



EDGE X FOUNDRY™

# DevOps Working Group

Thursday March 12, 2020

# Agenda

Time	Topic	Owner
10 Min	Geneva / DevOps Updates	James
20 Min	Continuous Delivery (cd-management) ADR (release-kraken)	Lisa
10 Min	Geneva Release – Accomplishments & Remaining Work	James / Lisa
15 Min	Lftools / sigul issue (signing for Geneva)	James
5 Min	AOB / Opens	All

# Attendees

Name	Organization	Video	Audio	Chat
JG	James Gregg (Intel) (Me)	On	On	On
BM	Bill Mahoney (Intel)	Off	On	On
L	Lisa Rashidi-Ranjbar	Off	Off	On
W	Walt (Intel)	Off	On	On
EB	Eric Ball	Off	Off	On
JW	Jim White	Off	Off	On
LG	Lenny Goodell (Intel)	Off	Off	On
M	Mike	Off	Off	On



# DevOps WG Update

## Geneva

- Jenkins Transformation to Pipelines
  - Work continues on the transformation to Jenkins Pipelines
    - “release-kraken” full automation of the release - WIP
    - Linter for edgex-global-pipelines - WIP
    - Update to Jenkins Pipeline documentation - WIP
      - PR under review
    - git-semver bug fix - WIP
    - Automation for the GitHub Issue labels - WIP
      - Seeing job failures related to cron job - ssh credentials error to GitHub
      - Needs further investigation and possible help from LF Release Engineering
    - Update lftools for ci-build images
      - Defect identified lftools:latest which supports python3 includes sigul which doesn't
      - LF Release Engineering plans to issue a PR back to the sigul project and hopes that they will accept it
      - Seeking alternatives for github tag signing
    - Snap Global Library developed with plans to implement after review
    - Stretch Goal - Implement code coverage via codecov.io for edgex-global-pipelines
      - Explore completed with decision made to not continue with implementation for Geneva
      - Will revisit for possible Hanoi scope

## CommunityBridge - Advanced Snyk Reporting

- EdgeX Foundry added to the CommunityBridge Vulnerability Reporting
  - EdgeX Foundry added to the CommunityBridge Vulnerability Reporting
  - CB fixed a number of the issues identified (sorting, search, filtered out archived repo per the settings toggle)

# 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

# Backlog Review

EdgeX Foundry Project

Repositories 100 Packages People 68 Teams 100 Projects 12

DevOps WG Updated 22 hours ago

**Icebox**

- Snap builds should use unbuffer for better output logging
- edgeXSemver leaves command to call but doesn't allow specifying the version/image to use
- Update snapcraft inside docker to use new setup from snapcraft
- Make stage-snap jobs more smart about pushing metadata
- Root cause analysis of the ARM failures for blackbox-testing - Infrastructure failures
- Create standard pipeline template Jenkinsfile for legacy java repos

**New Issues**

- Need edgex-global-pipeline version information in the pipeline log
- Build Automation for Open Horizons
- New build automation for device-blueoothic
- New build automation for device-opcus-c
- New build automation needed for device-gps service
- Set up codecov for edgex-global-pipelines
- Create documentation for edgex-global-pipelines manual bump of stable and experimental tags
- Integrate edgeXSnap Function into edgeXBuildGoApp and edgeXBuildCApp
- Add snap stage job for edgex-go in cd-management
- Integrate the snap release into the release kraken in cd-management

**Release Backlog**

- We need to lint edgex-global-pipelines

**In Progress**

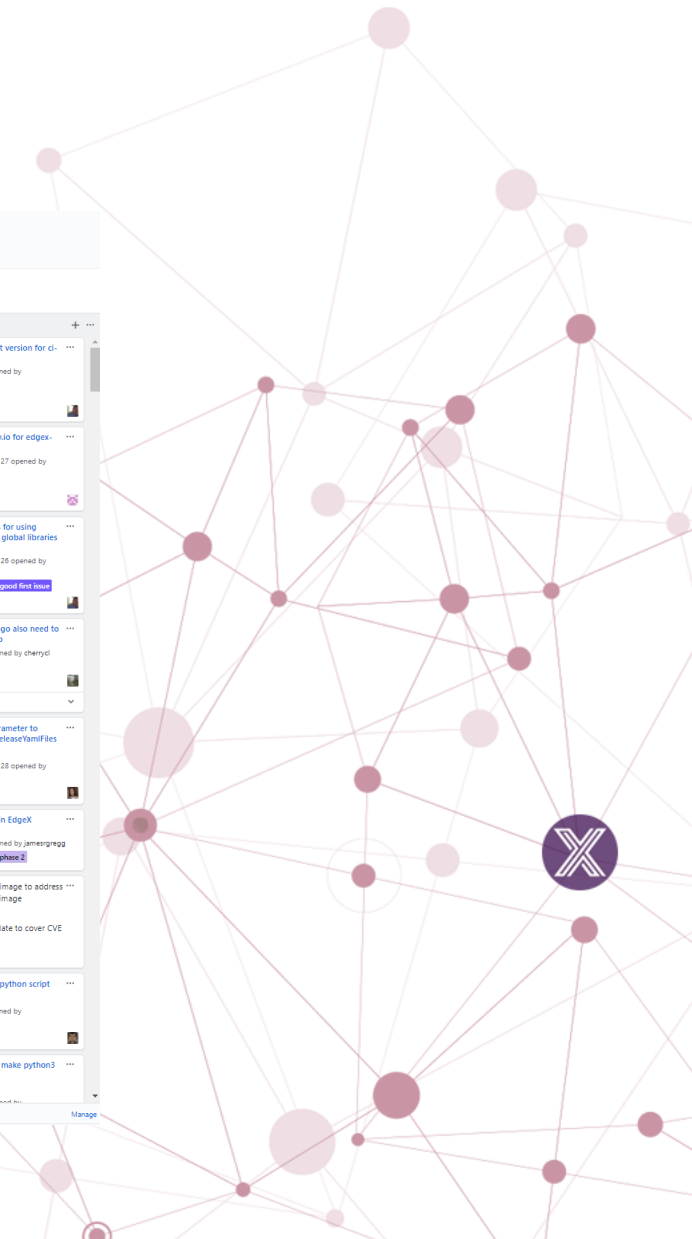
- Automation for the Git Hub Issues labels
- Create global function for snap releases (Geneva)
- EdgeX DevOps SPIKE - Investigate root cause for intermittent OPEN SSL errors when pulling go module dependencies
- Git semver is unable to determine branch for HEAD in Jenkins job

**QA/Code Review**

- Update developer documentation on how to use Jenkins Sandbox to test a new pipeline
- ADR to outline the release automation flow for EdgeX

**Done**

- Update Iftools to latest version for ci-build images
- DOC to set up codecov for edgex-global-pipelines
- SPIKE: explore options for using codecov for Jenkins global libraries - groovy code base
- The V1 APIs on edgex-go also need to be published to swaggerhub
- Add releaseBranch parameter to edgeXReleaseCollectReleaseFamilies
- Cleanup empty views in EdgeX Jenkins
- Update edgex-mongo image to address Snyk findings for base image
- add fix for urlgrabber python script
- update alternatives to make python3 default



# Meeting Minutes

Lftools / sigul - identified issues with validation within LF release process - **continuous improvement opportunity**

Next sprint focus is on delivery of CD-Management

- Need to include the validation (QA/Test)
- LTS support



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# Hanoi Planning

Scope Discussions



# Hanoi - DevOps

- Performance Optimizations for EdgeX-Go Jenkins Pipelines
- Code Coverage for Jenkins Global Libraries (codecov.io)
- Kubernetes - Explore options from LF for supporting Jenkins on K8s
- Validation / Testing - Simplify testing
- Semantic Versioning – revisit need to refactor git-semver
- Performance of the Build Environment
- Monitoring
- Alerting
- Technical Debt
- Caching Dependencies – speed it up (upstream dependencies)
- Shared Infra with Open Horizons – Add On Build Automation for OH



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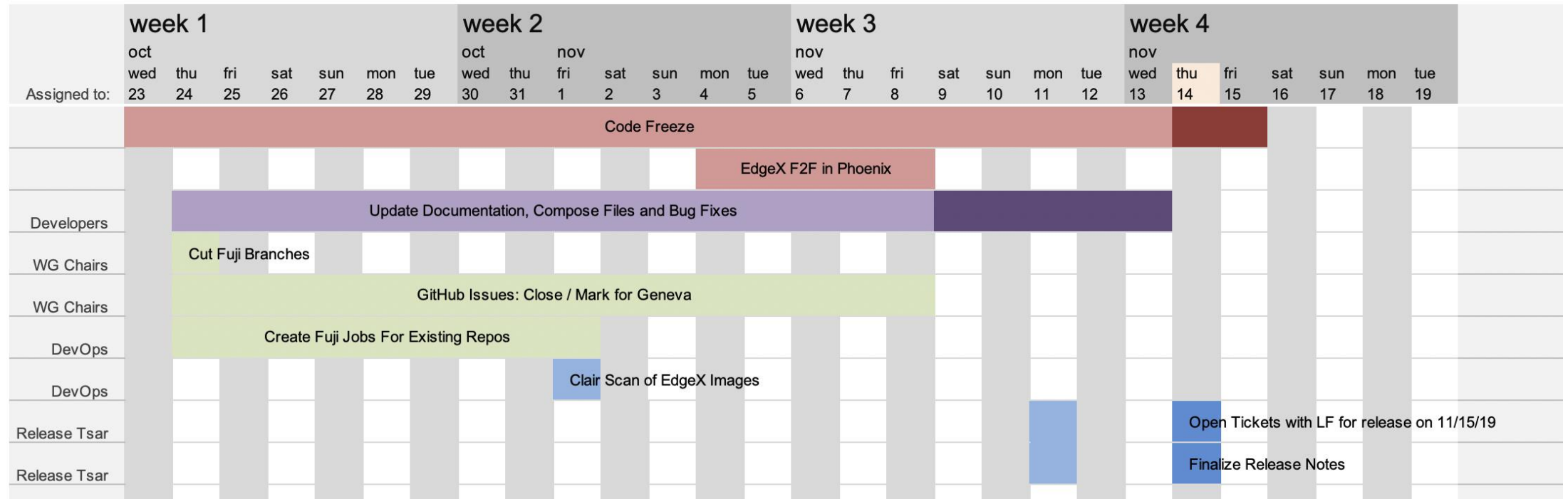
# Geneva Planning

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)



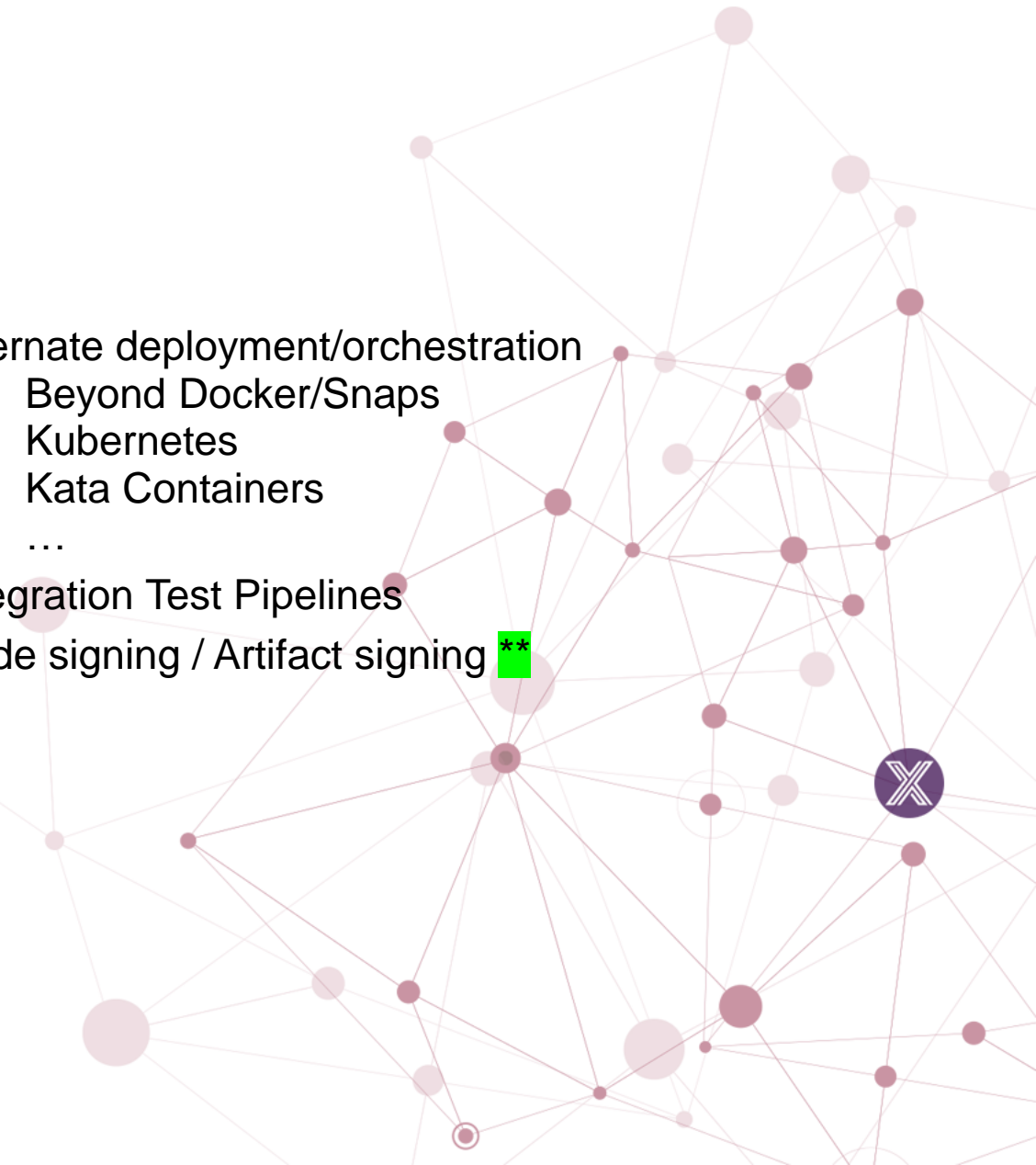
# Geneva – DevOps

## In

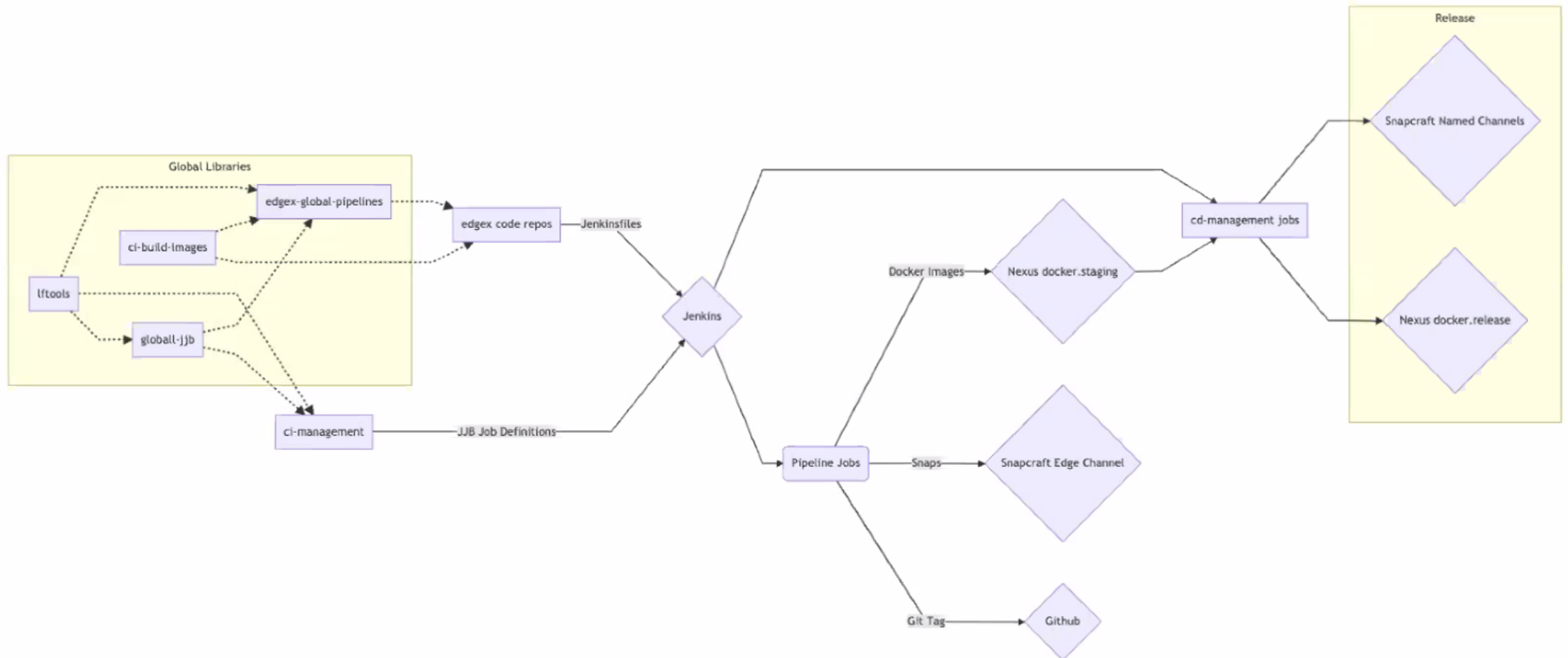
- Full Pipeline transformation for EdgeX services
  - Convert Jenkins JJB Freestyle jobs to Jenkins Pipelines
- Introduce GitHub Org Plugin
- Simplified Jenkinsfile
- Global Libraries to support Jenkins Pipeline transformation
- Add Unit testing to global-libraries (uncommitted) \*\*
- Snyk integration 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

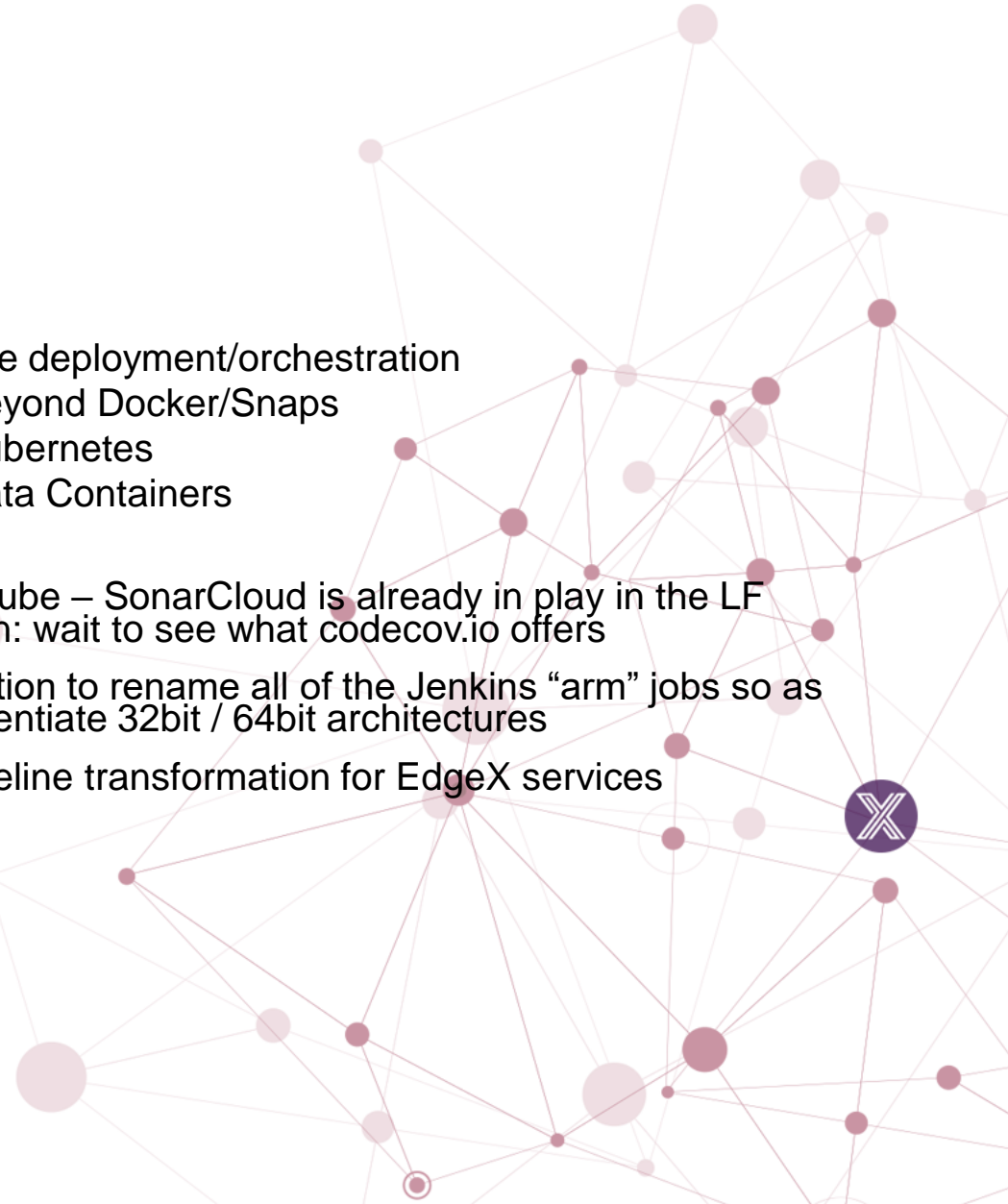
- Static code analysis tool identified and integrated into the EdgeX Jenkins Pipeline for Docker image scanning (Clair Server)

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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# Past / Future Agenda Topics

WW36	
WW37	