



EDGE X FOUNDRY™

# DevOps Working Group

Thursday April 2, 2020



















# Agenda

Time	Topic	Owner
10 Min	Geneva / DevOps Updates	James
20 Min	Open Horizons	Joe Pearson / David Booz / IBM
10 Min	Geneva Release Planning	Lisa
15 Min	Hanoi Release Pre-Planning	James / All
5 Min	AOB / Opens	All

# Attendees

Participants (8)

Find a participant

- JG** James Gregg (Intel) (Me)   
-  Ernesto Ojeda (Intel)  
-  Jim White  
- JP** Joe Pearson (IBM)  
- LG** Lenny Goodell (Intel)  
- L** Lisa Rashidi-Ranjbar  
- TE** tony espy  
- CH** Colin Hutchinson (Kong) 



# DevOps WG Update

- Jenkins Transformation to Pipelines
  - Work continues on the transformation to Jenkins Pipelines
    - Multiple stories related to release automation for Geneva - WIP
      - Create global function to handle docker images for the automated release
      - Add unit tests to global library – need to research
      - Add a snap stage job for edgex-go in cd management – WIP
      - New user story added to add edgex-global-pipeline version info to the pipeline log
      - Create global function for releasing git tags - WIP
      - Documentation
    - Optimizations of edgex-global-pipelines
      - Completed migration from Maven to Gradle unit test runner in order to easily leverage jacoco test reports for code coverage - DONE
      - go-mod-configuration Pipeline - Thank you Lenny !! - DONE

# Open Horizon Project

- Started discussion with Open Horizon team
  - Shared documentation with David Booz/IBM
  - Meeting planned for 04/02/2020
- Linux Foundation Infrastructure
  - Access to the build infrastructure
    - Referred to Linux Foundation documentation <https://docs.releg.linuxfoundation.org/en/latest/jenkins.html#>
- Jenkins Pipelines
  - Current Build Process via Jenkins Pipelines documentation [https://github.com/edgexfoundry/jenkins\\_pipeline\\_presentation](https://github.com/edgexfoundry/jenkins_pipeline_presentation)
  - <https://docs.releg.linuxfoundation.org/en/latest/jenkins-sandbox.html>

- OH source code
- OH Artifacts
  - Docker images
  - Compiled binaries

# Geneva Freeze and Release dates

## TSC approved

- Freeze: 12pm GMT, April 22 (Wed, week before planning meeting)
- Release: 12pm GMT, May 13 (Wed two weeks after planning meeting)
  - See Geneva release notes for details (on Slack)

## Geneva release

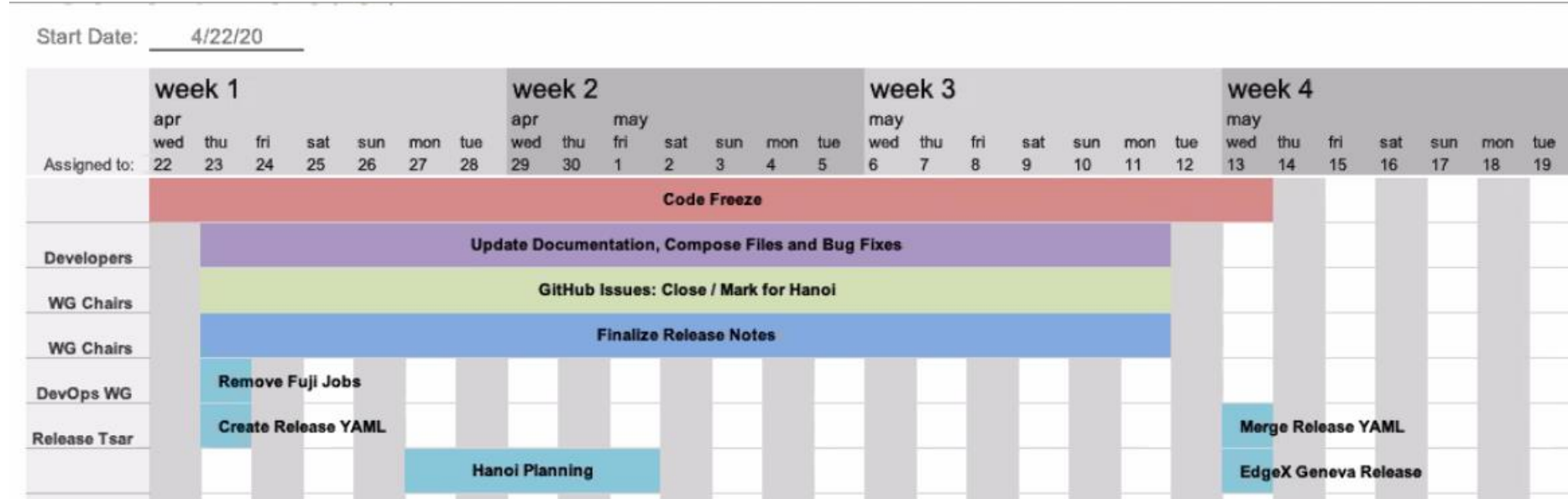
Completed	Work In Progress	Release Backlog
163	4	7

**Iteration Status** < Unscheduled > Select or Add Saved and Shared Views

Search Work Items + Add New Show 1 Filter Show Fields

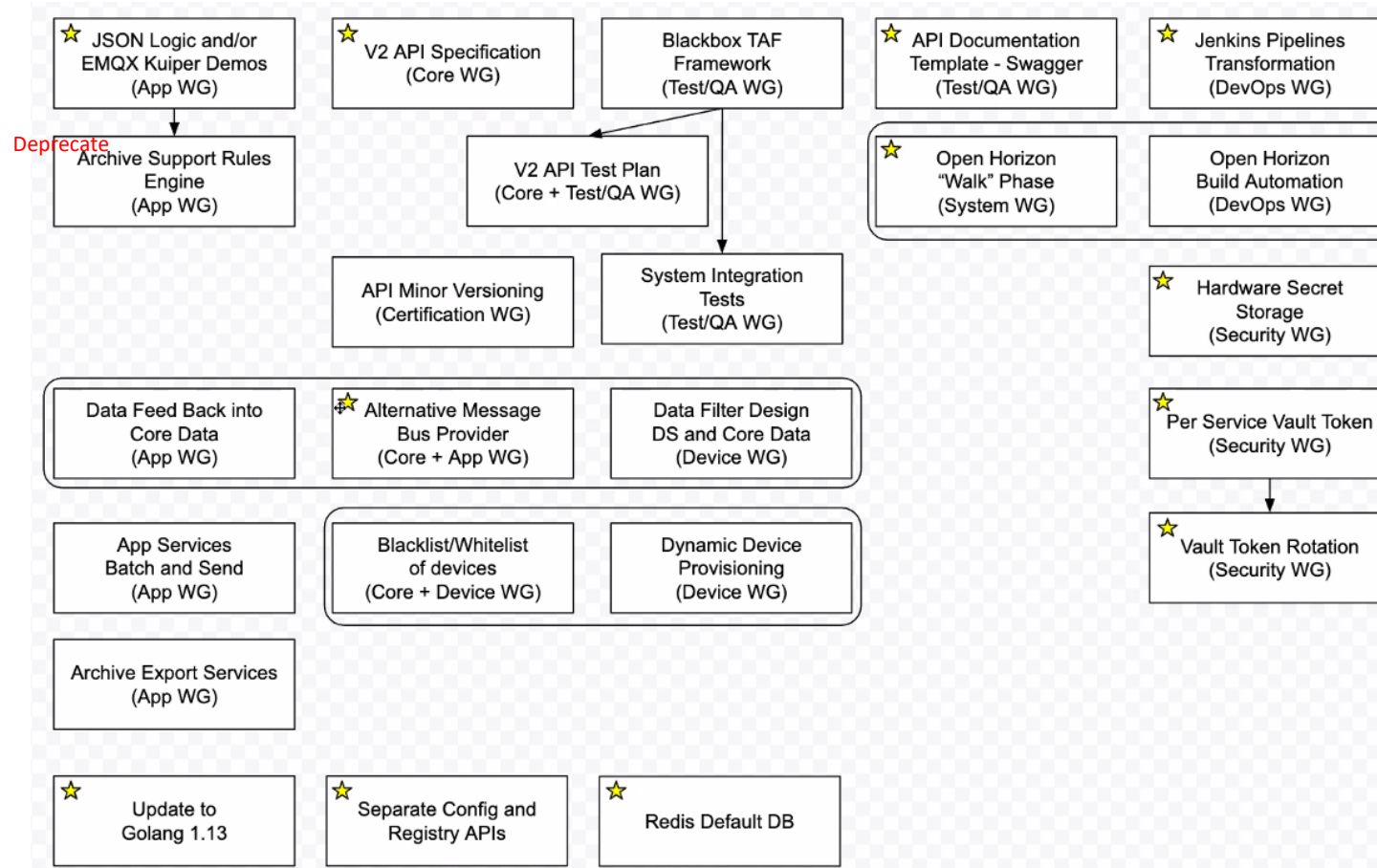
Rank	ID	Name	Schedule State	Blocked	Plan Est	Task Est	To Do	Owner	Defects	Tags
<b>Totals</b>					30 Points	1 Hours	1 Hours			
<input type="checkbox"/>	1	US6335 EdgeX DevOps: Integrate the edgeXReleaseDocker into the releaseKraken in cd-management	D	⚡	3	0	0	Lisa Rashidi-Ranjbar	⚡	Geneva Kraken
<input type="checkbox"/>	2	EdgeX DevOps: Need edgex-global-pipeline version information in the pipeline log (implementation)	D	⚡	5	0	0		⚡	Geneva Phase 3
<input type="checkbox"/>	3	EdgeX DevOps: Documentation: edgex-global-pipelines manual bump of stable and experimental tags	D	⚡	3	0	0		⚡	Geneva Phase 3
<input type="checkbox"/>	4	EdgeX DevOps: Integrate edgeXSnap function into edgeXBuildGoApp and edgeXBuildCApp	D	⚡	5	0	0		⚡	Geneva Phase 3
<input type="checkbox"/>	5	EdgeX DevOps: Integrate the snap release into the release kraken in cd-management	D	⚡	5	0	0		⚡	Geneva Phase 3
<input type="checkbox"/>	6	EdgeX DevOps: New build automation for device-opcua-c (BLOCKED)	D	⚡	3	0	0		⚡	Geneva Phase 3
<input type="checkbox"/>	7	EdgeX DevOps: Build automation for device-bluetooth-c (BLOCKED)	D	⚡	3	1	1		⚡	Geneva Phase 3
<input type="checkbox"/>	8	EdgeX DevOps: Create standard pipeline template for legacy java repos - support-rules-engine (BLOCKED)	D	⚡	3	0	0		⚡	Geneva Phase 3

# Geneva Release Schedule





# Geneva Dependency



# Backlog Review

EdgeX Foundry Project

Repositories 100 Packages People 69 Teams 100 Projects 12

DevOps WG Updated 21 hours ago

Filter cards + Add ca

5 Icebox

- Snap builds should use unbuffer for better output logging  
ci-management#369 opened by anonymouse64
- Update snapcraft inside docker to use new setup from snapcraft  
ci-management#449 opened by anonymouse64  
enhancement
- Make stage-snap jobs more smart about pushing metadata  
ci-management#475 opened by anonymouse64  
enhancement
- edgeXSemver leaves command to caller but doesn't allow specifying the version/image to use  
edgex-global-pipelines#15 opened by dweomer  
bug
- Create standard pipeline template Jenkinsfile for legacy java repos  
edgex-global-pipelines#55 opened by Iranjbar  
wontfix

4 New Issues

- New build automation for device-opcua-c  
ci-management#481 opened by jamesgregg  
blocked enhancement geneva
- New build automation needed for device-gps service  
ci-management#446 opened by jamesgregg  
blocked enhancement geneva
- Need edgex-global-pipeline version information in the pipeline log  
edgex-global-pipelines#131 opened by jamesgregg  
enhancement hanoi
- Set up codecov for edgex-global-pipelines  
edgex-global-pipelines#56 opened by Iranjbar  
hanoi

7 Release Backlog

- Create documentation for edgex-global-pipelines manual bump of stable and experimental tags  
edgex-global-pipelines#124 opened by Iranjbar  
documentation geneva
- Create global function for releasing git tags  
edgex-global-pipelines#134 opened by Iranjbar  
geneva
- Integrate edgeXSnap function into edgeXBuildGoApp and edgeXBuildCApp  
edgex-global-pipelines#125 opened by Iranjbar  
enhancement geneva
- Add snap stage job for edgex-go in cd-management  
cd-management#2 opened by Iranjbar  
geneva
- Integrate the snap release into the release kraken in cd-management  
cd-management#3 opened by Iranjbar  
geneva
- New build automation for device-bluetooth-c  
ci-management#470 opened by jamesgregg  
blocked enhancement geneva
- Git semver is unable to determine branch for HEAD in Jenkins job  
git-semver#47 opened by soda480  
bug

2 In Progress

- Create global function to handle docker images for the automated release  
edgex-global-pipelines#135 opened by Iranjbar  
geneva
- Build Automation for Open Horizons  
edgex-global-pipelines#63 opened by jamesgregg  
enhancement geneva

2 QA/Code Review

- ADR to outline the release automation flow for EdgeX  
edgex-docs#110 opened by Iranjbar  
geneva  
Changes approved
- update endpoints to test release  
cd-management#6 opened by ernestojeda  
2-medium geneva  
Changes approved

163 Done

- Root cause analysis of the ARM failures for blackbox-testing - Infrastructure failures  
ci-management#520 opened by Iranjbar  
blocked
- Implement release docker image  
edgex-global-pipelines#140 opened by ernestojeda  
2-medium enhancement geneva
- Update developer documentation on how to use Jenkins Sandbox to test a new pipeline.  
ci-management#588 opened by jamesgregg  
documentation geneva
- Migrate from Maven to Gradle  
edgex-global-pipelines#138 opened by ernestojeda  
2-medium enhancement geneva
- EdgeX DevOps: SPIKE - investigate root cause for intermittent OPEN\_SSL errors when pulling go module dependencies  
ci-management#555 opened by jamesgregg  
geneva phase 3
- Create global function for snap releases (Geneva)  
edgex-global-pipelines#45 opened by

# Meeting Minutes

No new update regarding open PR related to lftools / sigul – [IT-19186](#)

Officially closed the ticket related to Community Bridge – Advanced Snyk Reporting

Support for **-race** flag within CI - as discussed within the Architect's Meeting this week (Hanoi pre-wire)

- It works for edgex-go because that Pipeline builds on the VM host, not within Docker like the other microservices
  - *edgex-go does not use the Alpine base-build image*
- Action: Scope the work involved to change to Ubuntu / Debian based build images
  - Note: There's no commitment to include this scope for Hanoi – need to size the effort and report out at Hanoi planning meeting
  - We build within Alpine base-build image because the microservices all use the same base for each EdgeX Foundry service
  - Reason for using Alpine based image is not just because of performance, there's also less work involved with patching / updating base build images when new CVEs are found

ADR to outline the release automation flow for EdgeX - <https://github.com/edgexfoundry/edgex-docs/pull/110>

- ADR0007 communicates the vision around continuous delivery and work involved to automate the release
- Action: Lisa will work to incorporate feedback from the reviewers
- The official approval process will require formal TSC approval
- Expect to close on this next week after additional review by the community

Removal of config-seed broke the Fuji jobs.

- Is there a plan for a Fuji dot release ? - **NO**
  - **DECISION**: Jim White to cover with TSC next week – we will not fix the broken Fuji jobs

# DevOps WG Update (Geneva)

Geneva (~Apr 2020) Focus:

- DevOps Jenkins Pipeline Transformation completed
  - Introduced new Jenkins Global Libraries for build automation
    - Includes test framework for Groovy code
    - Explore underway to look into code coverage of Groovy code using Codecov.io
  - Semantic Versioning using Intel contributed utility (git-semver) enhanced to include test framework
  - Continuous Delivery via "release-kraken"
  - Developer Enablement – GitHub Project Tracker, GitHub Issue label creation automated, gitcommit linter implemented \*
  - New ci-build images and global libraries developed to support Jenkins Pipelines
  - New life cycle policies implemented on Linux Foundation Nexus repositories
  - Developer Documentation created for new Jenkins Pipelines
  - Improved performance of all builds to include collaboration with Linux Foundation to drive performance improvements for ARM builds (~15 mins build performance improvements using a new flavor of LF build nodes)
    - X86 build nodes (VM) uses 4cpu – 2gb
    - Arm64 build nodes (VM) now uses 4 cpu – 16gb

DevSecOps scope includes:

- Snyk Advanced Reporting via Community Bridge - \$8K savings on licensing for developer licenses
- Snyk Docker Hub image scans with weekly reports of new vulnerabilities
- Snyk CLI of Go integrated into scan stage of Jenkins Pipelines
- Clair image scans within scan stage of Jenkins Pipelines
- DevOps contributed code fixes to address CVEs found in images based on Snyk reporting
- Lftools updated to use latest version – code signing, git tag signing, Docker image signing



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# Hanoi Planning

Scope Discussions

# Hanoi - DevOps

- Performance Optimizations
  - Jenkins Pipeline optimizations for edgex-go
  - Explore options from LF for supporting Jenkins on K8s
- Performance of the Build Environment
  - Monitoring / Alerting optimizations (Continuous Improvement Opportunity)
- Technical Debt
  - Caching Dependencies – speed it up (upstream dependencies)
- Open Horizons Enablement
  - Shared Infra with Open Horizons
  - Build Automation for OH
- Stretch Goals
  - Code Coverage for Jenkins Global Libraries (codecov.io)
  - Snap improvements
  - Support for **-race** flag



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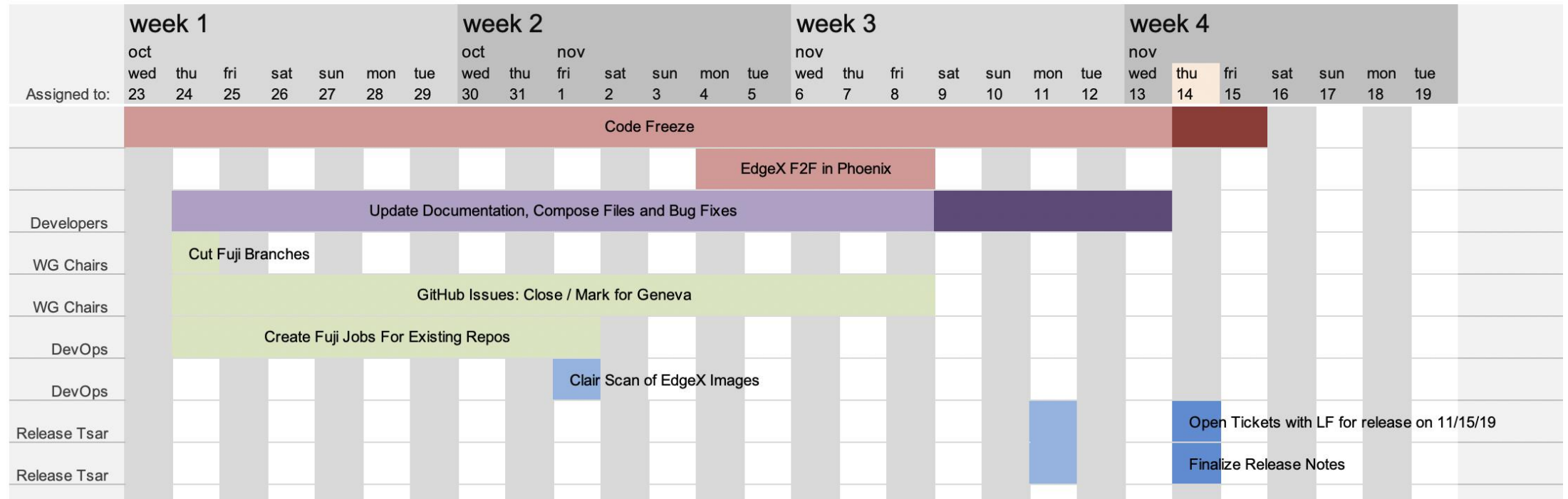
# Geneva Planning

Scope Discussions

# Fuji Release

- Freeze: Oct 23<sup>rd</sup> (Wednesday)
- Release: Nov 15<sup>th</sup> (Friday)

Start Date: 10/23/19 (with extension)





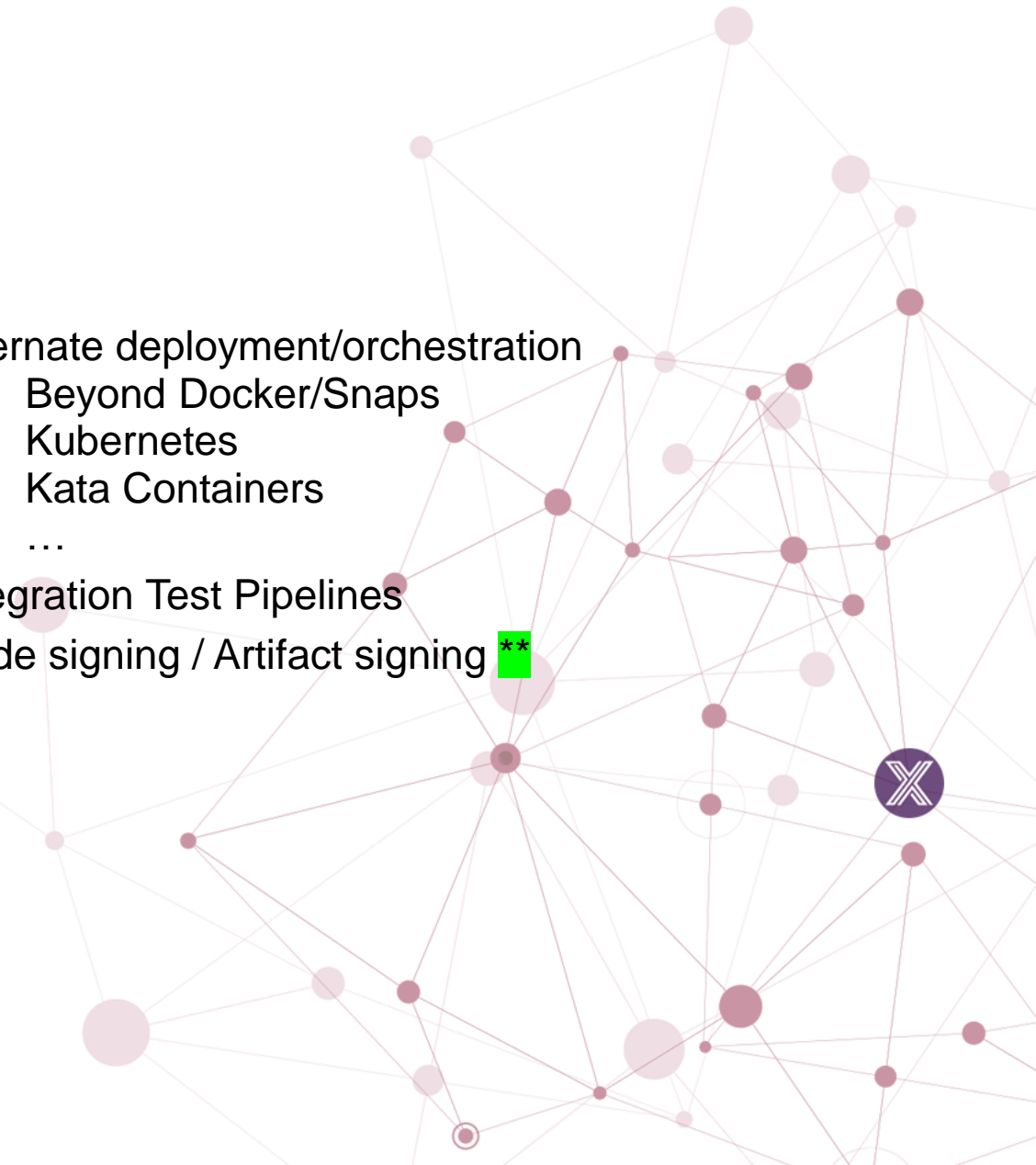
# Geneva – DevOps

## In

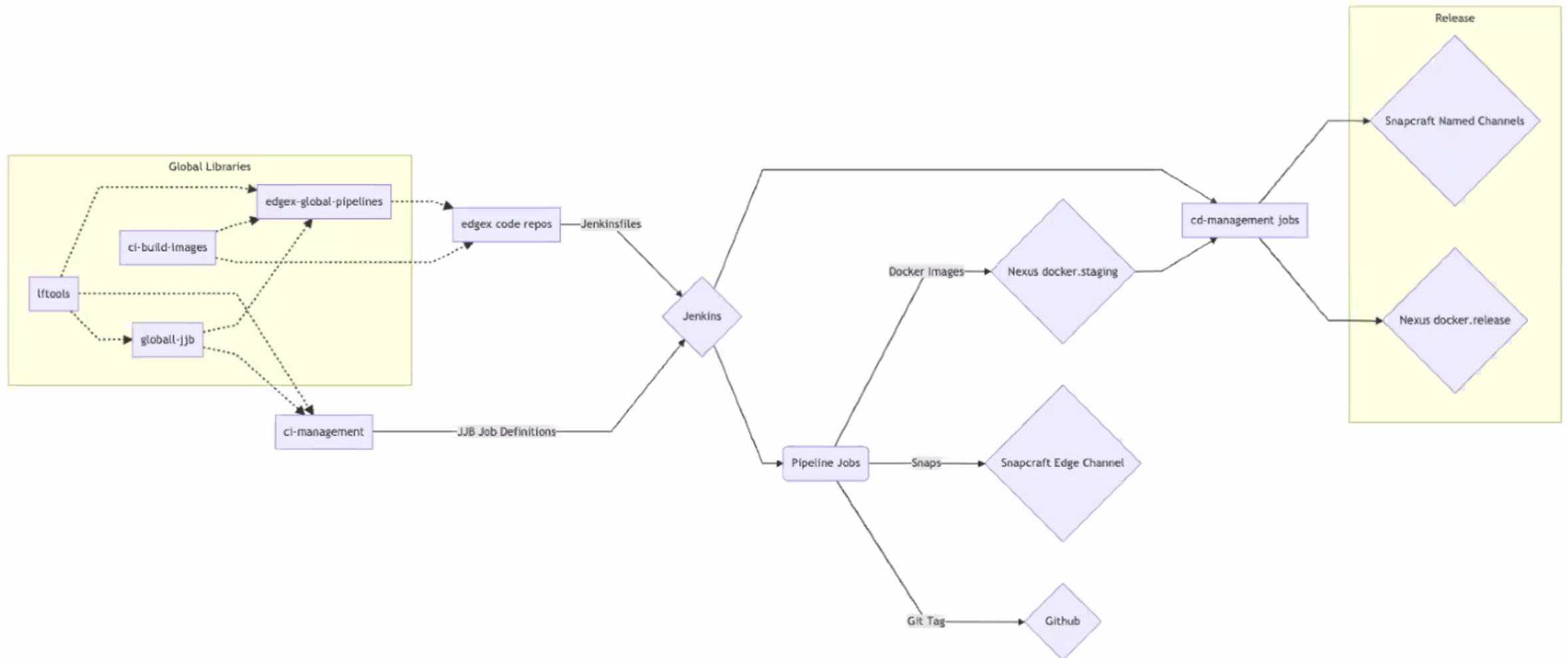
- Full Pipeline transformation for EdgeX services
  - Convert Jenkins JJB Freestyle jobs to Jenkins Pipelines
- Introduce GitHub Org Plugin
- Simplified Jenkinsfile
- Global Libraries to support Jenkins Pipeline transformation
- Add Unit testing to global-libraries (uncommitted) \*\*
- Snyk integration for edgex services
  - As part of Jenkins Pipeline conversion
- Slack integration with Jenkins pipelines
- Nexus Cleanup / Lifecycle Policy

## Out

- Alternate deployment/orchestration
  - Beyond Docker/Snaps
  - Kubernetes
  - Kata Containers
  - ...
- Integration Test Pipelines
- Code signing / Artifact signing \*\*



# Geneva Transformation: Architecture



# How long does it take? Is this all Geneva scope?

## Geneva Transformation

Phase 1  
Work in Progress  
Q3 2019

### Phase 1

- Research Spikes
- Plugin Setup and Configuration
  - Jenkinsfile
  - Jenkinsfile.sandbox

### Phase 2

- Jenkinsfile templates
- Implementation details get solidified
- Refactor existing pipelines to use new templates

### Phase 3

- Existing Job Migration

Full Transformation by Geneva Release - April 2020



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# Fuji Planning

Scope Discussions

# Fuji – DevOps

## In

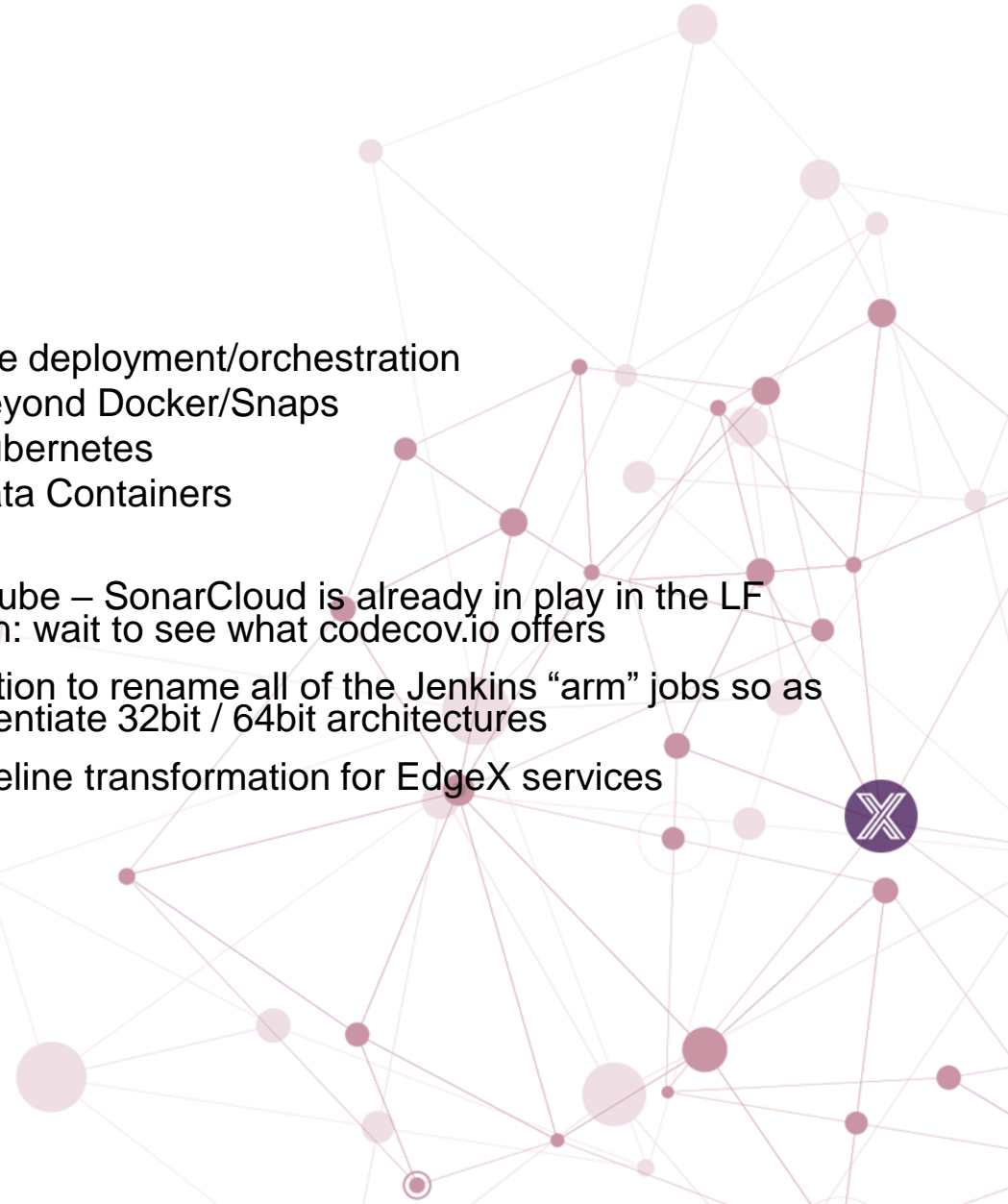
- Static code analysis tool identified and integrated into the EdgeX Jenkins Pipeline for Docker image scanning (Clair Server)

Explore SAST for true static code analysis to include additional tooling such as Fortify / Coverity





- Code and artifact signing with semantic versioning
- Fix Documentation – edgex-go
  - Create a new repo for edgex-docs
- Build Performance Optimizations
  - Pipelines for EdgeX Foundry base build images
  - Basebuild images managed locally within Nexus
  - Leverage PyPi Proxy for local pip dependencies
  - ARM builds – optimization leveraging different high CPU build nodes / OS (ARM Team)

## Out

- Alternate deployment/orchestration
  - Beyond Docker/Snaps
  - Kubernetes
  - Kata Containers
  - ...
- SonarQube – SonarCloud is already in play in the LF Decision: wait to see what codecov.io offers
- Suggestion to rename all of the Jenkins “arm” jobs so as to differentiate 32bit / 64bit architectures
- Full Pipeline transformation for EdgeX services



# EdgeX DevOps Commitments (Fuji)

Scope of Work	
Add static artifact analysis into the EdgeX Jenkins Pipeline (analysis of Docker /runtime artifacts, not the source code)	
Add code and artifact signing with semantic versioning	
Conduct build performance optimizations by: <ul style="list-style-type: none"> <li>• Adding Pipelines for EdgeX Foundry base build images</li> <li>• Allow base build images to be managed locally within Nexus</li> <li>• Leverage PyPi Proxy for local pip dependencies</li> </ul>	
Explore static code analysis like Checkmarx, Coverity, GuardRails, Synk, SonarQube	

- Clair Server landing no longer at risk for Fuji
  - LF committed to implement on AWS and fund with expected completion next week
- gitsemver along with lftools used for artifact signing and semantic versioning
- Jenkins build performance optimizations for base build images completed
- All base build images will now be stored in Nexus (Snapshot):10003
- PyPi enabled as part of Edinburgh scope
- Initial review of GuardRails showed that the product was identifying issues which were not applicable for microservices architecture

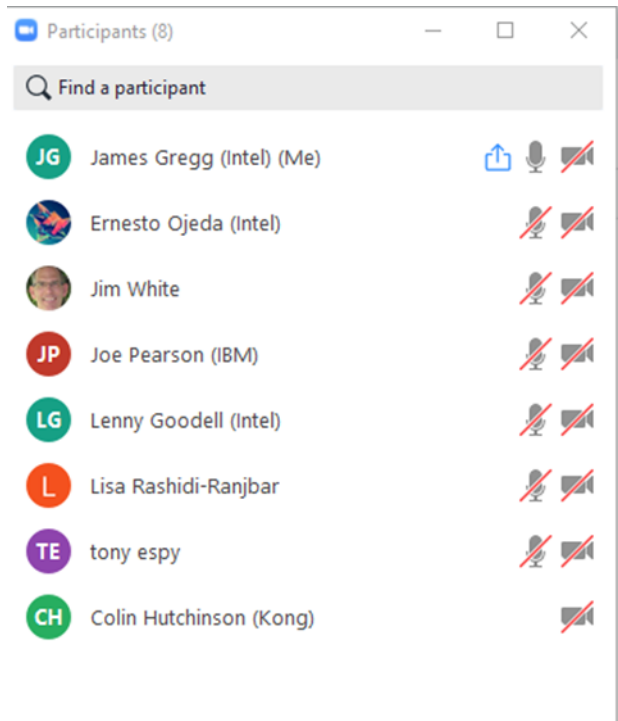


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# Attendees & Community Participation – ww14



Community Participation

