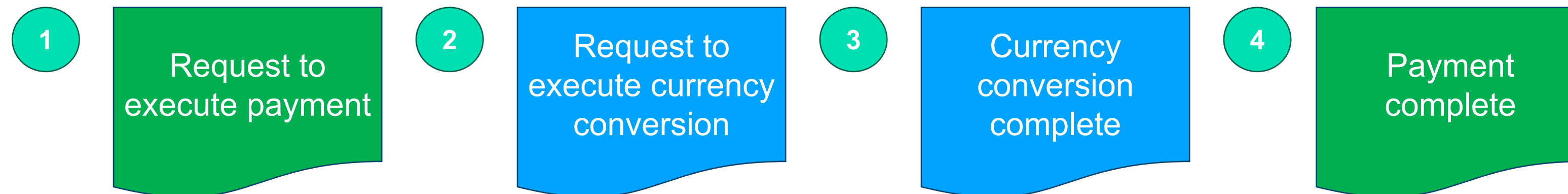
Message sequences in different use cases



1. Conversion is requested by the debtor party



2. Conversion is requested by the creditor party



3. Conversion goes through a settlement currency





The FX Message is fully aligned with Mojaloop Invariants

- The completion of the payment is always the last message in the sequence
- Request and complete messages for currency conversion always follow each other directly
- Each payment or conversion execution request message is stored with the determining transfer's transaction ID attached
- Each completion message should be checked for approval and signature integrity
 - Failure should result in the cancellation of every part of the payment
 - Success is recorded against the action's record in the switch
- This allows us to build a set of related actions, in which the last action will always be the successful completion of the determining transfer



API definition

Status



- Technical definitions are complete.
- Documentation has been revised and is being reviewed.
- API definitions and documentation are common across code versions.

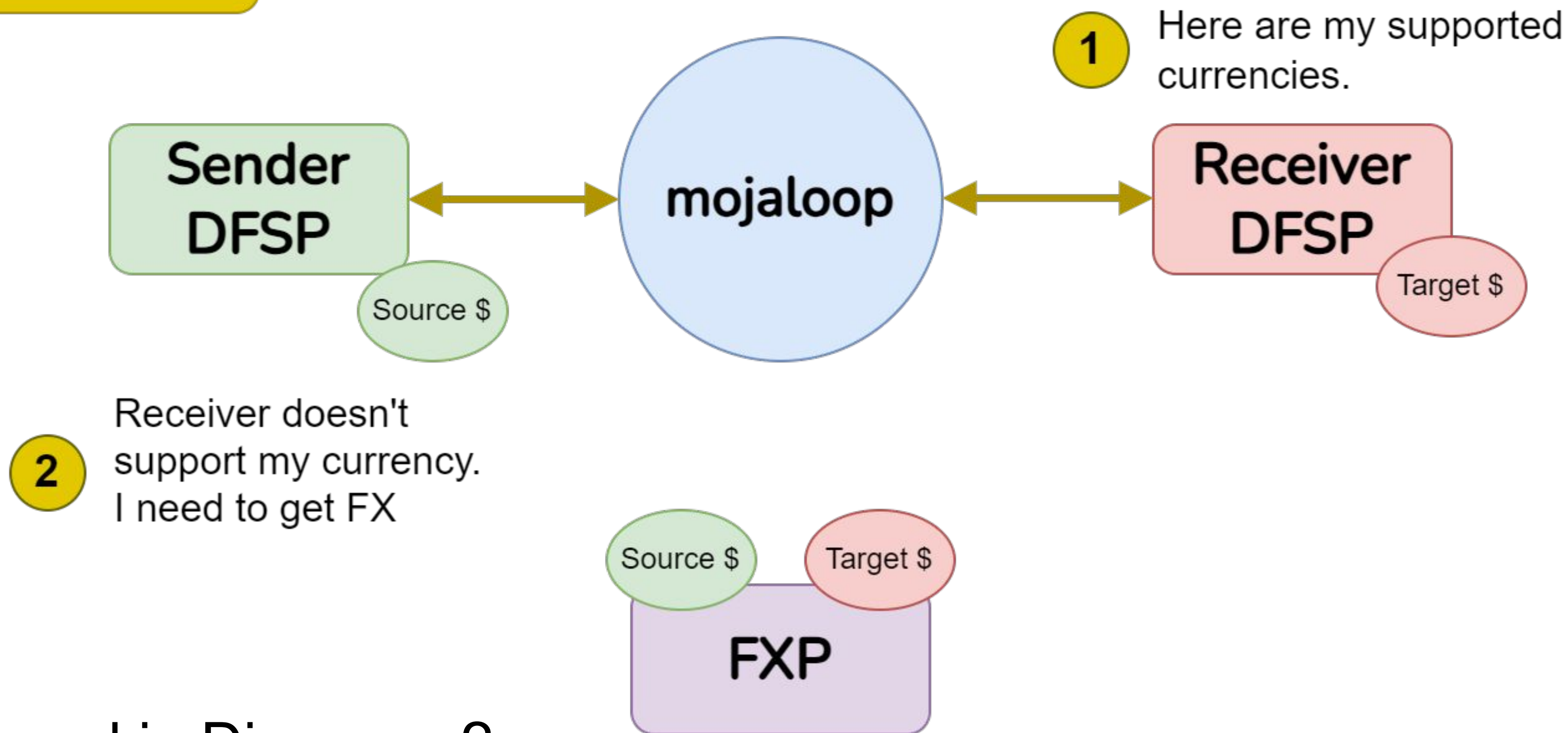


FX Marketplace (Epic #3552)

Demonstration

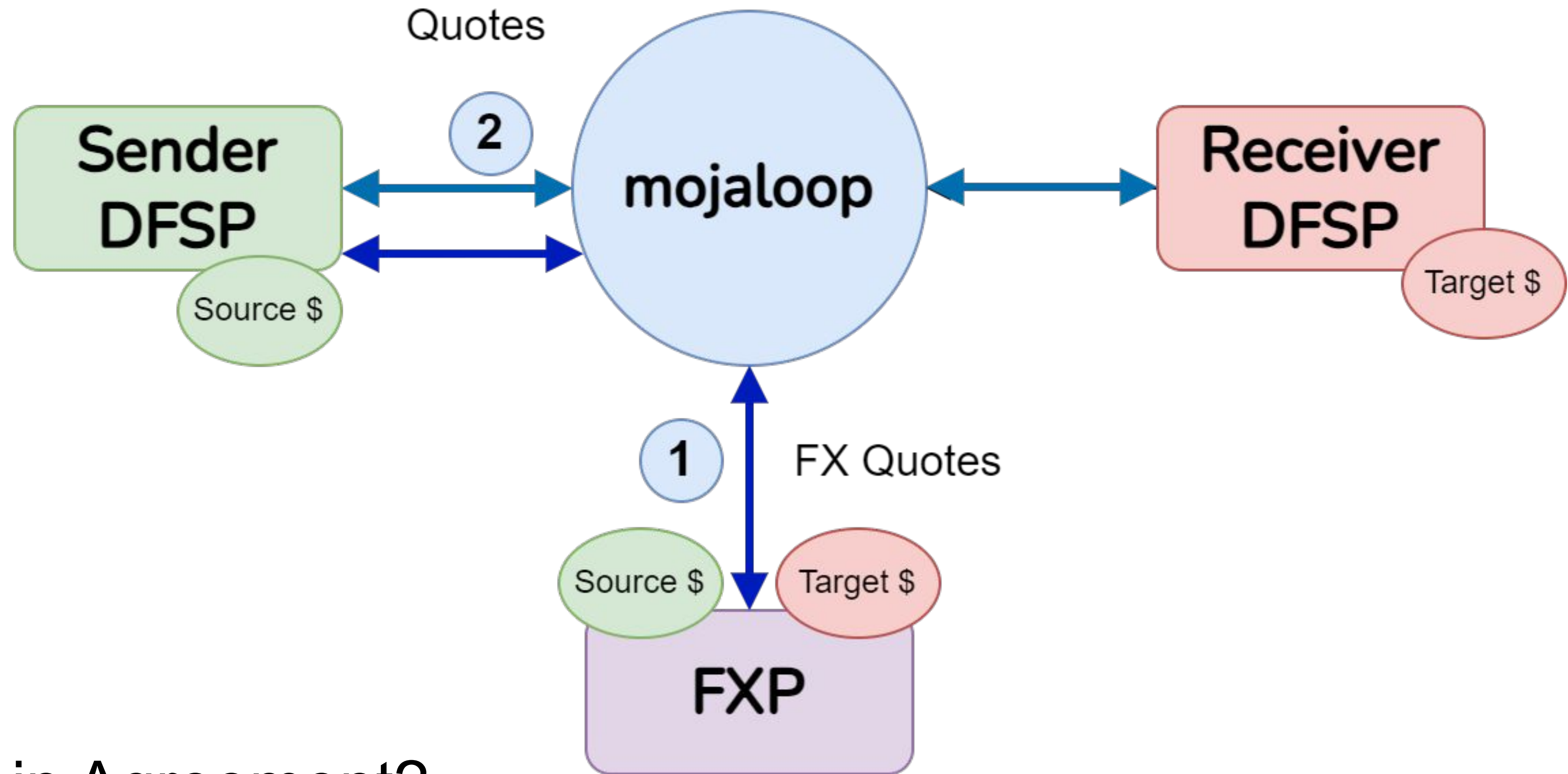
- Show how existing participants integrations can now send cross currency payments.
- Show how Foreign Exchange Providers can sell their services as Mojaloop participants.

Discovery



What changed in Discovery?

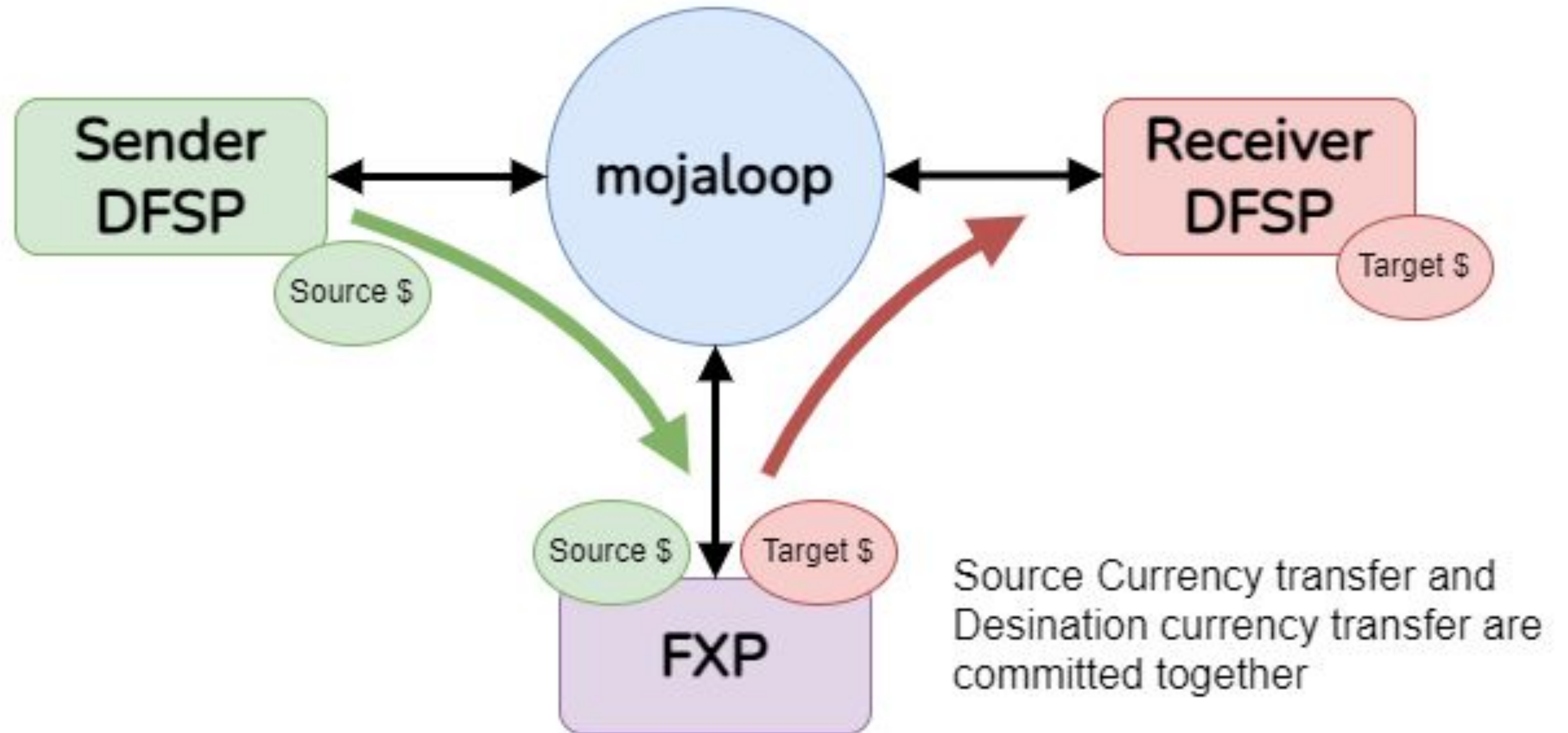
Agreement



What changed in Agreement?

Transfers

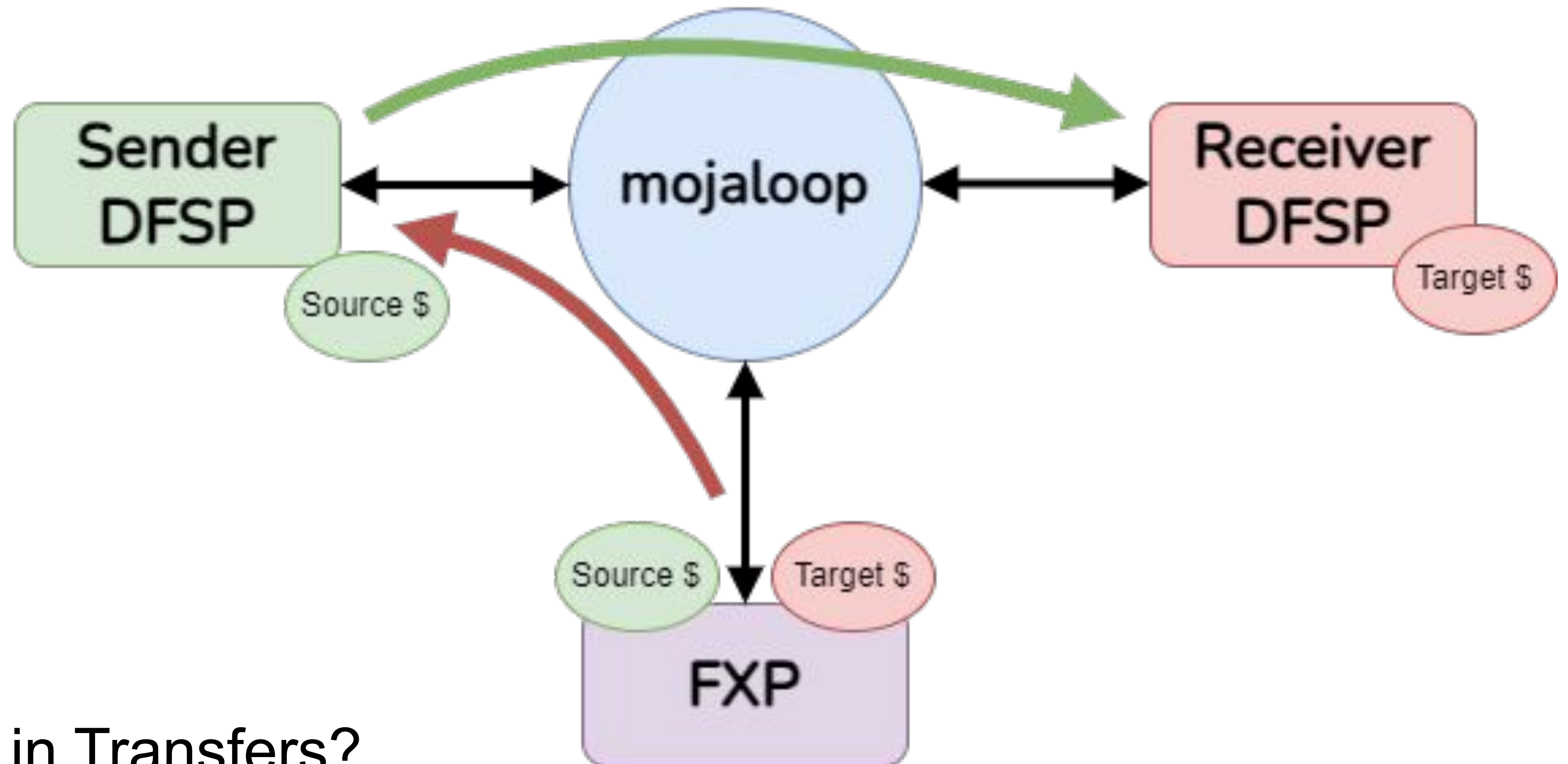
Obligations



What changed in transfers ?

Transfers

Transaction - flow



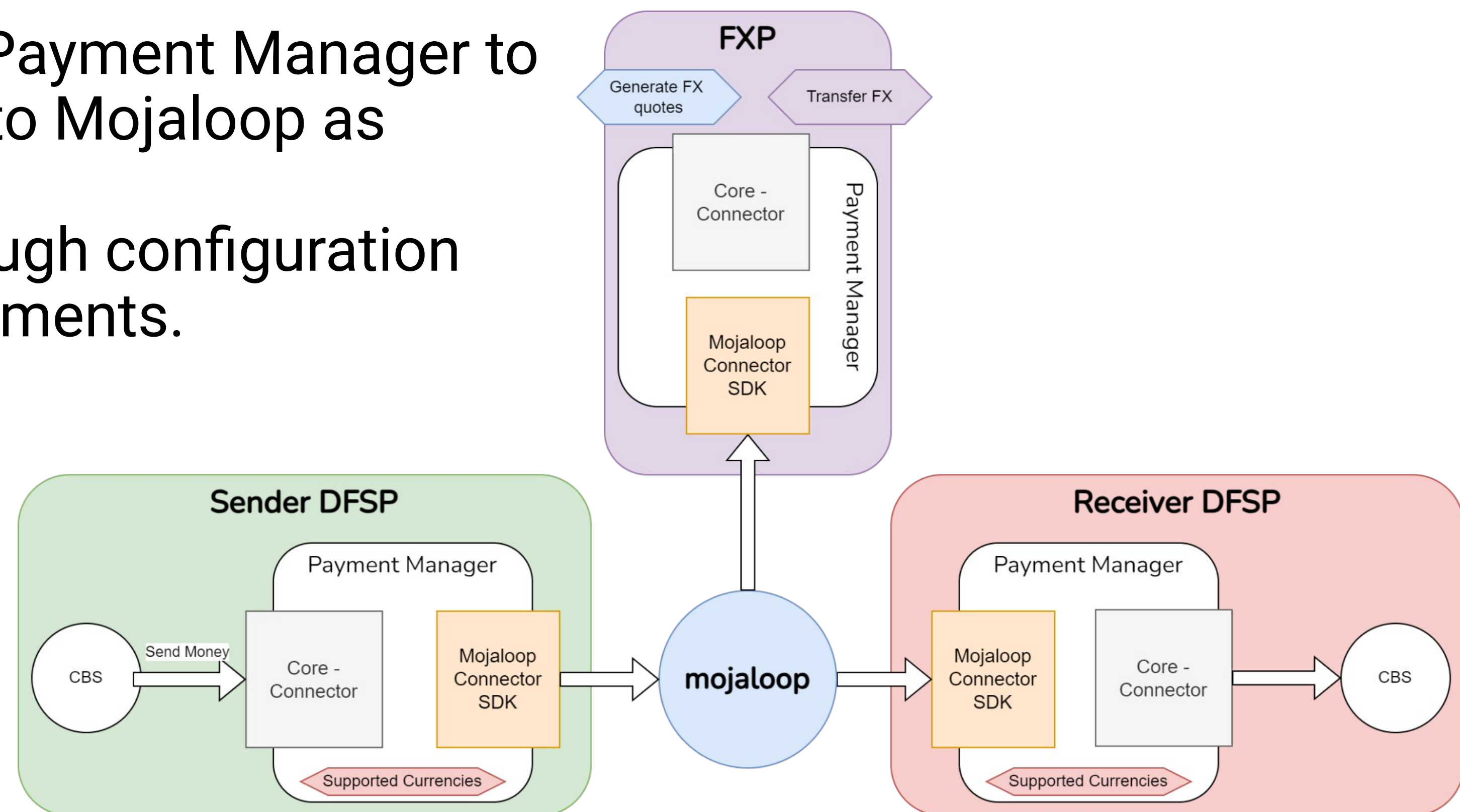
What changed in Transfers?

Mojaloop Connector & Payment Manager

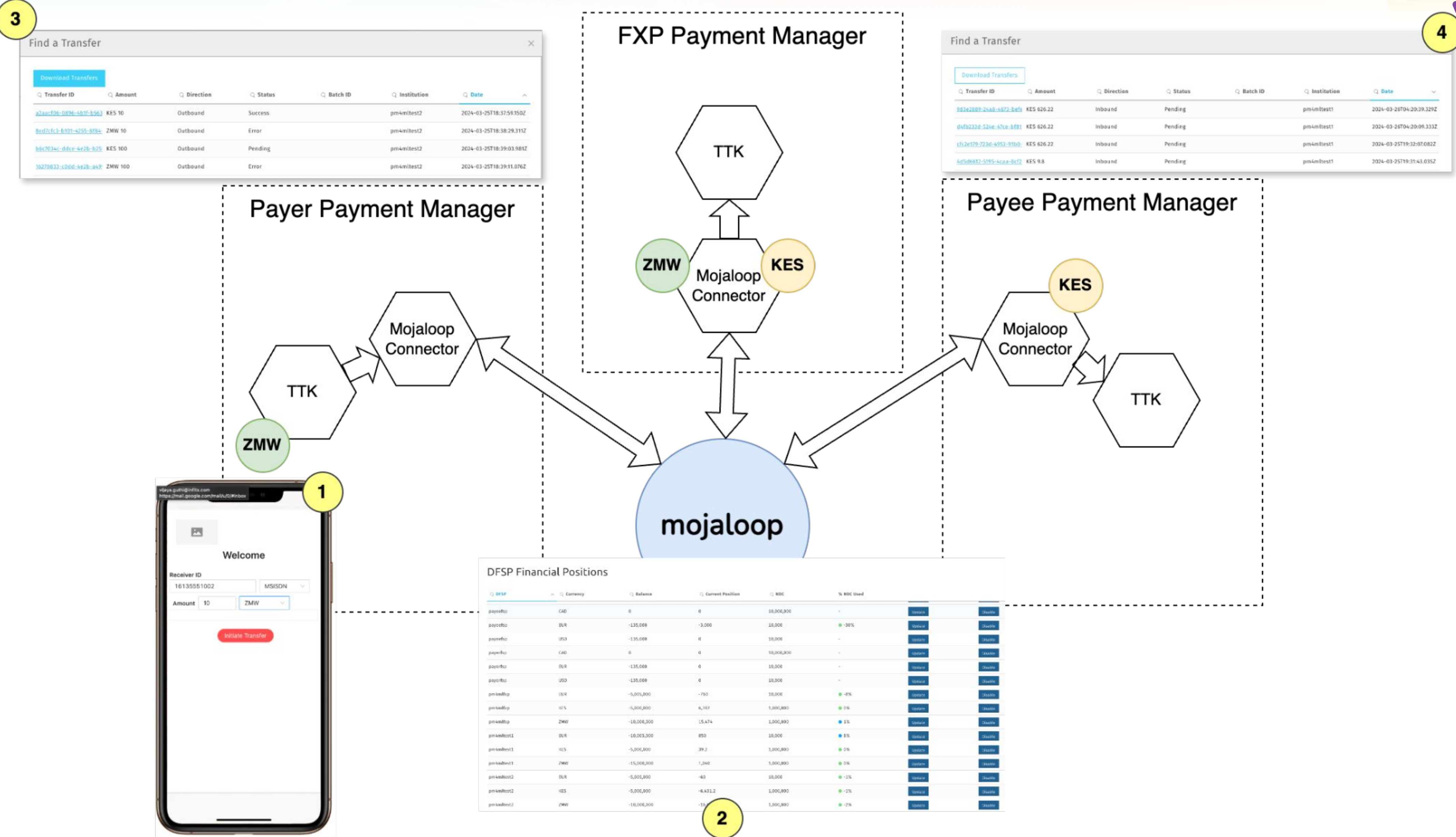


Mojaloop Connector has been enhanced to support FX for DFSP integrations and FXP integrations.

1. New FXP participants can use Payment Manager to build integrations and connect to Mojaloop as Foreign Exchange Providers.
2. Existing DFSP integrations through configuration can support cross currency payments.



Demonstration - FX Transfer



What is next?



Hardening of the functionality

- This is already underway with the first component completed

User interface need improvements for FX transfers and the role of the Financial Service Provider

- Finance Portal - tracing a transfer
- Payment Manager

Thanks to Contributors

- Eugen Klymniuk
- Kevin Leyow
- Paul Baker
- Steven Oderayi
- Vijay Kumar G





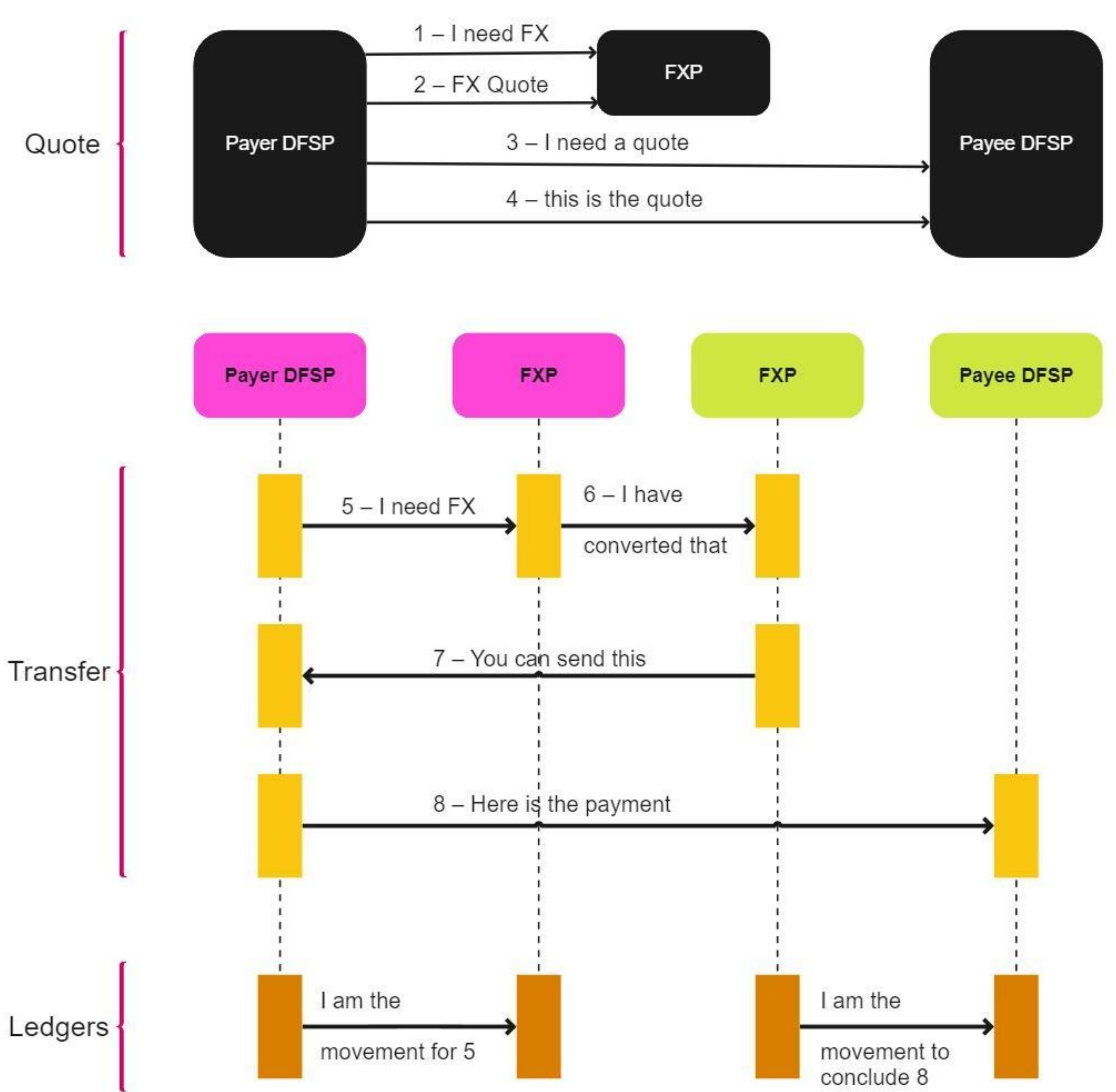
FX sub-workstream (Vnext)

26.03.2024

Focus Use Case

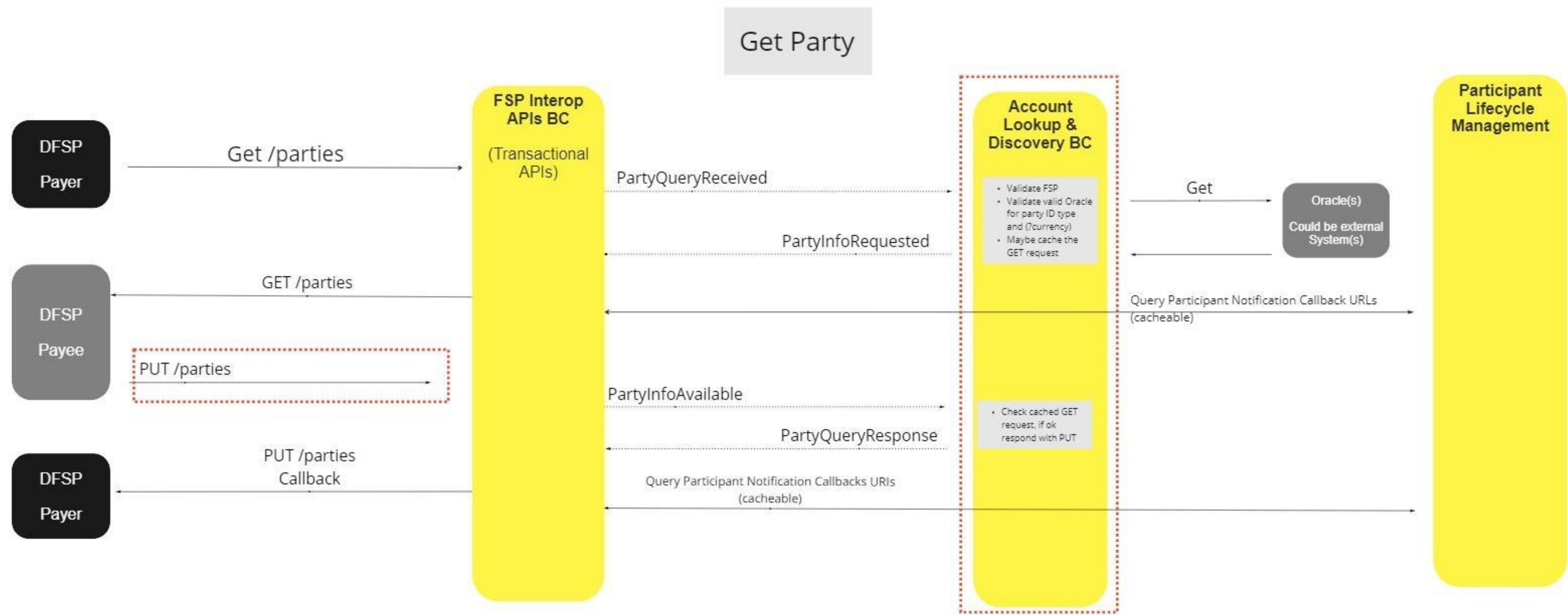


Currency conversion is being performed by the payer DFSP
(SEND amount type)



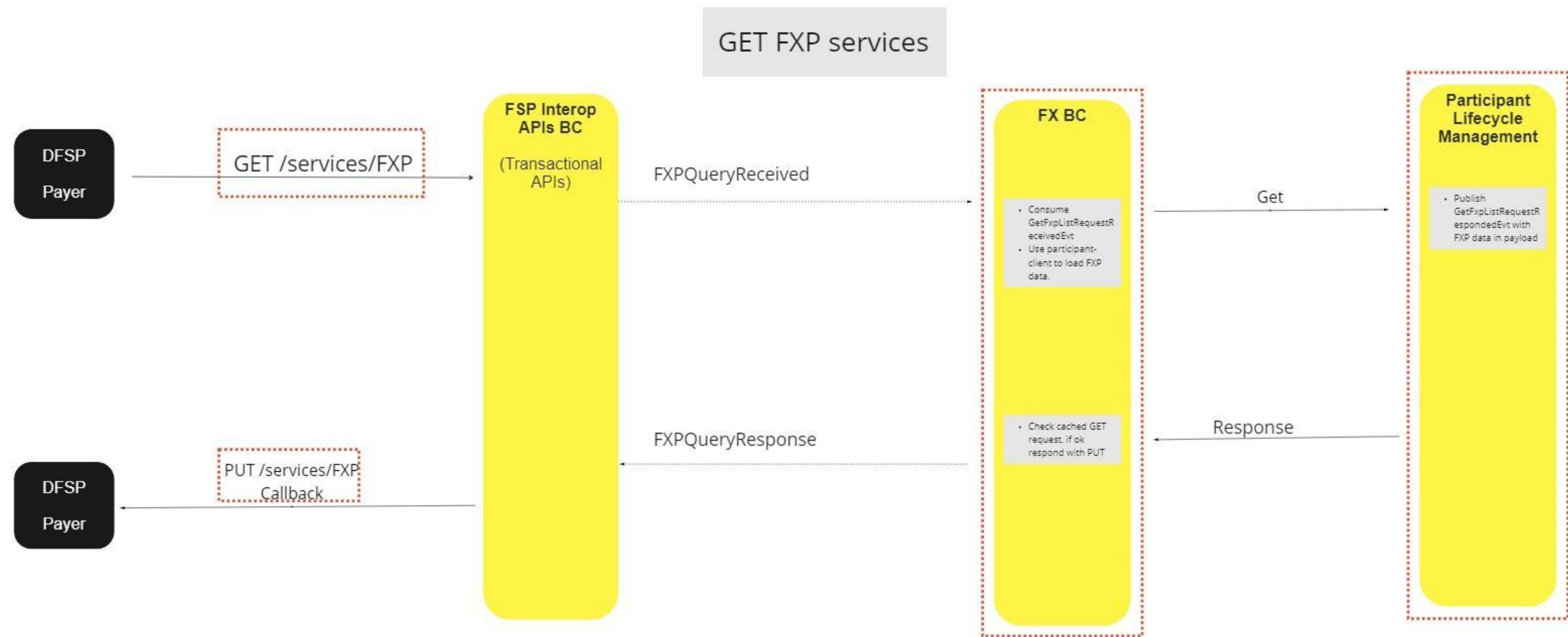
Discovery Phase

<https://app.zenhub.com/workspaces/mojaloop-project-59edee71d1407922110cf083/issues/gh/mojaloop/project/3723>



Currency Conversion Phase

<https://app.zenhub.com/workspaces/mojaloop-project-59edee71d1407922110cf083/issues/gh/mojaloop/project/3737>

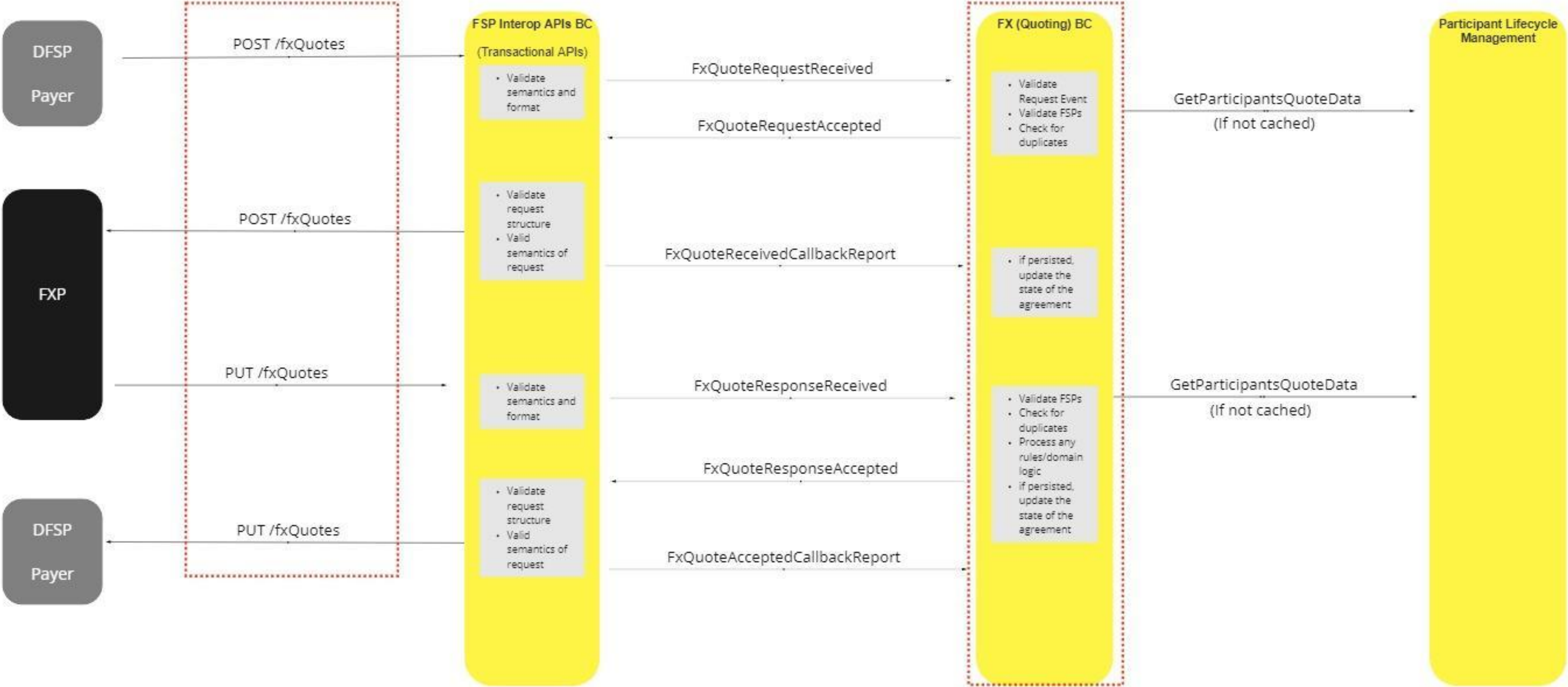


Quote Phase

<https://app.zenhub.com/workspaces/mojaloop-project-59edee71d1407922110cf083/issues/gh/mojaloop/project/3753>
<https://app.zenhub.com/workspaces/mojaloop-project-59edee71d1407922110cf083/issues/gh/mojaloop/project/3756>

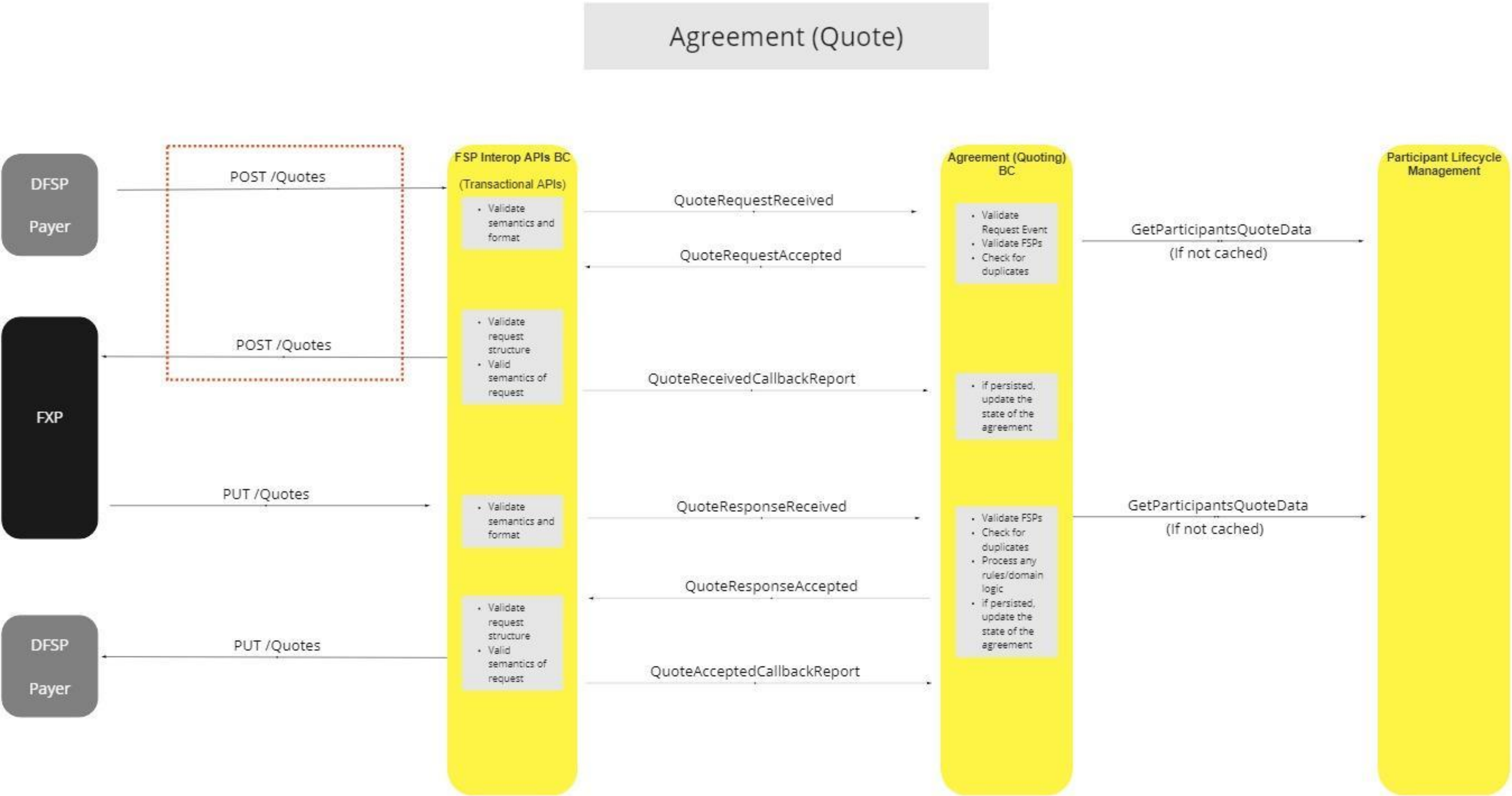


Agreement (fxQuote)

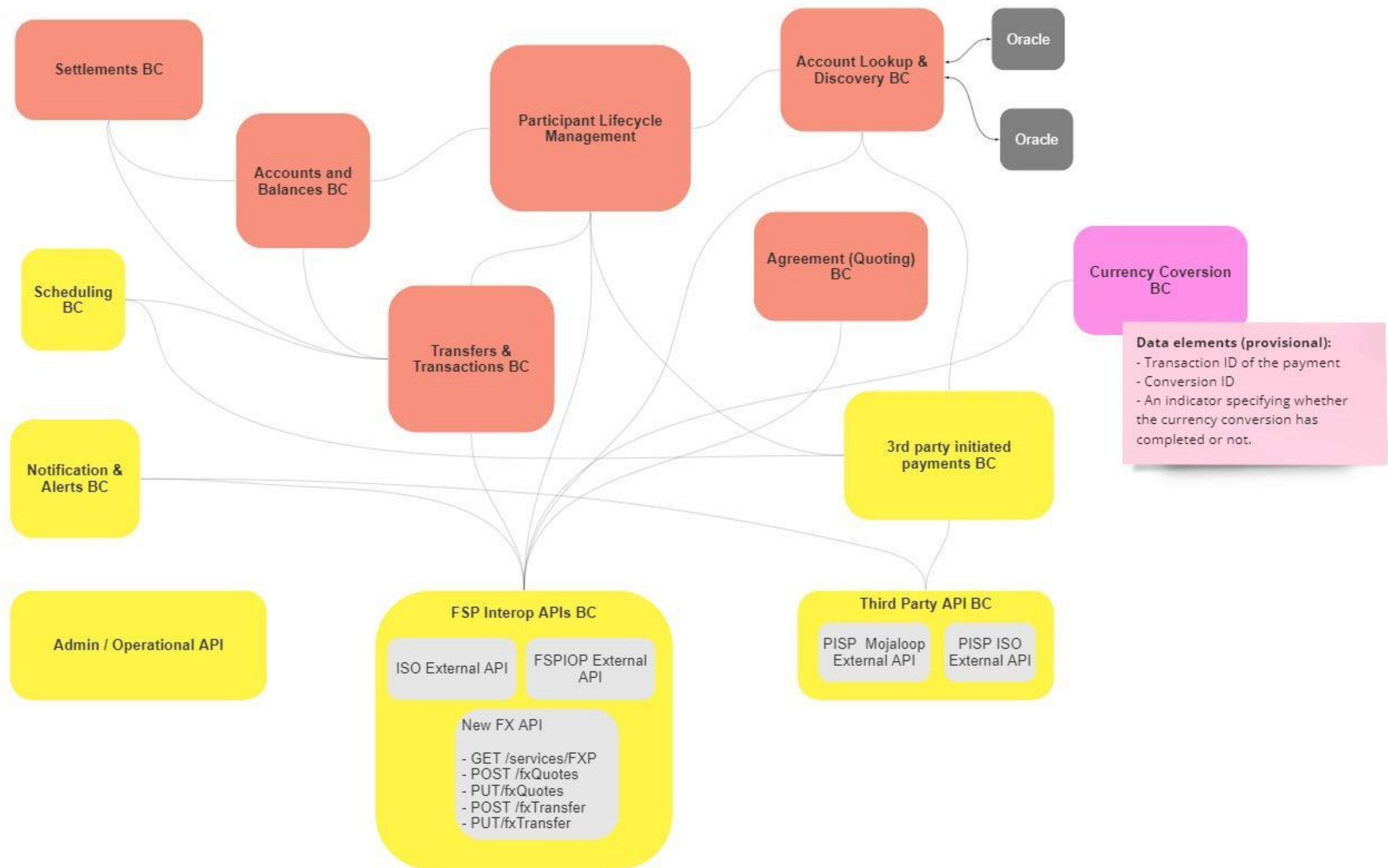


Quote Phase

<https://app.zenhub.com/workspaces/mojaloop-project-59edee71d1407922110cf083/issues/gh/mojaloop/project/3755>



High Level Architecture



Changes to be made in each phases



□ Discovery Phase

- Changes in FSPIOP (PUT /parties's body data to support "supportedCurrencies")
- Changes in Account Lookup & Discovery BC

□ Currency Conversion Phase

- Changes in FSPIOP (new **GET /services/FXP**)
- Adding new FX BC
- Changes in **Participant Lifecycle Management BC**

□ Agreement Phase

- Changes in FSPIOP (Post/Quote request body & new fxQuotes endpoints)
- Changes in **FX (Quoting) BC**

□ Transfer Phase

- Changes in FSPIOP (transaction object and new fxTransfers endpoints)
- Changes in BC (TBD)

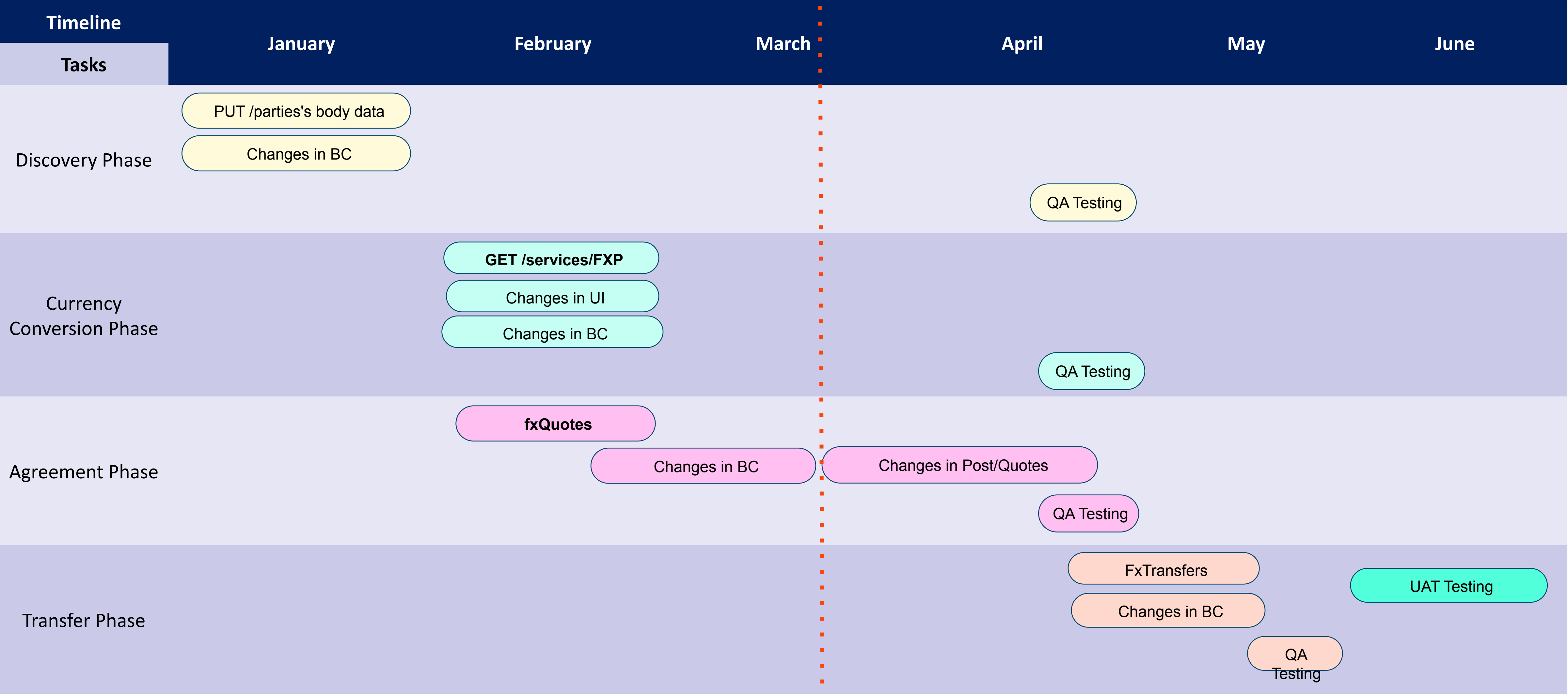
See Sub-Workstream
Update in here



Current Status



Today



Thank you!!!



info@thitsaworks.com



[Fb.me/thitsaworks](https://fb.me/thitsaworks)



thitsaworks.com