



# Inside the loop: Mojaloop Core & Releases

**PI-21 Community event - Kigali, Rwanda**

Mojaloop Core team, March 2023





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# Agenda



1. Mojaloop internals overview - *Inside the* (Moja)*Loop*
2. Mojaloop **PI-20** overview
  - a. Maintaining Mojaloop **v14.1.0** and **v14.1.1**
  - b. Mojaloop release **v15.0.0** update
  - c. **laC** update
3. Roadmap, **PI-21** goals



# Mojaloop PI Overview



Timeline	Summary
Phase-1 <small>(2016 - 17)</small>	<b>Level One Project</b> <ul style="list-style-type: none"><li>• Reference Implementation</li><li>• 6 Program Increments (PIs)</li></ul>
Phase-2 <small>(2018)</small>	<b>Road To Productionization</b> <ul style="list-style-type: none"><li>• 1 – 4 Program Increments</li></ul>
Phase-3 <small>(2019 Jan - Dec)</small>	<b>Supporting Adoption &amp; Deployment</b> <ul style="list-style-type: none"><li>• PI-5 (Feb – April): Account lookup, QA Framework, Streamlined CI, Release process, Error endpoints, Documentation, Node Upgrade, Bug Fixes &amp; Community support, Bulk Transfers Design</li><li>• PI-6 Event handling framework, Bulk Transfers PoC, API Gateway, OSS Settlements API, Quoting Service, ALS</li><li>• PI-7 Event &amp; Error Handling framework, Packaging, OSS Settlements, Performance testing capabilities, QA</li><li>• PI-8 Consolidation, Performance, Community Support</li></ul>
Phase-4 <small>(2020 Jan - Dec )</small>	<b>Going Live!</b> <ul style="list-style-type: none"><li>• PI-9: Performance Testing &amp; Improvements, Merchant Request to Pay, Operational Monitoring, Testing toolkit, Settlement v2</li><li>• PI-10: Performance PoC, Standardizing Bulk Transfers, Testing toolkit, Settlement v2, Adopting FSPIOP API v1.1, Versioning</li><li>• PI-11: Performance PoC, Standardizing designs, code &amp; QA, Adopting FSPIOP API v1.1, Versioning, PISP support, Code quality</li><li>• <b>PI-12:</b> Hardening, Packaging, Releases and prep for Phase-5 (October 2020 – January 2021)</li></ul>
Phase-5 <small>(2021 Jan - Dec )</small>	<b>One Loop for All: Mojaloop in Motion!</b> <ul style="list-style-type: none"><li>• PI-13: Removing friction, Understanding &amp; addressing (feature) gaps, Cost reduction, Increasing Trust &amp; confidence in Mojaloop (February 2021 – April 2021)</li><li>• PI-14: Reference Architecture, Supporting existing implementers; ISO messaging, FX support; Bulk Payments, Merchant QR enhancements (May – July 2021)</li><li>• PI-15: Ref Architecture, Supporting existing implementers; ISO messaging, FX support; Bulk, Merchant extensions; TBD on planning day (Aug – Oct 2021)</li><li>• <b>PI-16:</b> Ref Architecture, Supporting existing implementers; ISO messaging, FX support, IaC, 3PPI. TBC on planning day (Nov 2021 – Jan 2022)</li></ul>
Phase-6 <small>(2022 Jan - Dec )</small>	<ul style="list-style-type: none"><li>• PI-17: Ref Architecture, Supporting existing implementers, Mojaloop releases; ISO messaging, FX support, IaC, 3PPI, Merchant extensions, Bulk</li><li>• PI-18: Bulk, vNext, Mojaloop releases, core maintenance; ISO messaging, FX support, IaC, 3PPI, Merchant extensions, Sandbox, Code quality &amp; security</li><li>• PI-19: Bulk, vNext, Mojaloop releases, core maintenance; ISO messaging, FX support, IaC, 3PPI, Merchant extensions, Sandbox, Code quality &amp; security</li><li>• PI-20: Make Adoption Easier, Achieve Scale, Connect to other systems, Quality Product (ML Journey, Miniloop, FRMS, Azure, Fintech-sandbox, PISP MRTTP, Bulk, Merchant registration, Interledger, ISO 20022, Settlement, G2P connect, Tigerbeetle, vNext, ML core maintenance, Platform Q &amp; S)</li></ul>
Phase-7 <small>(2023 Jan - Dec )</small>	<ul style="list-style-type: none"><li>• <b>PI-21:</b> Make Adoption Easier, Achieve Scale, Connect to other systems, Quality Product</li></ul>





## Mojaloop core overview: **Inside the Loop**



# PI-21 Workstream Readout

## Summary



Workstream Name:	Mojaloop releases & core maintenance [v14.1.0, v14.1.1, laC, v15]
Roadmap Pillar:	Quality Product (Foundation)
Lead:	Core - Sam Kummary, Miguel de Barros laC - David Fry
Workstream Objectives:	<ol style="list-style-type: none"><li>1. Publish Mojaloop v14.1.0 and maintenance</li><li>2. Implement separation of external dependencies</li><li>3. Externalize passwords in values files</li><li>4. Develop RC for v15 and Publish Mojaloop v15</li></ol>
Progress Against Objectives:	<ol style="list-style-type: none"><li>1. Mojaloop v14.1.0 published, along with v14.1.1</li><li>2. Separation of external dependencies implemented</li><li>3. Externalized passwords in values files and tested</li><li>4. Mojaloop v15 RC available</li></ol>
Issues:	
Plans for Next PI:	Goals for next PI <ol style="list-style-type: none"><li>1. Support in deployment (laC, tooling) for Mojaloop v15</li><li>2. Settlements enhancements (including Tigerbeetle integration)</li><li>3. Support vNext implementation</li><li>4. Support Patch notification on failures, Bulk (transfers FSPIOP API v1.2)</li><li>5. Node LTS upgrade</li></ol>

To-be confirmed/decided during roadmap day (and workshops next week)



# Overview of current status PI-20



1. Mojaloop [OSS platform components](#)
2. ML [API versions](#)
3. ML [FSPIOP use-cases](#)
4. ML [FSPIOP resources](#) endpoints
5. ML [Administration / Operations](#) support
6. ML [Settlement](#) support
7. ML [3PPI / PISP](#) support

## Key

- [●] Supported with functional tests
- [●] Supported
- [●] Proof of Concept
- [●] Not implemented
- [○] Out of Scope



# Mojaloop Platform



## 1. Mojaloop Core

- Transactional hub components and settlement i.e. API layer, central ledger (including bulk), settlement, ALS, quoting, trx req

## 2. 3PPI, ml-connectors

- Best practice Mojaloop connectors. I.e. Third-party services, sdk adapter/ml-connectors,

## 3. API Gateway

- Adds in the and enforces the Mojaloop Security design
- IP filtering / white-listing, Ingress/Egress, Firewalls, Security support (**JWS**, **mTLS**) [IaC provides this via WSO2]

## 4. Supporting services

- Interop: Connect with settlement banks, Onboarding FSPs, integrations (connection management)
- Mojaloop Toolkit (TTK), PM4ML instances, Simulators, ALS support, CEP, Events processing
- Oracles - Customer or Merchant Registries

## 5. Infrastructure

- Kubernetes, Infrastructure as Code, Automated deployments (mini-loop, IaC, Rancher)
- Deployment artifacts - Helm Charts, Docker Containers

## 6. Finance portal (RBAC), Reporting

- Hub operator UI & API experience layer that is Implemented by business operations framework.

## 7. Monitoring support (Operational support)

- Operational support and tracing (e.g. EFK, and/or Prometheus, Grafana, Loki, etc) [IaC provides this via Grafana, Prometheus & Loki]



# Mojaloop API versions PI-20



1. FSP Interoperability (FSPIOP) API v1.1.1
  - Changes to support notifications on failures,
2. Settlement API v2.0
  - No changes approved but proposed and being reviewed
3. Administration API v1.0
  - No changes approved but proposed and being reviewed
4. Third-party Payment Initiation (3PPI) API v1.0
  - v1.0 officially published and supported in implementation. v2.0 being finalized
5. FX API - in design
  - Mostly accepted; finalizing changes, reviews



# Mojaloop Switch Functionality – FSPIOP Use Cases (Phase-7 PI-20)

## Mojaloop FSPIOP API v1.1 Use cases

### Payer-Initiated Transaction

- [●] P2P Transfers
- [●] Customer-Initiated Merchant Payment
- [●] Customer-Initiated Cash-out - Receive Amount
- [●] Customer-Initiated Cash-out - Send Amount
- [●] ATM-Initiated Cash-out
- [●] Refund

### Bulk Transactions

- [●] Bulk Payments

### Payee-Initiated Transaction

- [●] Merchant-Initiated Merchant Payment
- [●] Agent-Initiated Cash-out
- [●] Agent-Initiated Cash-In – Send Amount
- [●] Agent-Initiated Cash-In – Receive Amount

### Payee-Initiated Transaction using OTP

- [●] Merchant-Initiated Merchant Payment Authorized on POS
- [●] Agent-Initiated Cash-out Authorized on POS

#### Key

- [●] Supported with functional tests
- [●] Supported
- [●] Proof of Concept
- [●] Not implemented
- [○] Out of Scope



# Switch Functionality: Mojaloop End-points (Phase-7 PI-20)

FSPIOP API v1.1 Specification



## Transfers\*

- [●] POST - Prepare
- [●] PUT - Response
- [●] PUT - Error
- [●] PATCH - Notification
- [●] GET - Query

## Parties

- [●] GET - Request
- [●] PUT - Response
- [●] PUT - Error

## Quotes

- [●] POST - Request
- [●] PUT - Response
- [●] PUT - Error
- [●] GET - Query

## Participants

- [●] POST - Create
- [●] PUT - Response
- [●] POST - Bulk Create
- [●] PUT - Error
- [○] DEL - Delete

## Transactions

- [○] PUT - Response
- [○] GET - Query

## TransactionRequests

- [●] POST - Request
- [●] PUT - Response
- [●] PUT - Error
- [●] GET - Query

## Authorizations

- [●] GET - Request
- [●] PUT - Response
- [●] PUT - Error

## BulkTransfers\*

- [●] POST - Request
- [●] PUT - Response
- [●] PUT - Error
- [●] GET - Query

## BulkQuotes

- [●] POST - Request
- [●] PUT - Response
- [●] PUT - Error
- [●] GET - Query

### Key

- [●] Supported with functional tests
- [●] Supported
- [●] Proof of Concept
- [●] Not implemented
- [○] Out of Scope

\* Enhancements in PI-19



# Switch Functionality – Administration (Phase-7 PI-20)



## Admin API v1.0 Specification

### Participants

- [●] Manage Participants
- [●] Create Initial Values
- [●] Query
- [●] Update
- [●] Manage positions, limits
- [●] Create Initial Value
- [●] Query
- [●] Update
- [●] Manage Callback URLs
- [●] Create Initial Value
- [●] Query
- [●] Update

### Settlement Models

- [●] Settlement models
- [●] Configure
- [●] Query

### Participant Accounts

- [●] Manage accounts
- [●] Create
- [●] Query
- [●] Update
- [●] Funds In/Out

### Transactions

- [●] Transactions
- [●] Query

\* Enhancements in PI-19

## ALS Oracle API v1.0 Specification

### Oracles (ALS)

- [●] Manage Oracles
- [●] Create
- [●] Query
- [●] Update
- [●] Delete

#### Key

- [●] Supported with functional tests
- [●] Supported
- [●] Proof of Concept
- [●] Not implemented
- [○] Out of Scope



# Switch Functionality – Settlement (Phase-7 PI-20)

Settlement API v2.0 Specification



## Settlements v1.0 [Deferred, Multilateral Net]

- [●] Open, close Settlement Windows
- [●] Query Settlement Windows
- [●] Query Settlement Report
- [●] Create/Trigger Settlement with Windows
- [●] Process successful Settlement Acknowledgements
- [●] Reconcile Positions based on successful Settlements
- [●] Process failed Settlement Acknowledgements

## Settlements v2

- [●] Settlement models
- [●] Designs
- [●] Settlement by Currency
- [●] Interchange Fees
- [●] Continuous Gross Settlement

### Key

- [●] Supported with functional tests
- [●] Supported
- [●] Proof of Concept
- [●] Not implemented
- [○] Out of Scope



# Switch – Third-party (3p) API v1.0 (Phase-7 PI-20)

## Third-party API v1.0 Specification



### Linking

- [●] Pre-Linking
- [●] Discovery
- [●] Request consent
- [●] Authentication
- [●] Grant consent
- [●] Credential registration

### Un-Linking

- [●] Un-linking

### Third-party (3p) Transfers

- [●] Discovery
- [●] Agreement
  - [●] 3p transaction request
  - [●] 3p authorization
  - [●] Signed authorization
  - [●] Validate authorization
- [●] 3p Transfer
- [●] Query trxreq status

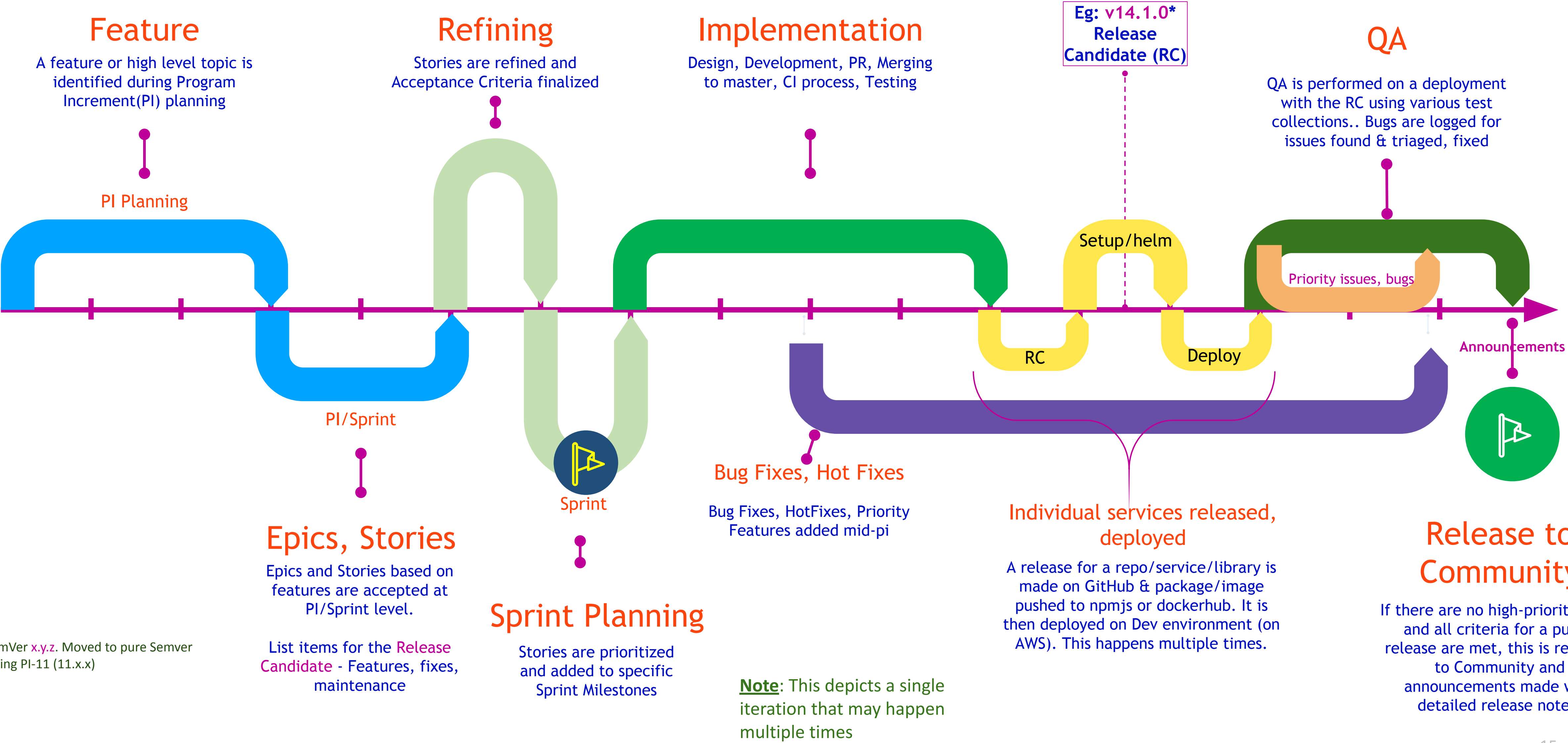
\* Enhancements in PI-19

#### Key

- [●] Supported with functional tests
- [●] Supported
- [●] Proof of Concept
- [●] Not implemented
- [○] Out of Scope

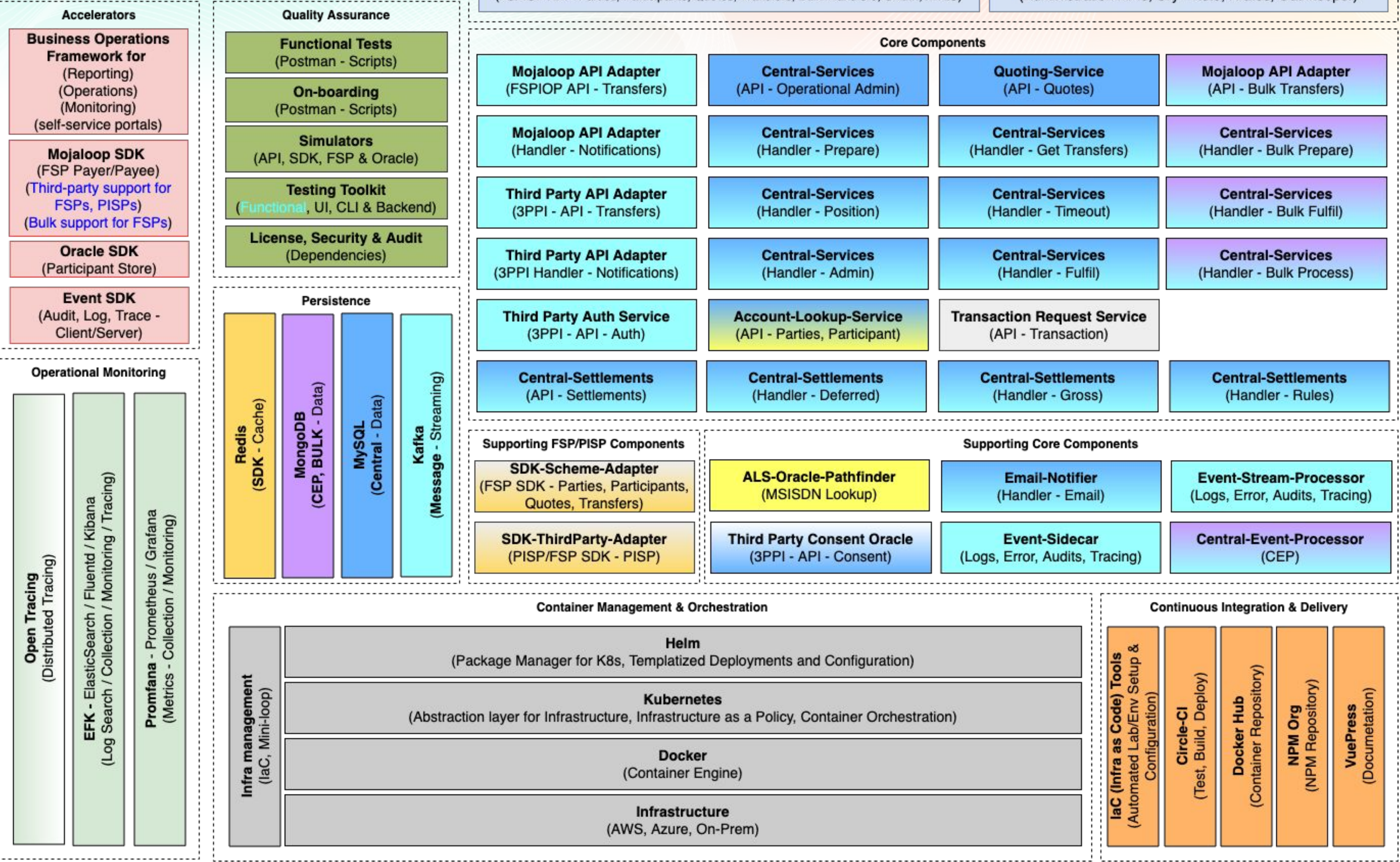


# Mojaloop Release Process



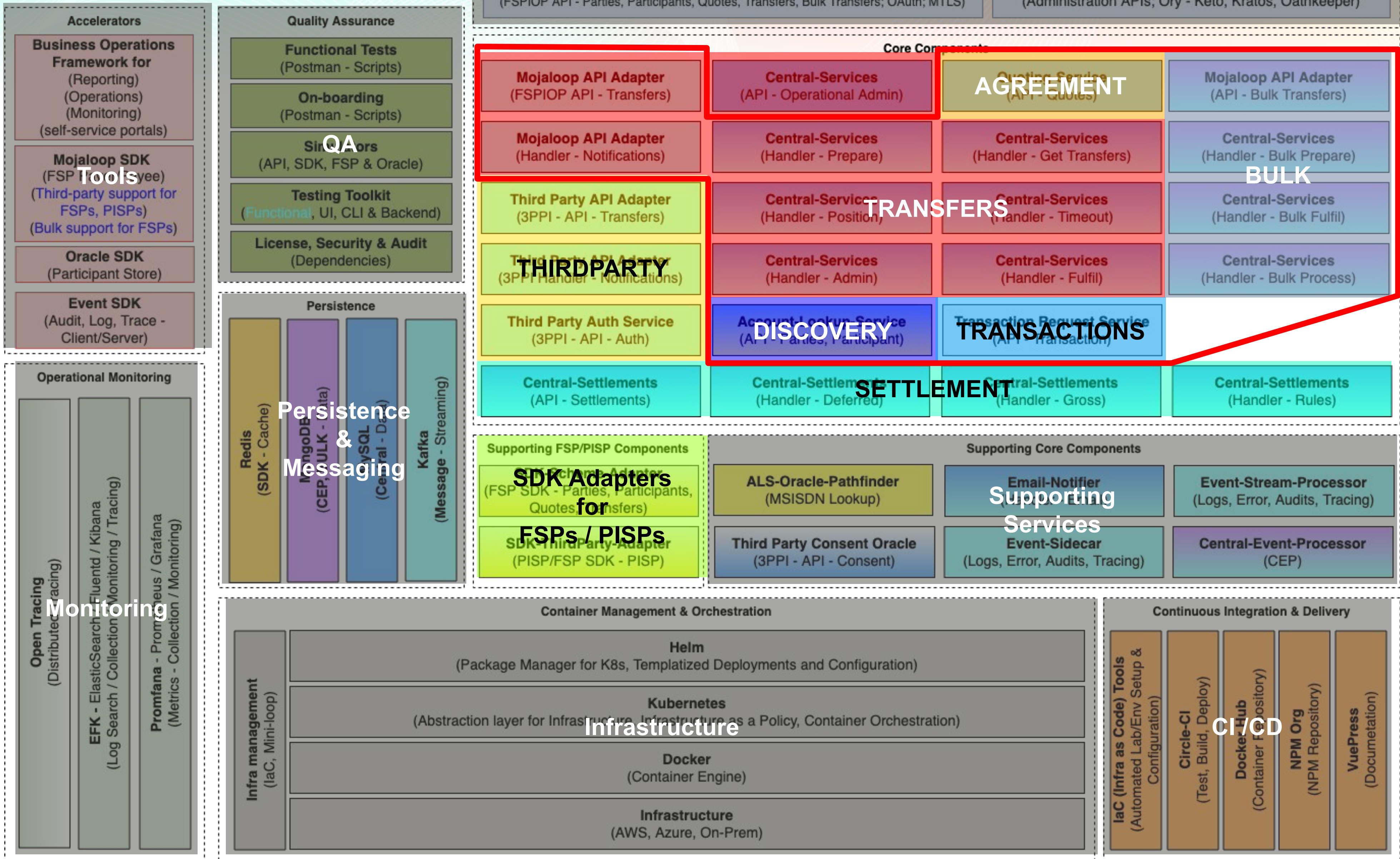


Mojaloop Component diagram PI-20 - Overview





# Mojaloop Component diagram PI-20 - Overview



FSPIOP related components

- 1. Discovery
- 2. Agreement
- 3. Transfer



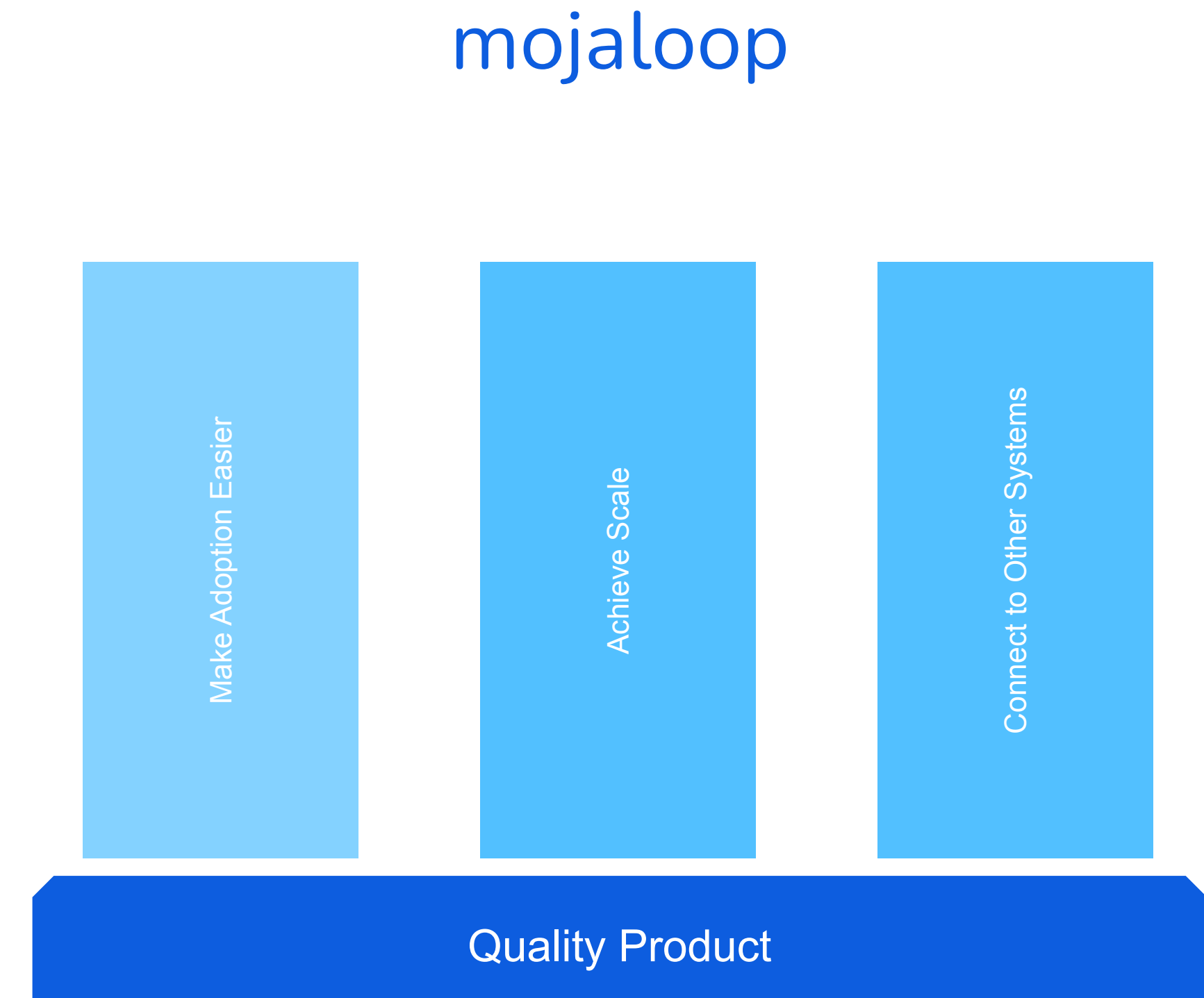


**Core releases & maintenance: PI-20**



# Mojaloop PI-20 overview

1. Mojaloop **v14.1.0**, **v14.1.1**
2. v14.1.0 maintenance
3. **laC** for v14.1.0 and other minor releases
4. Mojaloop **v15** Release Candidate (RC)





# Mojaloop v14.1.1

Release notes: <https://bit.ly/3FarM7c> ~ <https://github.com/mojaloop/helm/releases/tag/v14.1.1>



Mojaloop **v14.1.1** published as part of maintenance of **v14.1.0**

## 1. TTK updates

- Rule** import and export functionality
- Save & list **reports** and end-point provided
- Redesigned TTK definition report
- Enhancements to “break on error” and performance
- Markdown support in meta info

A screenshot of the GitHub release page for the Mojaloop Helm chart, version 14.1.1. The page shows the release details, including the release name, the user who released it (mdebarros), and the date. It also includes a table of release notes and a list of breaking changes and known issues.

Releases / v14.1.1

**v14.1.1 Release** Latest

mdebarros released this 2 weeks ago · 1 commit to master since this release v14.1.1 4

**Helm Release Notes**

Date	Revision	Description
2022-12-16	0	Initial draft of RC
2023-02-20	0	Initial release v14.1.1

- For **BREAKING CHANGES**, please review the section [#5](#) "Breaking Changes" below.
- For **KNOWN ISSUES**, please review the section [#8](#) "Known Issues" below.



# Mojaloop v15.0.0 RC (Release Candidate) - Features

Release notes: <https://bit.ly/3ZuZkFg>



## New Features

1. **Externalize** Backend Dependencies for services including TTK, 3PPI services [[#2887](#), [#3083](#), [#3091](#), [#3129](#), [#3131](#)]
2. **Support** for **sub-scenarios** to backend [[#3053](#)]
3. Utilize **externalized secrets** for user/password management [[#3082](#), [#3130](#) ]
4. Increased test coverage and testing improvements
5. Upgrade logger to central-services-logger [[#2928](#)]
6. **Support** for **test currencies** to ALS [ [#2740](#) ]
7. API changes, fixes
  - a. Sync DFSP backend api with api-snippets [[#3074](#)]
  - b. Update backend simulator api ([#156](#))
  - c. Added moja sim inbound api [[#2814](#)]
8. TTK enhancements
  - a. TTK (UI) performance enhancements: Add config option to configure socket io [[#3075](#)]



# Mojaloop v15.0.0 RC - Maintenance

Release notes: <https://bit.ly/3ZuZkFg>



## Bug Fixes

1. Callback for GET /transfers is wrong for expired transfers [ [#3078](#) ]
2. Initial open settlementWindow is failing on clean install [ [#3152](#) ]
3. Add checks for when mongodb is disabled [ [#3020](#) ]
4. Missing error-code for the transfer in the central-ledger db [ [#2644](#) ]
5. Unable to upgrade knex dependency on centralLedger [ [#3096](#) ]
6. Fix outbound fspiop headers ([#436](#))
7. WSO2 auth fix fspiop handler ([#437](#))
8. Bulk transactions sdk crash ([#440](#))
9. ML Toolkit fixes
  - a. Fix config async changes ([ml-testing-toolkit/pull/229](#))
  - b. Fix config fetching for monitoring payload condition ([ml-testing-toolkit/pull/228](#))
  - c. Refactor break on error ([ml-testing-toolkit/pull/227](#))
  - d. Parameterized the inbound request size ([ml-testing-toolkit/pull/221](#))



# Mojaloop v15.0.0 RC - Overview



**Externalise Backend Dependencies** [ [#3041](#), [#2887](#), [#3083](#), [#3091](#) ]

**What?**

1. **Remove the infrastructure services** from the Mojaloop charts (e.g. MySQL, Kafka, Redis, Mongo, Zookeeper)
2. External **Backend Dependencies** to be **deployed separately**
3. Provides an “**Example**” **Backend Helm Chart** that can be used for **Testing**, **Dev** and **Demo/PoC** deployments

**Why?**

1. **Removes tight coupling** to dependencies that we have no control over
2. **Improves stability & upgradability** of Mojaloop Releases
3. **Reduced maintenance**
4. **Ensures backend dependencies are managed separately** from the Mojaloop deployment aligning to **best practices**

**Utilise externalised secrets for password management** [ [#3082](#) ]

**What?**

1. Support **passwords configuration** in both **clear-text** and via a **pre-configured Kubernetes Secret**
2. All **default clear-text passwords** in **configuration values** have been **removed** (ref: [design-authority-project/issues/98](#))
3. **Mojaloop Helm chart** by default uses the **Secrets** created by the “**Example**” **Backend Helm Chart** deployment.

**Why?**

1. Aligned to **security best-practices** with **Secrets** supporting **encryption** and **RBAC access**
2. **Passwords** configuration support via a **Secret & Key Management System** (e.g. HashiCorp Vault) ~ alignment to **IaC**



# Mojaloop v15.0.0 RC - Overview (cont...)



## Standardisation and Addressing Technical Debt

1. Services (**configs, annotations, etc**)
2. Image Pull Policies, Secrets and Command Definitions
3. Diagnostic Mode (useful for **debugging**)
4. Init-Containers (**dependency checks, data migrations, data seeds**)
5. Container Security Context (**limit container privileges**)

## Breaking Changes (Refer to <https://bit.ly/40bfS5t> ~ <https://github.com/mojaloop/helm/blob/release/v15.0.0-rc-1/.changelog/release-v15.0.0.md#5-breaking-changes>)

1. **Backend dependencies have been externalised**
2. **Charts have been re-factored for consistency**, which will impact the following value configs. These are not necessarily breaking changes, but you will need to ensure any customized values files are updated to reflect these changes
3. The following services **no longer support a "Connection URL" for backend configurations** to support Password Injection via Env Vars. You will now explicitly configure the Host, User, Pass, DB, Port, etc instead.
  - **Central-Ledger** for MongoDB
  - **Bulk-API-Adapter** for MongoDB
  - **ML-Testing-Toolkit-Backend** for MongoDB
  - **Auth-Service** for MySQL
4. Several **ML-Testing-Toolkit Backend Dependencies** (i.e. **Keycloak, Connection-Manager**) are no longer needed as the associated functionality has been **deprecated**



# Mojaloop v15.0.0 RC - WiP (Work in Progress)



Pull Request: <https://github.com/mojaloop/helm/pull/551>  
Working Branch: <https://github.com/mojaloop/helm/tree/release/v15.0.0-rc-1>  
Release notes: <https://bit.ly/3ZuZkFg>

## Deploy from the GIT branch:

Build the Mojaloop Chart's dependency tree

Install Example Backends

Install Mojaloop

Test Mojaloop

```
> git clone -b release/v15.0.0-rc-1 https://github.com/mojaloop/helm.git

/tmp
> cd ./helm

/tmp/helm release/v15.0.0-rc-1
> sh ./update-charts-dep.sh

> helm install backend ./example-mojaloop-backend

/tmp
> helm -n demo install moja ./mojaloop

/tmp
> helm -n demo test moja
```

Clone the v15.0.0-rc-1 branch from the Helm repo

Mojaloop Helm Git Repo

Change to Project directory

Wait for all Backends to report healthy before installing Mojaloop  
"kubectl -n demo get po"

Wait for all Services to report healthy before running tests  
"kubectl -n demo get po"

Check the Deployment Guide to setup Kubernetes

https://github.com/mojaloop/helm/blob/release/v15.0.0-rc-1/changelog/release-v15.0.0.m

mojaloop / helm Public

<> Code Issues 7 Pull requests 5 Zenhub Discussions Actions Projects Wiki Settings

< release/v15.0.... helm / .changelog / release-v15.0.0.md

mdebarros feat(mojaloop/#3082): utilise externalised secrets for user-password ... ✓

4 contributors

174 Lines (133 sloc) 12.6 KB

Helm Release Notes

Date	Revision	Description
2023-02-20	0	Initial draft of RC (PLACEHOLDER)

- For *BREAKING CHANGES*, please review the section #5 "Breaking Changes" below.
- For *KNOWN ISSUES*, please review the section #8 "Known Issues" below.

1. New Features

\* <https://docs.mojaloop.io/getting-started/installation/installing-mojaloop.html> for the Deployment Guide  
\* <https://github.com/mojaloop/helm/blob/release/v15.0.0-rc-1/README.md#pre-requisites> if you have any issues  
\* <https://github.com/mojaloop/helm/blob/release/v15.0.0-rc-1/README.md#ingress> for more information about default Ingress access

Check this link for settings up Ingress Access



# Mojaloop v15.0.0 RC - WIP (cont...)



Backend

Mojaloop

List Helm deployments in the “demo” namespace.

Example Mojaloop Backend Helm chart version v14.1.0

```
> helm -n demo list
```

NAME	NAMESPACE	REVISION	UPDATED	STATUS	CHART	APP VERSION
backend	demo	1	2023-03-09 08:15:16.353966 +0200 SAST	deployed	example-mojaloop-backend-14.1.0	nginx: 4.4.2 ; my 3.3.1; redis:17.3.7
moja	demo	1	2023-03-09 08:20:45.241093 +0200 SAST	deployed	mojaloop-15.0.0	ml-api-adapter: v13.0.0; quoting-service: v15.0.2; central-settlement: v15.0.0; bulk-api-adapter: v15.0.0; transaction-requests-service: v14.0.1; sdk-scheme-adapter: v22.0.1; thirdparty-sdk: v15.1.0; ml-testing-toolkit: v16.0.0; ml-testing-toolkit-ui: v15.1.3;

“APP VERSION” column wrapping

Mojaloop Helm chart version v15.0.0

Application versions for each deployed service

\* <https://helm.sh/docs/intro/quickstart> for the more info on Helm



# Mojaloop v15.0.0 RC - WiP (cont...)



Check your Helm deployment's **status**

```
> helm -n moja2 status moja2
NAME: moja2
LAST DEPLOYED: Thu Mar  9 08:20:45 2023
NAMESPACE: moja2
STATUS: deployed
REVISION: 1
TEST SUITE: moja2-ml-ttk-test-setup-sdk-bulk
Last Started: Thu Mar  9 10:06:46 2023
Last Completed: Thu Mar  9 10:07:37 2023
Phase: Succeeded
TEST SUITE: moja2-ml-ttk-test-setup-tp
Last Started: Thu Mar  9 10:05:37 2023
Last Completed: Thu Mar  9 10:06:26 2023
Phase: Succeeded
TEST SUITE: moja2-ml-ttk-test-setup
Last Started: Thu Mar  9 09:57:45 2023
Last Completed: Thu Mar  9 09:59:36 2023
Phase: Succeeded
TEST SUITE: moja2-ml-ttk-test-val-bulk
Last Started: Thu Mar  9 10:03:11 2023
Last Completed: Thu Mar  9 10:05:36 2023
Phase: Succeeded
```

List of executed tests using **helm test**

**Information** on useful commands on how to access status, run tests, and access test logs

```
....

This Helm chart lives @ http://github.com/mojaloop/helm

To learn more about this deployment, try:

$ helm status moja2

Use the following command to execute Test cases:

$ helm -n moja2 test moja2

Use the following command to execute Test cases and print logs to console:

$ helm -n moja2 test moja2 --logs

Use the following command to execute a specific Test case:

$ helm -n moja2 test moja2 --filter "name=moja2-<TEST_NAME_1>,name=moja2-<TEST_NAME_2>"

Use the following command to ignore a specific Test case:

$ helm -n moja2 test moja2 --filter "!name=moja2-<TEST_NAME_1>"
```

\* <https://helm.sh/docs/intro/quickstart> for the more info on Helm



# Demo(s)



1. Release Notes for [v14.1.1](#), [v15.0.0](#)
2. Mobile Simulator
  - a. P2P
  - b. Settlement
3. Helm Charts
  - a. Secret Configs
  - b. Standardisation of Configs
4. Helm Test tests
  - a. Slack Announcements
  - b. Run `helm tests` for GP tests; notification on [#announcements](#) channel
5. TTK Reports
  - a. Show reports



# laC support for ML releases





# Mojaloop IaC release for v14.1.0 - DONE



**IaC Release v3.0.4:** <https://github.com/mojaloop/iac-aws-platform/releases/tag/v3.0.4>

This release supports merges the cloud-agnostic work with the IaC changes to support ML **v14.1.0** and the upgrade to v1.0 of the ingress api which is needed to upgrade k8s to **>= 1.24**.

Optional support for bulk and third-party apis added in this release.

1. TTK testing via GitLab CI is improved and streamlined.
2. Cleanup of pipeline definition files.
3. Added prefunding to test dfsps: "DFSP\_TRANSFER\_FUNDSIN\_AMOUNT" = pm4ml\_config.INITIAL\_FUNDING\_AMOUNT in order to provide initial funds for running PM4ML GP tests.
4. Kubernetes default version has been upgraded to **1.24.6**
5. Kubespray has been upgraded to **2.20.0**
6. GitLab CI image's base image upgraded to ubuntu:**20.04**
7. Ingress Nginx helm chart upgraded to version: **4.3.0** (breaking change)
8. Loki stack upgraded to **2.8.3**
9. Vault helm chart upgraded to version: **0.19.0** and integration with kubernetes was reconfigured to only support newer k8s version. (>1.18) (breaking change)
10. WSO2 simple chart required updating on ingress templates - new version: **2.3.0**
11. Connection Manager chart required updating on ingress templates - new version: **0.6.1**
12. Oracle components required ingress updates: new versions: **2.0.7**



# Mojaloop IaC release for Bulk - DONE



**IaC Release v3.1.0:** <https://github.com/mojaloop/iac-aws-platform/releases/tag/v3.1.0>

1. Enabled **SDK Bulk** support for PM4MLs
2. Added new TTK based PM4MLs to sample workbench-config file
3. Refactored PM4ML TTK test cases execution pipeline and parameterised the pm4ml ttk tests version through workbench-config
4. Implemented PM4ML TTK environment file generation
5. Added new configuration options for PM4MLs through workbench-config file
  - a. ENABLE\_SDK\_BULK\_TRANSACTION\_SUPPORT
  - b. TTK\_ENABLED
  - c. USE\_TTK\_AS\_BACKEND\_SIMULATOR



# Mojaloop IaC release for ML v15 - Upcoming



Upcoming work to support the removal of passwords in the stateful resources and ML helm values.

1. Add support for vault operator (<https://github.com/redhat-cop/vault-config-operator>) to allow for **creation and storing of random secrets in vault** as well as **CR-generated K8S secrets** from these same vault secrets.
  - a. Custom Resource (CR) based method to auto generate credentials for the creation of stateful resources (mysql/etc)
  - b. CR-based creation of K8S secrets in multiple namespaces that can then be referenced in different helm charts.
  - c. The auto generation of the vault secrets also means that the secret will not be stored anywhere but in vault as opposed to the current situation where the random passwords are generated in terraform first which results in the pw being stored in terraform state file.
2. Update stateful services to make use of #1, includes creation of CRs.
3. Update mojaloop helm install to reference secrets generated from #2.





# Roadmap for core



# Roadmap items for PI-21



## ML v15.x items In-Pipeline

1. Search-replace values with \$release prefix with a TPL rendering helper function ([#3081](#) *on-going*)
2. Integrate Signing/Trust of packaged Helm Charts from DevSecOps stream into CI pipeline (*feature - on-going*)
3. Package Settlement Improvements (*feature - on-going*)
4. Upgrade K8s Test environment to meet Mojaloop testing standards (LTS K8s, Ubuntu, etc) (*feature - on-going*)

## Roadmap candidates

1. IaC support for Mojaloop **v15**
2. Settlements enhancements (including Tigerbeetle integration)
3. Enhance tracing components to use latest OSS standards
4. Support vNext implementation
5. Support **Patch** notification on failures (transfers FSPIOP API v1.2)
6. Node LTS upgrade
7. Community support
  - a. Bug fixes (20-25% of sprint capacity for prioritized issues)
  - b. Support community contributions and absorption into Mojaloop as required



# ML Release Roadmap - TBD with MLF Product, Community



v14.1.0  
(PI-19)

1. Support for k8s 1.24+
2. Bulk Enhancements
3. \*Testing k8s v1.24

v14.1.1  
(PI-20)

1. Mojaloop Toolkit enhancements: Reports, Rules, UI enhancements

v15.0.0  
(PI-20)

1. Separations of external backend dependencies from Mojaloop Helm charts
2. Utilise externalised secrets for password management ([#3082](#))
3. Bulk (sdk) functionality support out-of-the box

Future

1. Patch notification support for failures, Bulk
2. FX support in Mojaloop
3. Settlements improvements
4. Enhance tracing components to use latest open-tracing standards
5. vNext support
6. General maintenance, Node upgrade (LTS available at the time)



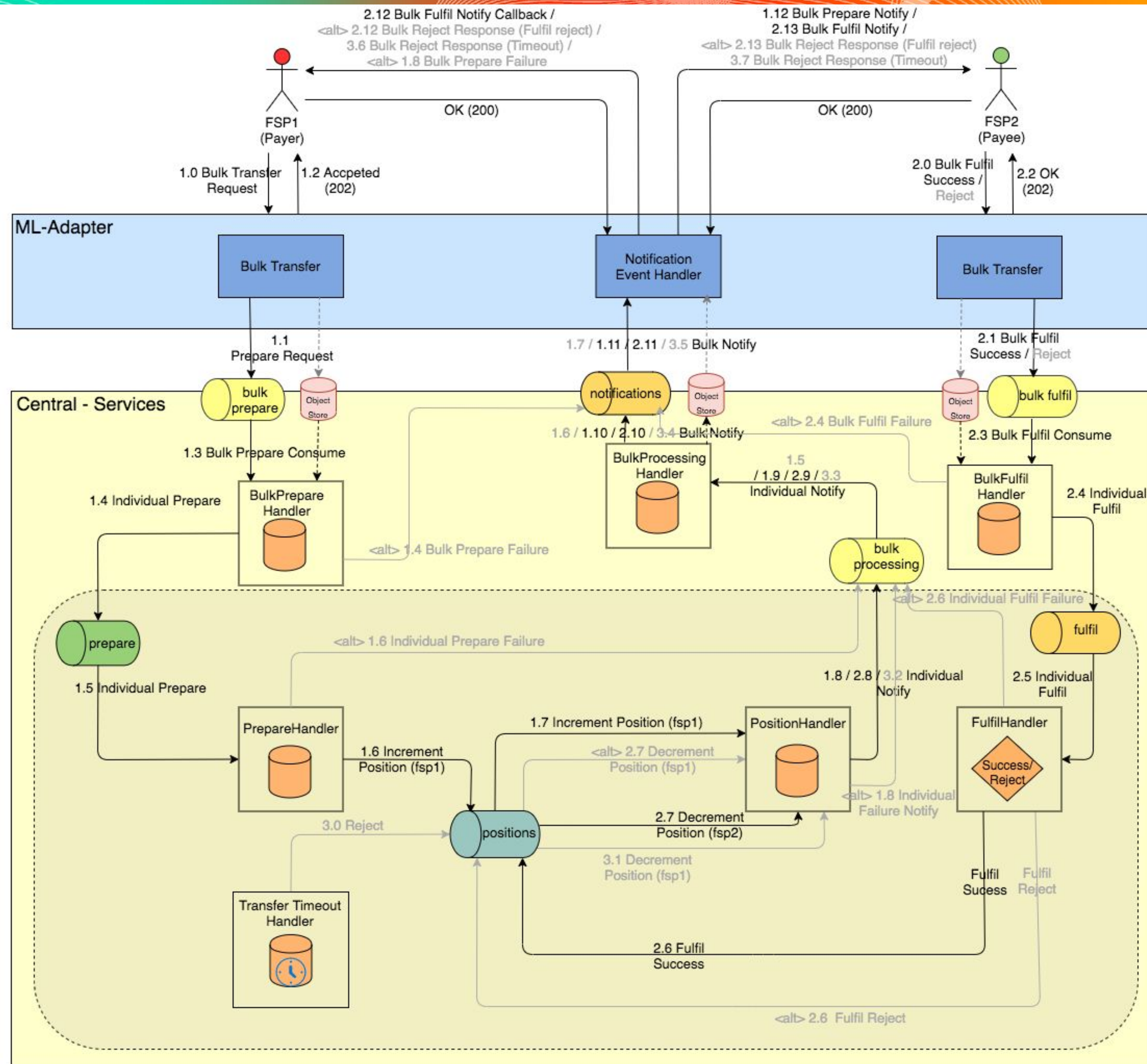


# Thank you!

Reach out for questions on Mojaloop Slack [#help-mojaloop](#) or [#ml-oss-dev](#) channels



# PI-19: Bulk Transfers Architecture v1.0





# PI-19: Transfers Architecture v1.1

