Inside the loop: Mojaloop Core & Releases

PI-20 Community event

Mojaloop Core team, October 2022

PI-19 Contributors

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Agenda

1. Mojaloop internals overview - ***Inside the*** (Moja)***Loop***
2. Mojaloop **PI-19** overview
    a. Maintaining Mojaloop **v14.0.0**
    b. Mojaloop release **v14.1.0** update
    c. Testing Updates including TTK
3. Roadmap, **PI-20** goals

Mojaloop PI Overview

Timeline	Summary
Phase-1 (2016 - 17)	**Level One Project** • Reference Implementation • 6 Program Increments (PIs)
Phase-2 (2018)	**Road To Productionization** • 1 – 4 Program Increments
Phase-3 (2019 Jan - Dec)	**Supporting Adoption & Deployment** • PI-5 (Feb – April): Account lookup, QA Framework, Streamlined CI, Release process, Error endpoints, Documentation, Node Upgrade, Bug Fixes & Community support, Bulk Transfers Design • PI-6 Event handling framework, Bulk Transfers PoC, API Gateway, OSS Settlements API, Quoting Service, ALS • PI-7 Event & Error Handling framework, Packaging, OSS Settlements, Performance testing capabilities, QA • PI-8 Consolidation, Performance, Community Support
Phase-4 (2020 Jan - Dec)	**Going Live!** • PI-9: Performance Testing & Improvements, Merchant Request to Pay, Operational Monitoring, Testing toolkit, Settlement v2 • PI-10: Performance PoC, Standardizing Bulk Transfers, Testing toolkit, Settlement v2, Adopting FSPIOP API v1.1, Versioning • PI-11: Performance PoC, Standardizing designs, code & QA, Adopting FSPIOP API v1.1, Versioning, PISP support, Code quality • **PI-12:** Hardening, Packaging, Releases and prep for Phase-5 (October 2020 – January 2021)
Phase-5 (2021 Jan - Dec)	**One Loop for All: Mojaloop in Motion!** • PI-13: Removing friction, Understanding & addressing (feature) gaps, Cost reduction, Increasing Trust & confidence in Mojaloop (February 2021 – April 2021) • PI-14: Reference Architecture, Supporting existing implementers; ISO messaging, FX support; Bulk Payments, Merchant QR enhancements (May – July 2021) • PI-15: Ref Architecture, Supporting existing implementers; ISO messaging, FX support; Bulk, Merchant extensions; TBD on planning day (Aug – Oct 2021) • PI-16: Ref Architecture, Supporting existing implementers; ISO messaging, FX support, IaC, 3PPI. TBC on planning day (Nov 2021 – Jan 2022)
Phase-6 (2022 Jan - Dec)	• PI-17: Ref Architecture, Supporting existing implementers, Mojaloop releases; ISO messaging, FX support, IaC, 3PPI, Merchant extensions, Bulk • PI-18: Bulk, vNext, Mojaloop releases, core maintenance; ISO messaging, FX support, IaC, 3PPI, Merchant extensions, Sandbox, Code quality & security • **PI-19: Bulk, vNext, Mojaloop releases, core maintenance; ISO messaging, FX support, IaC, 3PPI, Merchant extensions, Sandbox, Code quality & security** • PI-20: TBD on Product roadmap day

Mojaloop overview - **Inside the Loop**

Mojaloop API versions supported

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-6 PI-19)

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-6 PI-19)

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

* Enhancements in PI-19

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

Switch Functionality – Administration (Phase-6 PI-19)

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-6 PI-19)

Settlement API v2.0 Specification

Settlements v**1.0** [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 v**2**

[●] 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-6 PI-19)

Third-party API v1.0 Specification

Linking

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

Un-Linking

[●] Un-linking

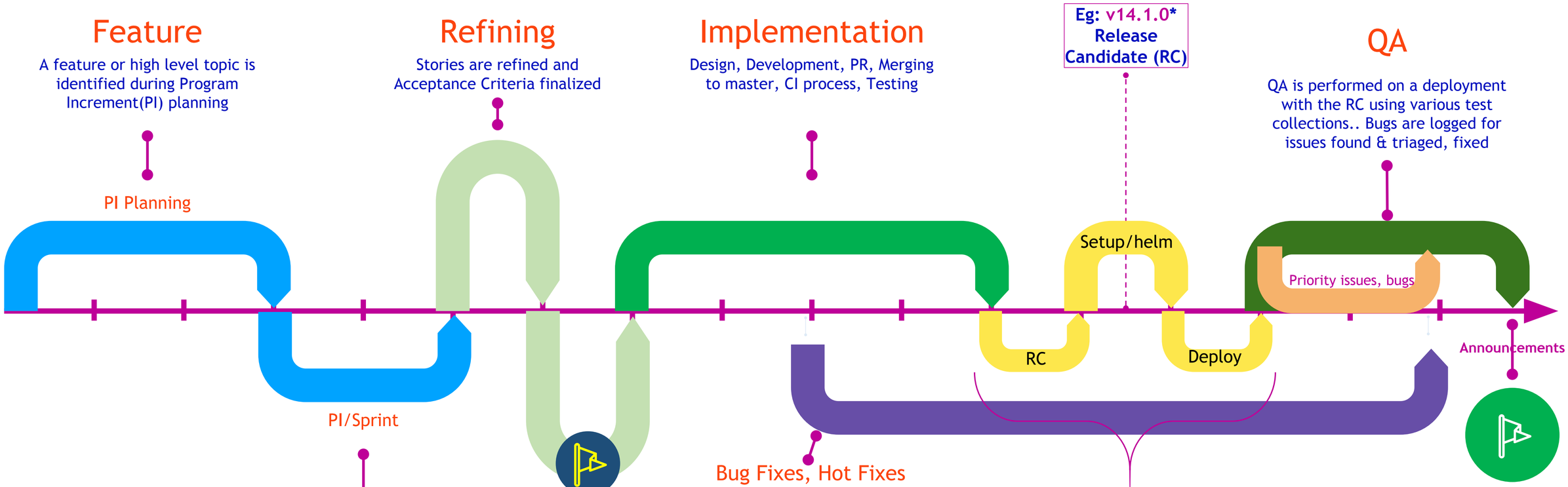
Third-party (3p) Transfers

[●] 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

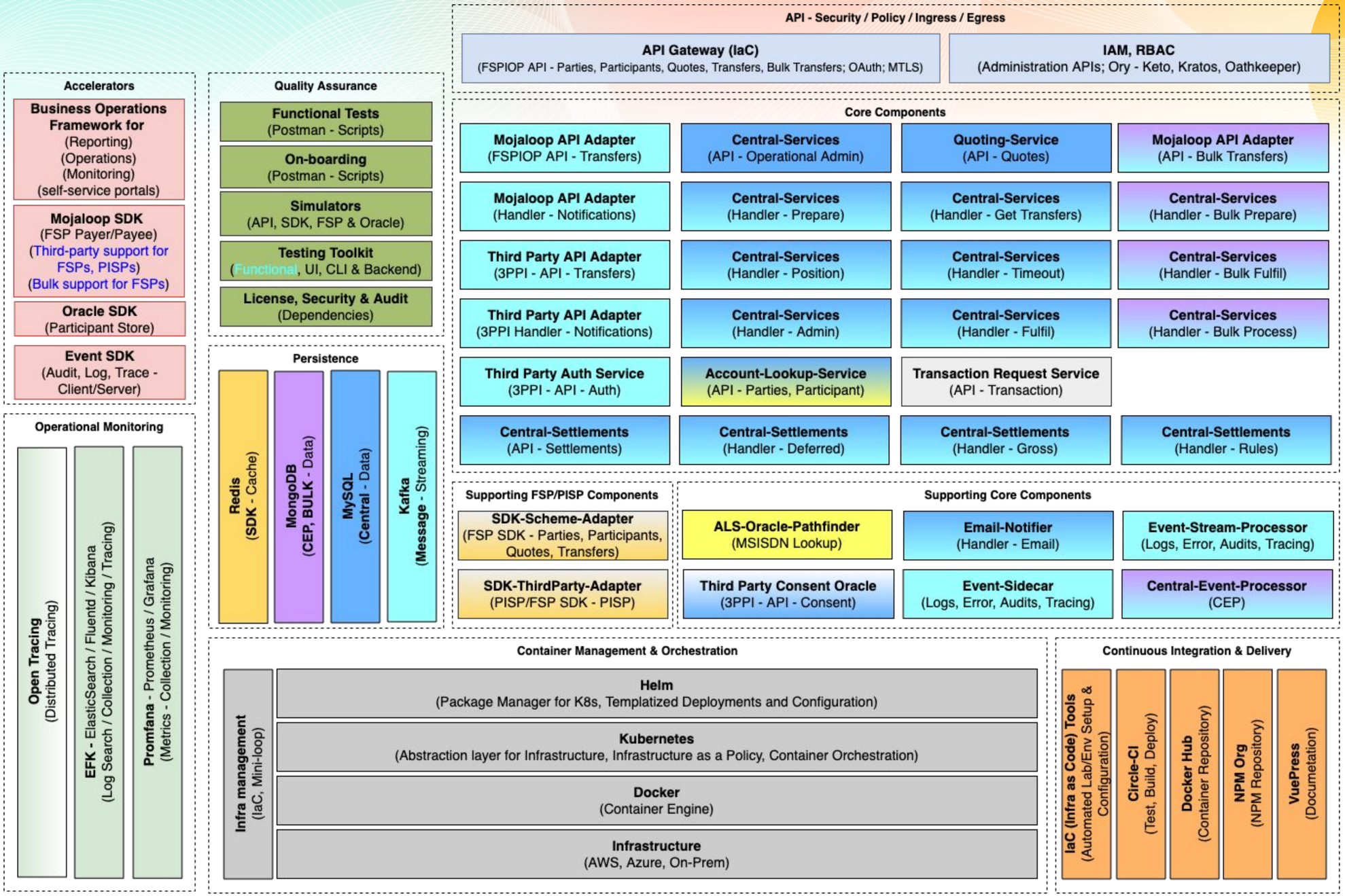
Mojaloop Release Process



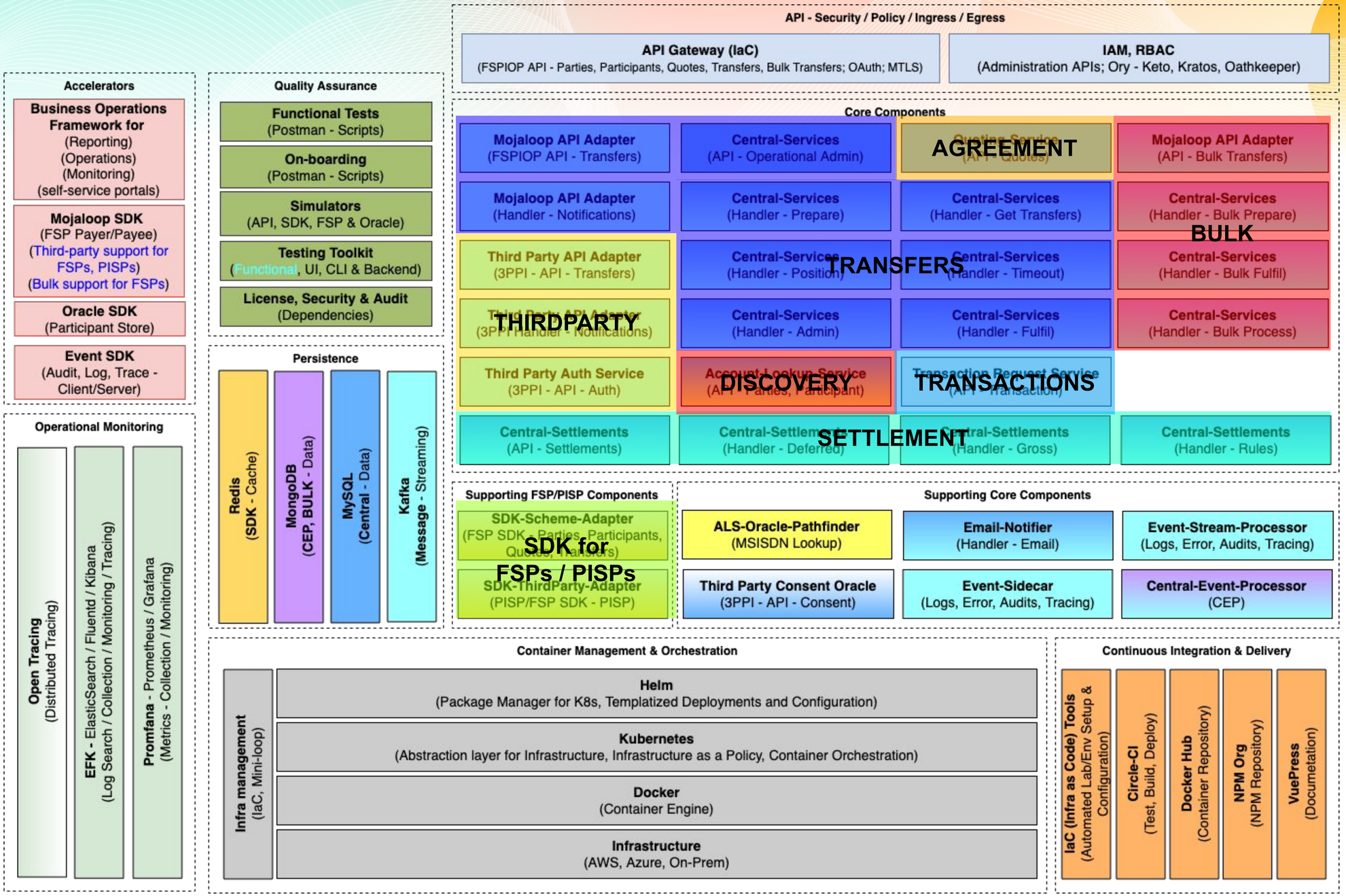
* SemVer x.y.z. Moved to pure Semver starting PI-11 (11.x.x)

Note: This depicts a single iteration that may happen multiple times

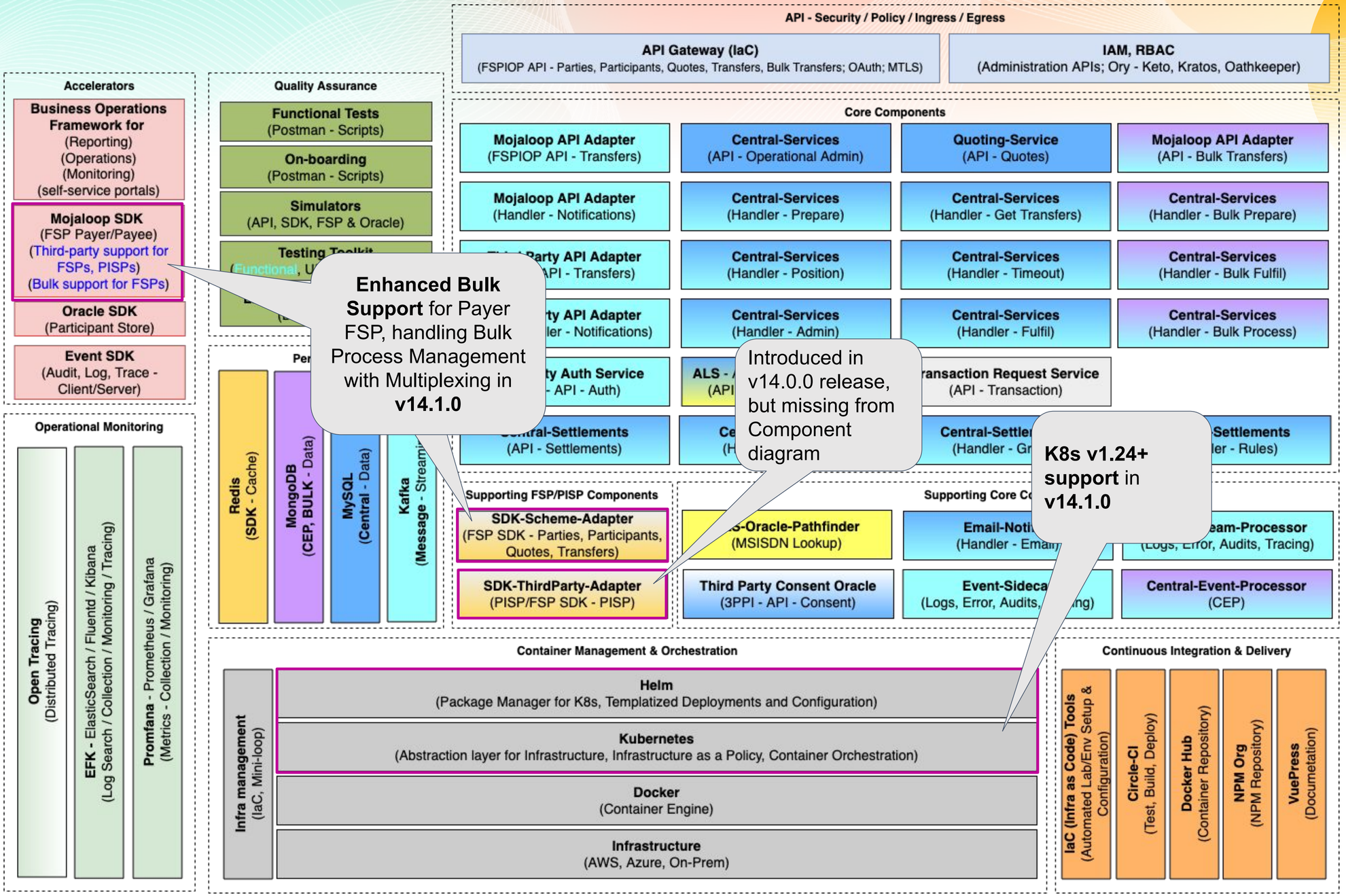
Mojaloop Component diagram PI-19 - Overview



Mojaloop Component diagram PI-19 - Functional Areas



Mojaloop Component diagram PI-19 - Whats new?



Core releases & maintenance: PI-19

PI 19: Mojaloop releases & core maintenance

Goal	**Publish Mojaloop v14.1.0 with major changes packaged along with support for latest k8s version with tooling support, Support contributions into Mojaloop**	
Key Epics Objectives	**1. Mojalop v14.1.0 is published** a. In addition to release notes, publish migration guide and details of test collections run b. Supporting dependencies upgraded c. CI/CD configuration standardized for all core services **3.** Support for **Kubernetes 1.24+** version	**3. Support other implementation work-streams** a. **Third-Party (3PPI)** b. **Bulk** c. **IaC** 4. Support changes made by other work-streams (3PPI, Bulk, FPv3) and absorb them into Mojaloop releases if relevant and ready for adoption(so that these features are available (along with tests) out-of-box with Mojaloop releases). 5. Maintain Golden path tests for production ready features and run them as part of regression testing (and releases at various levels)
Issues, constraints	Limited team available Lack of dedicated team members on IaC	
Success Defined How?	1. A mojaloop release **v14.1.0** is made available with latest Kubernetes support **(1.24)** and **Bulk feature for FSPs** (accelerate bulk adoption) included in the release, along with recent bug fixes.	1. A mojaloop release **v14.1.0** is published which and is adopted by **IaC** and adopters.

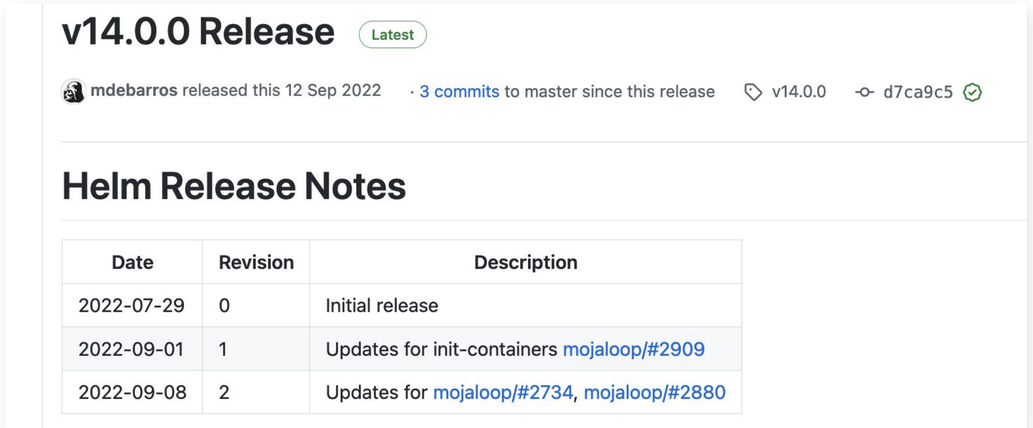
PI-19 Updates

1. Mojaloop **v14.1.0** release
   a. Support for kubernetes 1.24+
   b. Bulk feature for FSPs: sdk-scheme-adapter changes
   c. Bug fixes
      - Bulk bug fixes in Mojaloop core services
      - Testing improvements, fixes
2. Support current adopters, implementers
3. Sandbox deployed using IaC for dev, testing, QA
4. IaC support for Mojaloop **v14.0.0**, **v14.1.0**
5. Support Bulk implementation and enhancements
6. Support Bootcamps, hackathons - PISP Bootcamp (DFSLab), HiPiPo Hackathon

v14.0.0 Release - Revision 2

Maintenance

1. **Helm Maintenance Revisions**
   a. #2909: **Helm - Fixes for InitContainer dependencies** that did not have a fixed versions
      i. MongoDB was upgraded from v5.x to 6.x ← Upgraded initContainers to use 6.x
      ii. Fixed to ensure this issue doesn't repeat
2. #2880: **Central-Ledger - Simplify liquidity cover chec**k and fix issue with validation
3. **Testing-toolkit-test-cases updates**
   a. **Stability fixes** (i.e. availability of funds, tweaked timeouts, polling & wait-for-callback mechanisms)
   b. **Enhancements** to **tests to support liquidity** simplification ← additional validations added for balance checks



v14.0.0 Release Latest

mdebarros released this 12 Sep 2022 · 3 commits to master since this release · v14.0.0 · d7ca9c5

Helm Release Notes

Date	Revision	Description
2022-07-29	0	Initial release
2022-09-01	1	Updates for init-containers mojaloop/#2909
2022-09-08	2	Updates for mojaloop/#2734, mojaloop/#2880

v14.1.0 Overview

Kubernetes (K8s) v1.24+ Support ← Dev Release Available

1. **Support for K8s v1.24+ (#2352)** ← External (3rd-party) backends (e.g. MySQL, Kafka, etc) must be deployed separately
2. Backward **compatible from k8s v1.20+**

Scheme-Adapter ← WiP

3. **Helm Chart**
4. **Bulk Enhancements** (i.e. /***bulkTransactions***) & Supporting Simulators (SDK + TTK)

Notable Core Bug Fixes ← Dev Release Available

5. #2796: **Bulk** - Duplicate transaction not getting callback for POST /***bulkTransfers***
6. #2798: **Bulk** - No error callback when there's an Inactive participant in the transaction
7. #2800: **Bulk** - Invalid dfsp name in header or body does not return any error
8. #2801: **Bulk** - Invalid timestamp scenario not shown as failed transaction

Mojaloop v14.1.0 - k8s support

Summary of major maintenance changes

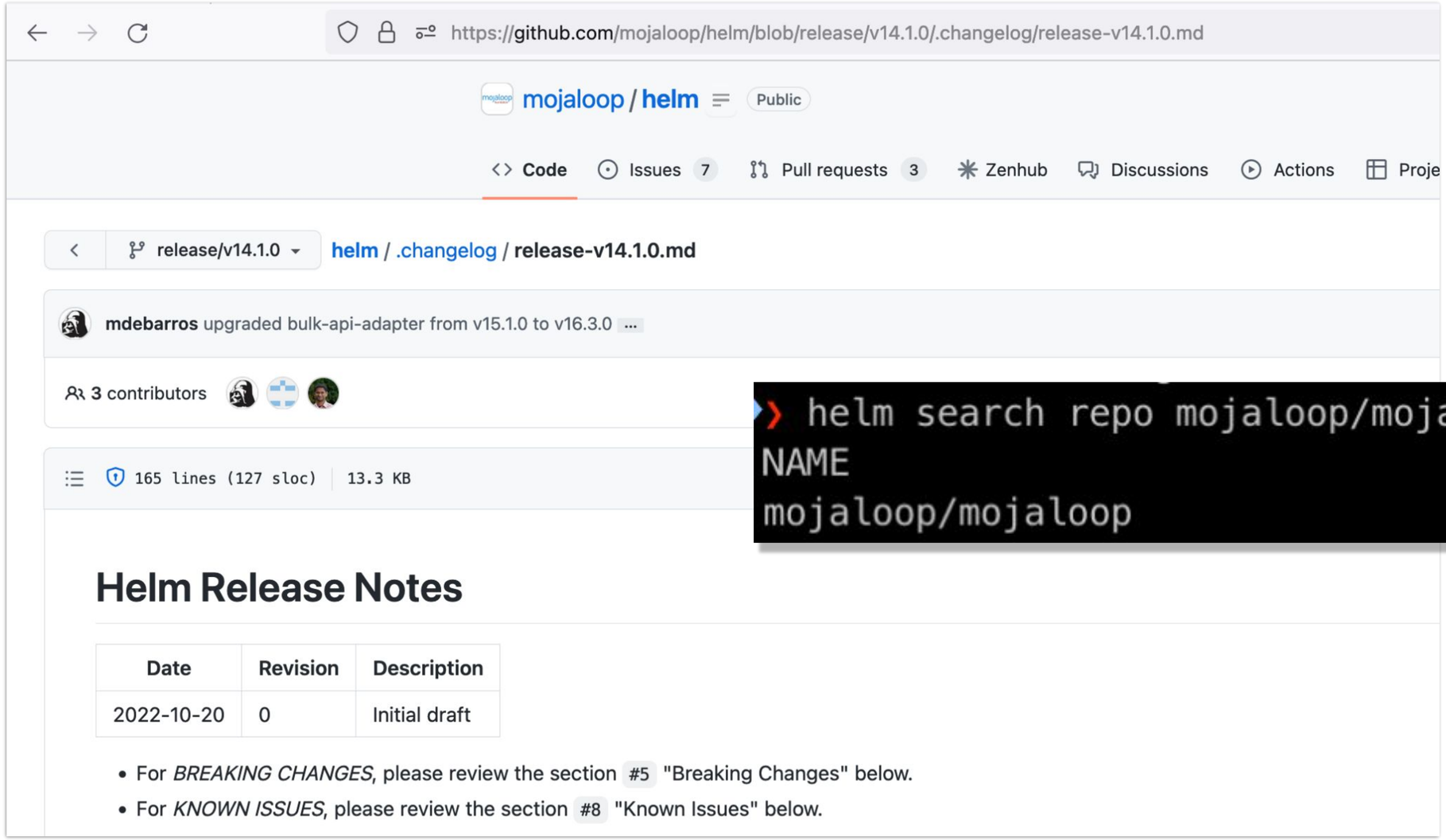
Kubernetes (K8s) v1.24+ Support

1. **Complete update to Helm 3**
   a. update (helm) Charts version to API **v2** (helm 3)
   b. remove all requirements.yaml => move all dependencies to Charts.yaml
   c. include new common library from “charts” repo to dependencies of all charts
2. **Start standardisation of ingress.yaml**
   a. replace ingress.yaml with a standardised k8s functional **1.24+** where possible
   b. modify remaining original *ingress.yaml* to *networking/v1* compliance
   c. values.yaml modified to unify how ingress are configured
   d. modify helm templates and helpers to support networking/v1

Mojaloop v14.1.0 (RC)

https://github.com/mojaloop/helm/releases

v14.1.0 RC release notes - https://bit.ly/3gEdi6v




```
❯ helm search repo mojaloop/mojaloop --devel
NAME                    CHART VERSION
mojaloop/mojaloop       14.1.0-14362.471407b
```

PI-19 Bootcamps, Hackathons support

1. Support Bootcamps, hackathons, Sandboxes
2. PISP Bootcamp (DFSLab)
    a. TTK sandbox exposing 3p-sdk
    b. Facilitation, participation
3. HiPiPo Hackathon
    a. sandbox mojaloop
    b. Facilitation
4. Sandbox setup on MLF's AWS with BMGF support

TTK PI-19 updates

1. Configurable rules in helm values
2. Used for development of **new** Bulk Feature in SDK Scheme Adapter
3. Supported hackathons by providing ML Sandbox using TTK
4. Used for development of GSP Adapter in hackathon

Roadmap for core

Mojaloop Release Roadmap - TBD with MLF and Community

v14.1.0 (PI-19)

1. Support for k8s 1.24+
2. Bulk Enhancements
3. *Testing k8s v1.25

v14.1.x (PI-20)

1. Maintenance revisions and patches
2. Support ‘patch’ notification on failures from FSPIOP v1.2

v15.0.0 (PI-20)

1. #2887: Separations of external backend dependencies from Mojaloop Helm chart
2. Support for Kubernetes v1.25+
3. Tech debt on dependency upgrades
4. Automated CI-CD checks for PR Validations and Release Testing using MiniLoop

Future

1. FX support in Mojaloop once FX API and design finalized
2. Settlements improvements
3. Third-party enhancements
4. Enhance tracing components to use latest OSS standards
5. vNext support
6. General maintenance, node upgrade (LTS available at the time)

Roadmap items for PI-20

1. Mojaloop release with separation of external dependencies into separate helm charts:

   https://github.com/mojaloop/project/issues/1852

2. Enhance tracing components to use latest OSS standards

3. Support vNext implementation

4. Support Patch notification on failures (transfers FSPIOP API v1.2)

5. Community support

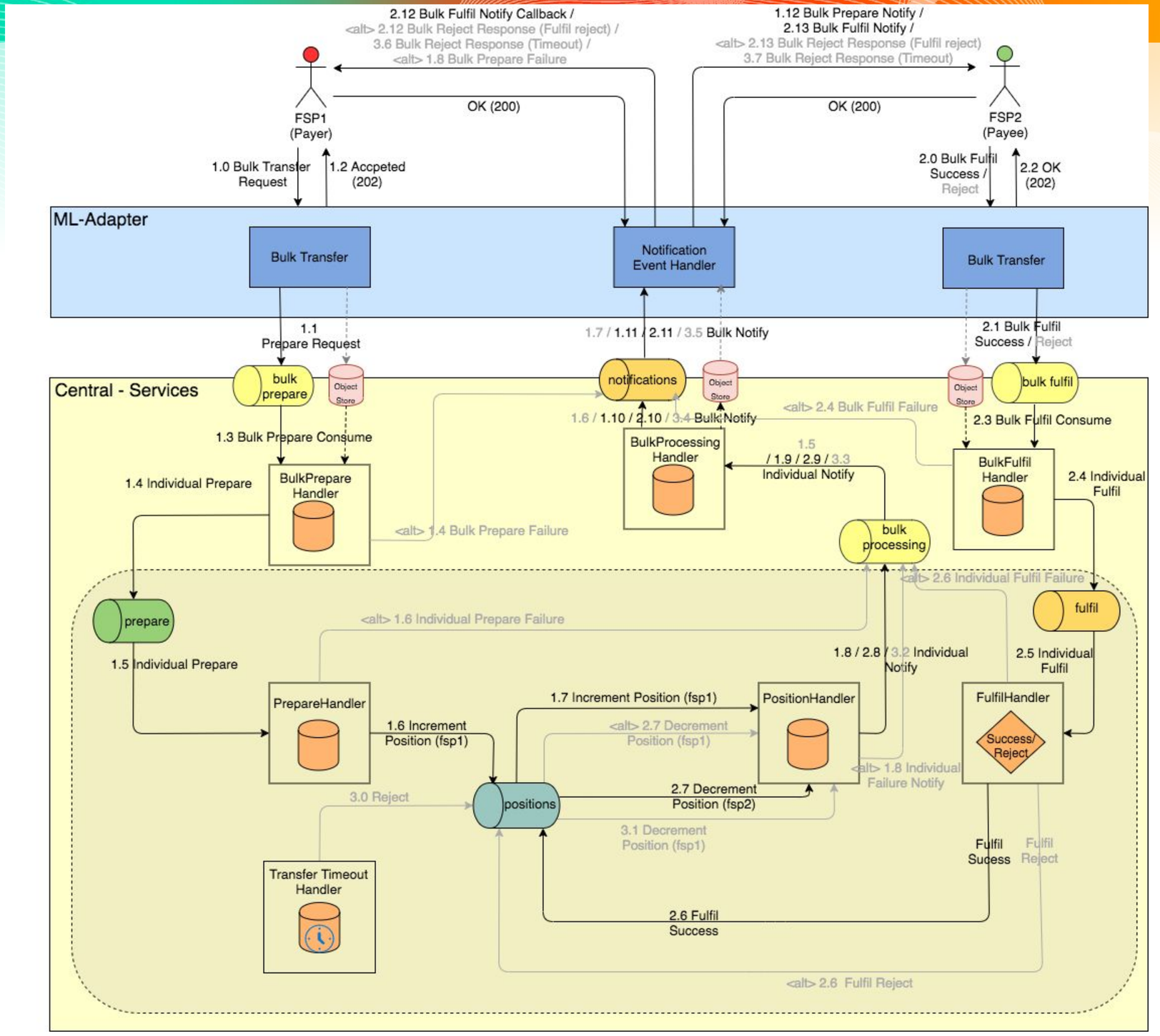
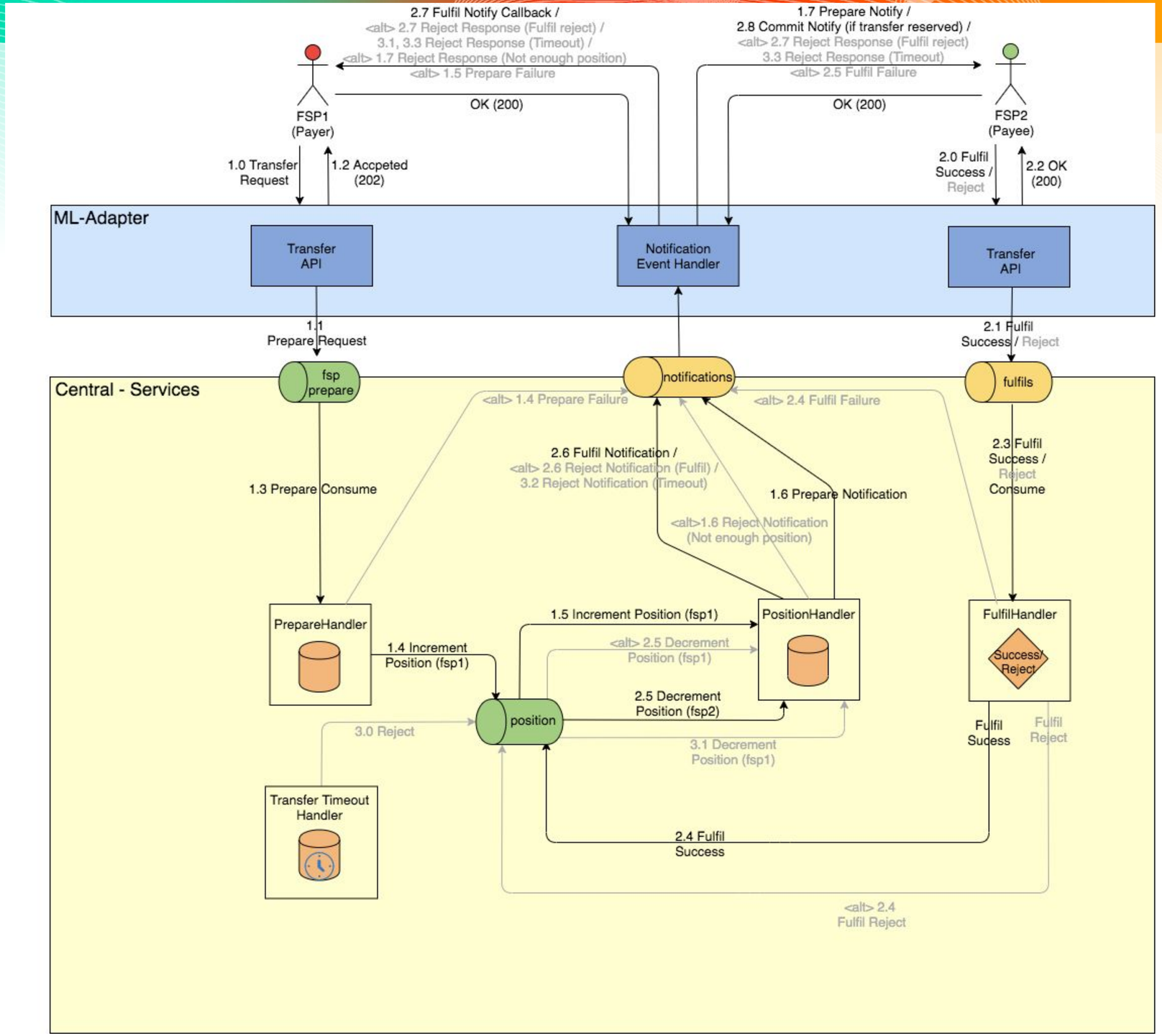
   a. Bug fixes (20-25% of sprint capacity for prioritized issues)

   b. Support community contributions and absorption into Mojaloop as required

Thank you!

Reach out for questions on Mojaloop Slack #help-mojaloop or #ml-oss-devs channels

PI-19: Bulk Transfers Architecture v1.0



PI-19: Transfers Architecture v1.1