Mojaloop releases & core PI-17

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Core team

PI-16 Contributors

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Agenda

1. Mojaloop PI-16 overview

2. PI-16 goals: Core releases & maintenance

3. Mojaloop releases update (**13.1.0 RC**, v14 PoC)

4. IaC update

5. Testing Toolkit (TTK) Update

6. Roadmap, PI-17 goals

Mojaloop PI Overview

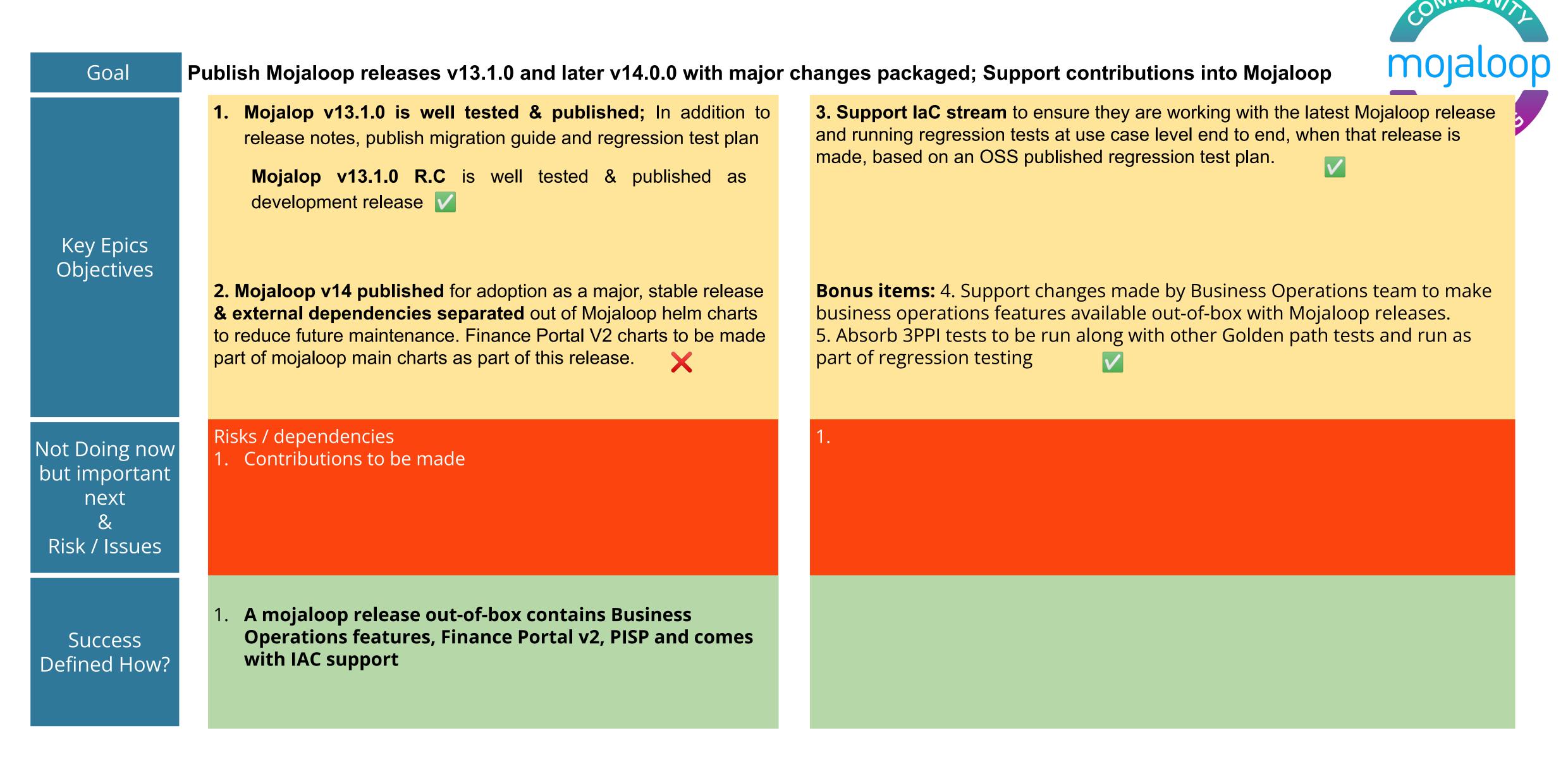| Timeline	Summary
Phase-1 (2016 - 17)	**Level One Project** • Reference Implementation • 6 Program Increments (PIs)
Phase-2 (2018)	**Road To Productionization** • 1 – 4 Program Increments
Phase-3 (2019 Jan - Dec)	**Supporting Adoption & Deployment** • PI-5 (Feb – April): Account lookup, QA Framework, 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. TBC on planning day (Feb - April 2022)**

Mojaloop API versions supported

1. FSP Interoperability (FSPIOP) API **v1.1.1**

   - Documentation changes to include details of optional HTTP headers that support distributed tracing

2. Settlement API **v2.0**

   - No changes

3. Administration API **v1.0**

   - No changes

4. Third-party Payment Initiation (3PPI) API ***v1.0***

   - v1.0 officially published in last PI

5. FX API - in design

   - Mostly accepted; finalizing changes, reviews

PI 16 Goals: Core releases & maintenance

Goal	**Publish Mojaloop releases v13.1.0 and later v14.0.0 with major changes packaged; Support contributions into Mojaloop**
Key Epics Objectives	1. **Mojalop v13.1.0 is well tested & published;** In addition to release notes, publish migration guide and regression test plan **Mojalop v13.1.0 R.C** is well tested & published as development release ✅ 2. **Mojaloop v14 published** for adoption as a major, stable release **& external dependencies separated** out of Mojaloop helm charts to reduce future maintenance. Finance Portal V2 charts to be made part of mojaloop main charts as part of this release. ❌	3. **Support IaC stream** to ensure they are working with the latest Mojaloop release and running regression tests at use case level end to end, when that release is made, based on an OSS published regression test plan. ✅ **Bonus items:** 4. Support changes made by Business Operations team to make business operations features available out-of-box with Mojaloop releases. 5. Absorb 3PPI tests to be run along with other Golden path tests and run as part of regression testing ✅
Not Doing now but important next & Risk / Issues	Risks / dependencies 1. Contributions to be made	1.
Success Defined How?	1. **A mojaloop release out-of-box contains Business Operations features, Finance Portal v2, PISP and comes with IAC support**	

PI-16 Objectives - Status

Core releases & maintenance work-stream Objectives

✓ 1. Mojaloop **v13.1.0** Release Candidate as dev release

2. Mojaloop **v14** Release

✓ 3. Support current adopters/implementers

✓ 4. Reference architecture stream support

✓ 5. Support merging of PISP, business operations framework features, tests

✓ 6. Progress on Mojaloop v14 (PoC done)

✓ 7. IaC support for Mojaloop releases

PI-16 Issues review - numbers

Core maintenance & release workstream

1. Total issues completed in PI-16: **20**

2. Bugs fixed in PI-16: **12** (included in above total)

3. IaC, DevOps, others not covered in this list

4. Link: https://github.com/mojaloop/project/issues?q=label%3Aoss-core+closed%3A%3E2021-11-01+updated%3A%3C2022-01-24+state%3Aclosed

Mojaloop Releases PI-16

1. **Release Notes**
   a. **v13.1.0** Release candidate - https://github.com/mojaloop/helm/blob/master/.changelog/release-v13.1.0.md

   The following command can be used to install/upgrade to v13.1.0 release candidate:

   ```
   helm -n {{namespace}} upgrade --install {{release}} mojaloop/mojaloop --devel --version 13.1.0-13148.8b8fd41
   ```

2. **Release Reports** (note: zenhub plugin required)
   a. v13.1.0 - https://bit.ly/3Gd3YPf* - blocked by #2556 (https://bit.ly/35fCwSN), #2654 (https://bit.ly/3tXMyCz)

3. **Future Releases**
   a. v14.0.0 - https://github.com/mojaloop/project/issues/2458

*Need zenhub plugin in the browser for release view

Mojaloop v14 Release Update ~ resume after v13.1.0 release

1. **Helm v14.0.0 PoC** - #2459 (https://bit.ly/3nrYmI5), #2458 (https://bit.ly/3rvGkXC)
   a. Remove external dependencies that are tightly integrated into the Mojaloop Helm Chart #1852
   b. Identify and replace deprecated Mojaloop dependant Helm Charts #1969 (MySQL and Kafka)
   c. Mojaloop Helm support for Kubernetes 1.22
   d. Nginx Ingress Controller v1.0.0 is incompatible with Mojaloop Helm v13.0.x releases #2448
   e. Mojaloop Helm deployments are not compatible when deployed to ARM-arch based hosts #2317
   f. Helm ingress rules at centralledger/chart-service hardcode ingress values #870
   g. Helm install failing with with "medium to large" release names #2322

2. **Improved Testing Capabilities**
   a. Testing with Kubernetes v1.20 -> v1.22 (https://bit.ly/3AtFe2H + https://bit.ly/3GYYkAf)
   b. Automated CI-CD Validation Testing (https://bit.ly/3AtFe2H + https://bit.ly/3GYYkAf)

3. **Community Contributions this PI**
   a. Automated CI-CD Validation Testing (https://bit.ly/3AtFe2H + https://bit.ly/3GYYkAf)
   b. Containerd support (https://bit.ly/3AtFe2H + https://bit.ly/3GYYkAf)
   c. Added Ingress Class support (required for K8s v1.22 + multiple Ing Cont.. support) (https://bit.ly/3AtFe2H + https://bit.ly/3GYYkAf)
   d. Business Operations Framework (See PRs https://bit.ly/3tRoTn1)

4. **Next PI Focus**
   a. Feedback from community on what target platforms should be supported, e.g: Ingress Controllers, K8s Releases
   b. Migrate & Re-factor remaining legacy (v13.x) Helm Charts into v14

Infrastructure as Code (IaC) updates Review of v1.3.x Release

1. All the repositories needed for IaC are publicly available
   a. https://github.com/mojaloop/iac-aws-platform
   b. https://github.com/mojaloop/iac-aws-bootstrap
   c. https://github.com/mojaloop/iac-shared-modules
   d. https://github.com/mojaloop/iac-aws-backend
   e. https://github.com/pm4ml/pm4ml-k3s-iac
2. Currently supports **v12 and v13**
3. Support multiple K8S versions tested on 1.17 and 1.21
4. Integrated BizOps
5. Support for Finance Portal v3 full test suite collection (Test Cafe)
6. Support for (automated) Payment Manager test suite collection (Test Cafe)
7. Fully integrated Payment Manager deployment with mTLS (all in Gitlab pipeline)

Infrastructure as Code (IaC) updates
V2 Refactoring

1. **Cleanup of Ingress**
   a. Removal of HAProxy on ingress
   b. Use 2 Ingress Controllers 1 for internal/1 for external traffic
   c. Front each ingress controller with AWS NLB (pass thru ssl)
   d. All traffic destined to hub operations goes thru internal NLB -> internal nginx -> service (includes grafana/vault/bizops/finance portal/wso2 admin/etc)
   e. Traffic for connection manager and the external gateway (api/token) traffic go thru the external.
   f. Whitelisting and ssl offloading including client certificate checking on api traffic is happening on the external nginx.
   g. Client certificate and IP whitelisting is configured in vault and automatically pushed to nginx.
   h. Wso2 containers are all accessed via ClusterIP services instead of nodeport services. Multiple ingresses have been created for wso2 services using various host names.
2. **Use of external-dns and cert-manager**
   a. All host names are generated using external-dns and all are based on an externally resolvable domain name, even those that are destined only for internal use
   b. Certificates are generated via cert-manager cluster issuers, one for letsencrypt and the other using vault.
3. **No more external VMs**
   a. Removal of external VMs that were running HAProxy
      i. Ingress HAProxy removed, functionality moved to nginx ingress controller
      ii. Callback HAProxy moved to a pod with a slightly modified helm chart from https://github.com/haproxytech/helm-charts
4. **Remove ElasticSearch, Kibana, APM and FluentD**
   a. Moved logging to use Loki stack - Single pane of glass for ops (Grafana)
   b. Results in less maintenance and lower specs of k8s cluster to support ES
   c. Also removes kibana which doesn't provide auth capability in open source offering.
   d. Requires Event Streaming Processor modifications to move off of EFK stack.
5. **Enhancements to Bizops**
   a. Removed 2nd IS-KM
   b. Moved to all TLS endpoints for bizops.
6. **Removal of addons kubernetes cluster** and the install of standalone simulators - now relying on pm4ml for e2e tests.
7. **Support for TTK tests**

Infrastructure as Code (IaC) - roadmap

1. Business Operations Framework support in IaC - Done

2. Helm v14 PoC testing in IaC - WIP

3. Support TTK and v13 Golden path tests internally and externally - Done

4. Enhancement: Payment Manager onboarding automation - WIP

5. Replace WSO2 - Design/POC stage

   a. ISKM -> Keycloak

   b. APIM -> ory stack integrated with ingress controller

ML TTK update

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PI 16 Goal: Mojaloop Testing Toolkit (TTK)

Confidence Vote: **4.5**

Goal

TTK - Support implementation teams with adoption. Support easy addition of new APIs and move to maintenance

Key Epics

1. Training Program and Documentation ✅
   a. MTP course for TTK is published
   b. Align documentation in the git repository with MTP

2. Support for teams ✅
   a. Support implementation teams use TTK for validation and other use-cases and deployment methods
   b. Support FXP implementation

3. Any OpenAPI definition can be easily added / onboarded using the UI

4. Improvements ✅
   a. Test execution improvements
   b. Test Runner improvements
   c. Improve version negotiation functionality
   d. Test coverage improvements
   e. Enhanced support for running on deployments
   f. IaC support

Not Doing now but important next

1. **Event SDK integration**

2. **Multi threaded execution**

3. **Native javascript support**

Success Defined How?

1. At least one existing Implementer adopts TTK for validating Switch deployment (and in daily cron jobs - bonus) - [in progress ✅]

2. MTP TTK course is published ✅

TTK PI-17 updates
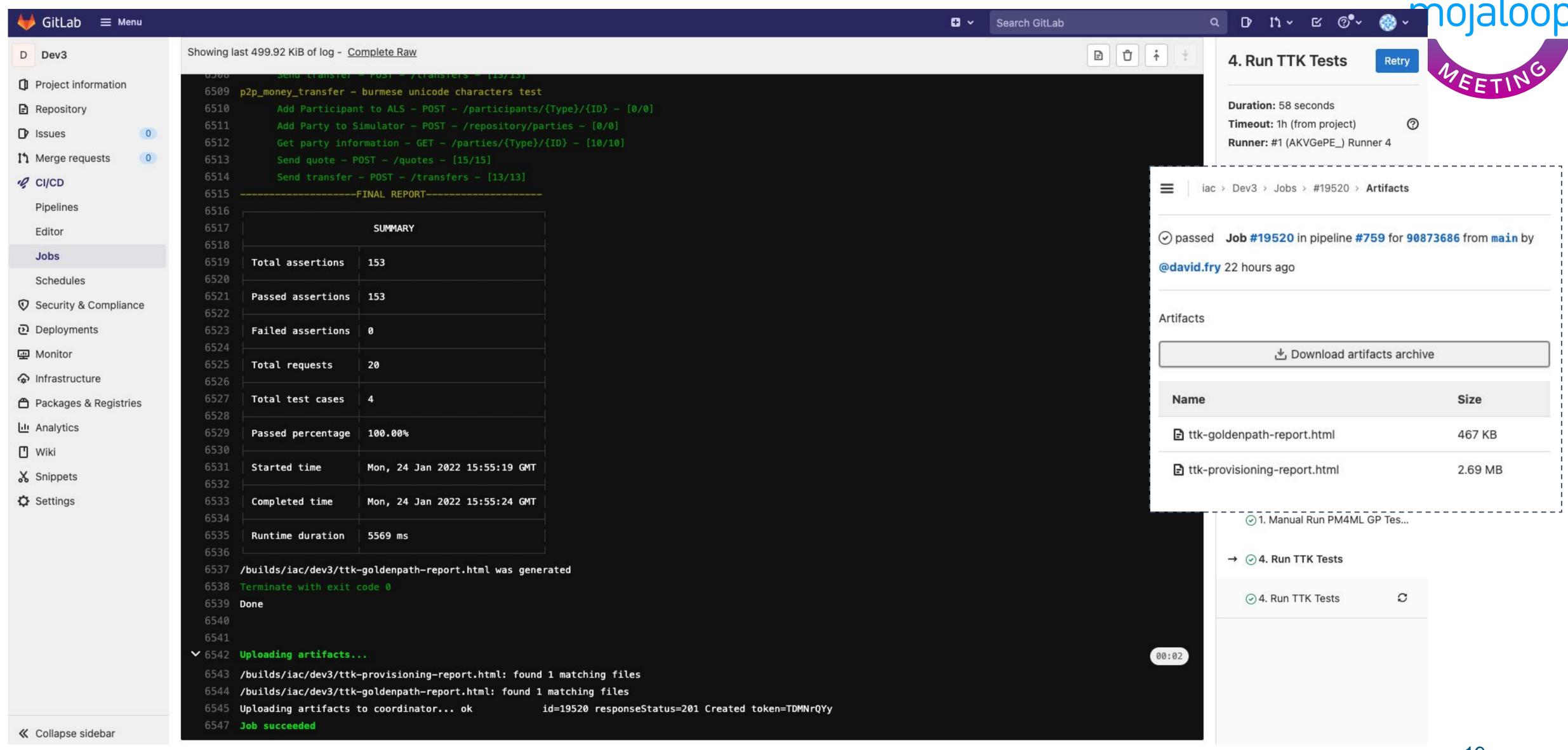
1. MTP TTK-101 is published!

2. TTK integrated with IaC

3. Support for teams that have adopted TTK (or in the process of adopting)

4. Minor feature improvements, test case additions and bugfixes

MTP TTK-101 Outline

1. MTP TTK-101 is published!

    a. How to use TTK

    b. Why TTK

    c. TTK usage in validating deployments, regression testing

    d. TTK to accelerate development

    e. Using TTK for demonstration

    f. TTK for onboarding

    g. TTK advanced use cases

    h. TTK usage with Payment Manager

Infrastructure as Code (IaC) - integration

Useful links

Documentation

https://github.com/mojaloop/ml-testing-toolkit/blob/master/documents/User-Guide.md

Video Tutorials

TTK 1 Validating Switch Deployments Demo - https://www.youtube.com/watch?v=P2kMuyFb7kc

TTK-2 Demonstration Purposes - https://www.youtube.com/watch?v=CG2BGzfauuM

TTK 3 Accelerating Development - https://www.youtube.com/watch?v=gPZYZdrjDps

Code Repositories

https://github.com/mojaloop/ml-testing-toolkit

https://github.com/mojaloop/ml-testing-toolkit-ui

Roadmap

PI 17 Roadmap: Mojaloop releases & core maintenance

To be confirmed during roadmap planning

Goal	**Publish Mojaloop releases v13.1.0 and v14.0.0 with major changes packaged; Support contributions into Mojaloop**

Key Epics Objectives	1. **Mojalop v13.1.0 is published;** In addition to release notes, publish migration guide and regression test plan. Document upgrade scenarios and deployment options to support v1.0 and v1.1 by Schemes 2. **Mojaloop v14 published** for adoption as a major, stable release **& external dependencies separated** out of Mojaloop helm charts to reduce future maintenance.	3. **Define release cadence. Document upgrade and migration strategy** to ensure adopters can upgrade to latest Mojaloop releases and are able to run regression tests at use case level end to end **Bonus items:** 4. Support changes made by other work-streams - Business Operations team, 3PPI, FPv3 to ensure these features are available out-of-box with Mojaloop releases as relevant. 5. Maintain Golden path tests for production ready features and run them as part of regression testing

Not Doing now but important next & Risk / Issues	Risks / dependencies
	1. Limited resourcing for core maintenance to work on both v14 and existing bugs/fixes
	2. Lack of dedicated team members on IaC
		1. Contribution dependency required from community for features such as:
		   a. Business Ops
		   b. Finance Portal v2 / v3
		   c. IaC

Success Defined How?	1. **A mojaloop release v14 is published and closely integrated with IaC**	1. **Mojaloop release v14 is accepted for testing by at least one implementer**

Thank you!

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