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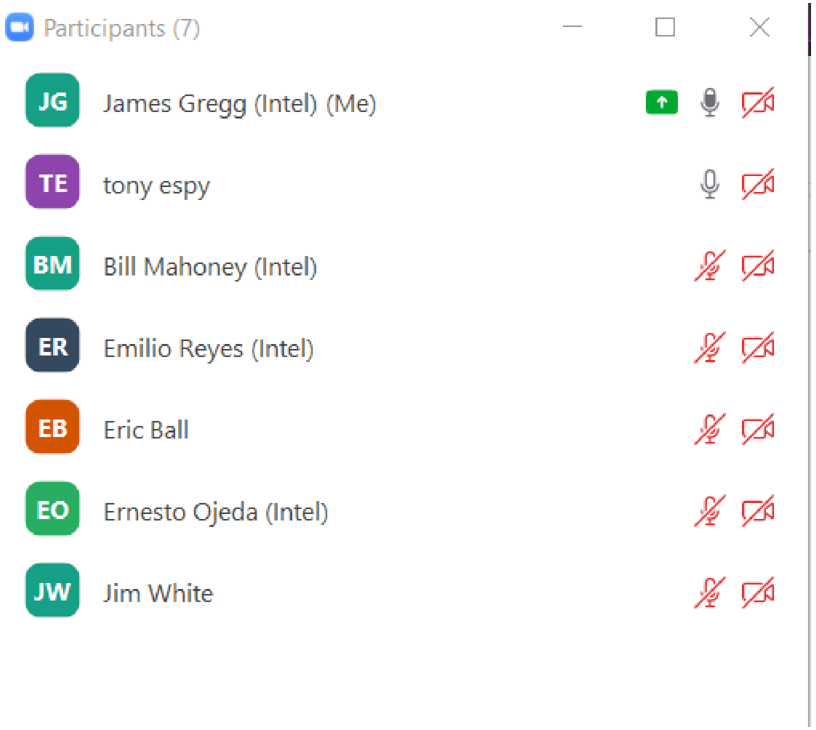
DevOps Working Group

Thursday May 21, 2020

Agenda

Time	Topic	Owner
30 Min	Geneva Retrospective	All
25 Min	Hanoi / DevOps Updates	James
		All
5 Min	AOB / Opens	All

Attendees



Participants (7)

- JG James Gregg (Intel) (Me)
- TE tony espy
- BM Bill Mahoney (Intel)
- ER Emilio Reyes (Intel)
- EB Eric Ball
- EO Ernesto Ojeda (Intel)
- JW Jim White

DevOps WG Recap (Geneva)

Geneva (May 2020):

- DevOps Jenkins Pipeline Transformation
  - 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
  - Automation of the labels across the project
  - GitHub Tracker (Kanban board) – utilized weekly with built in workflow
  - 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

Geneva Freeze and Release

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)

REMINDER:
We will NOT be branching off master for the Geneva release.

Includes **EVERYTHING**

Will not be versioning go modules

Do we need blackbox tests to be an “artifact” of a release?

- **QA/ Test WG doesn’t require signed tags, but since release kraken can be used to automate the creation of the tag, it would be a signed tag**
- **If there’s a need to patch Geneva, the tagged blackbox tests would be used**
- **Since blackbox tests wasn’t previously considered a “release artifact” does it get tagged? – YES it does**

Decision: We now need to consider blackbox tests as a formal artifact. Tag would be generated at the time of the formal release

Geneva Release Schedule

New scope – consider blackbox tests as artifact of the release

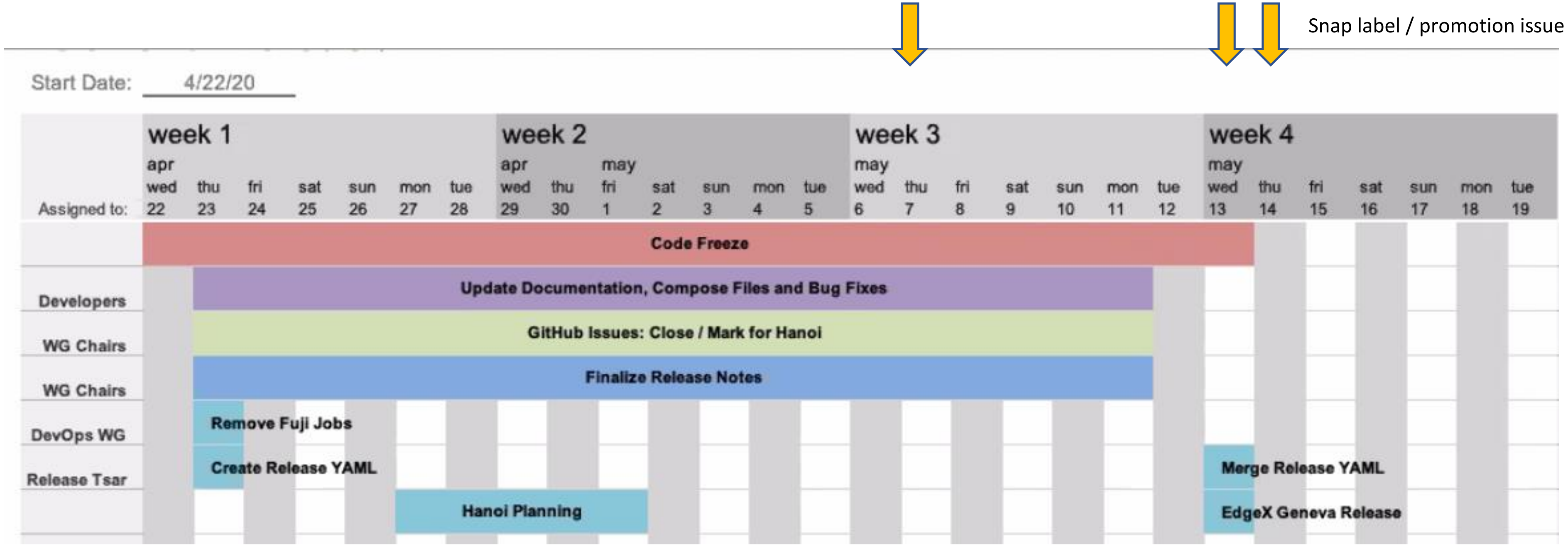
- should have been considered within review of ADR007

Green light decision to release

- TSC meeting late in the day
- Multiple issues worked throughout the day

support-rules-engine

Snap label / promotion issue identified



Start Date: 4/22/20

Assigned to:	week 1 apr wed 22	thu 23	fri 24	sat 25	sun 26	mon 27	tue 28	week 2 apr wed 29	thu 30	may fri 1	sat 2	sun 3	mon 4	tue 5	week 3 may wed 6	thu 7	fri 8	sat 9	sun 10	mon 11	tue 12	week 4 may wed 13	thu 14	fri 15	sat 16	sun 17	mon 18	tue 19
	Code Freeze																											
Developers		Update Documentation, Compose Files and Bug Fixes																										
WG Chairs		GitHub Issues: Close / Mark for Hanoi																										
WG Chairs		Finalize Release Notes																										
DevOps WG		Remove Fuji Jobs																										
Release Tsar		Create Release YAML																					Merge Release YAML						
						Hanoi Planning																	EdgeX Geneva Release						

Timeline to be reviewed for Geneva Retrospective

Geneva Retrospective

What went right?

- Smoother release – no branching at code freeze equated to efficiency
- Whole DevOps team was responsive
- Developers embraced the opportunity to create the Jenkinsfiles themselves
- Great collaboration and cross pollination of the information
- Linux Foundation was very helpful and responsive in the release – easier and supported well
- Use of JIRA tickets helped with response times on support / help needed from LF release engineer
- Andrew Grimberg came into the DevOps wg for a roadmap discussion
- Automation of the release went well – good coordination
- Phased approach of the work helped align to sprint cadence
- ADR practice helped with communications across the project
- Ernesto recognized for work on the snaps
- Lisa recognized the good communication / teamwork with Emilio / Ernesto
- Tony / Ian helped with review of the snap automation code – THANK YOU!!
- Risk acceptance / Risk taken - It worked!!
- Dry Run on release automation functionality
- Tony / Ian were responsive wrt Snap store issues – THANK YOU!!

What could be improved?

- Communication gaps
    - support-rules-engine issue related to a change in plan
        - DEPRECATION (Define process needed ??)
- Snap release process could be better understood
    - Need full path to production for snap release process
        - release to beta candidate chanel >> stable
        - Time crunch in the end could be root cause for the snap release issue
        - Might need TAF testing for snaps
        - No real hw testing (Akraino community lab – University of New Hampshire)
            - Canonical presentation on how they do hw testing with snaps
    - Need functional testing for snap automation
        - Need to figure out an example service (sample-service)
    - Inability to properly test in a sandbox, test environment
        - Help needed from LF to support ability
    - Release Kraken Improvements (re-lable / tagging)
        - Idempotency
        - Need to specify a commit (might be an edge use case but better)
        - Set up of the snap YAML
    - Manual release of documentation needs fixed
    - Snap store issues (503 error) – length of time to build snaps

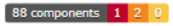
DevOps WG Update

Hanoi

- **Performance Optimizations**
  - Build Optimizations for edgex-go
    - Explore completed and demo'd by Ernesto Ojeda with observable performance improvements in the build time
    - Internal team demo of Docker image promotion techniques
      - Need edgex-go to use git-semver
      - Additional unity / functional testing
      - Documentation

- **DevSecOps**
  - Continued explore of options for addressing [Issue #1947]- vetting of 3rd party components (OSS dependencies)
    - *Crawl* – manual data collection
    - *Walk* - **Automation of the Paper Study** + Community Bridge + Clair + Snyk
      - Python script / Docker image "ghmetrics" - contribution from from Intel (Thank you Deloy Bitner / Nick Haunschild / Ramu Bachala)
    - *Jog* – Enhanced Community Bridge – Advanced Snyk Reporting
    - *Run* - Nexus IQ offered by Linux Foundation
      - EdgeX Foundry would be the first to use it for Go but requires go.sum + go.mod
      - Previously ran into problems in the builds when were still on Jenkins Freestyle jobs with Verify stage

  - Other Sonatype tools could be complimentary if used within the developer workflow - OSS Index, DepShield, Nancy
      - Add a badge to the README to see issues with dependencies


88 components 1 2 0

  - Looked at GitHub Marketplace for a Dependency Management bot
    - Dependabot – adds a "dependency" label to the PR – good visualization option for the PR Reviewer
      - One option might be to monitor go.mod and IF CHANGED – add the label
    - Already using Snyk (without go.sum)

- Community Bridge Feature Requests
  - Transitive dependencies for Go modules - findings don't match other tools like Sonatype
  - [SUPPORT-1311] - CommunityBridge findings for Go modules

- **Other**

LFTools / Sigul latest version that supports Python 3.x

  - Update Eric Ball working on a sigul fork but running into some issues – [IT-19186]

Hanoi Planning

Scope Discussions

DevOps Scope of Work - Hanoi

- Performance Optimizations
    - Jenkins Pipeline optimizations for edgex-go
    - Explore options from LF for supporting Jenkins on K8s – completed roadmap review within Geneva
    - Explore alternatives to containerization within the builds
        - Explore use of BuildKit to simplify creation of x86/ARM build images so they share a single manifest when published to Docker Hub / Nexus
        - Explore use of Kanico
            - Explore Complete – Will not Work
                - Requires use of K8s persistent volumes and dedicated build agents which are long lived
- Performance of the Build Environment
    - ~~Monitoring / Alerting optimizations (Continuous Improvement Opportunity)~~
- Technical Debt
    - ~~Caching Dependencies – speed it up (upstream dependencies)~~
      Reference Linux Foundation roadmap
- ~~Open Horizons Enablement~~
    - ~~Shared Infra with Open Horizons~~
    - ~~Build Automation for OH~~
- Stretch Goals
    - Code Coverage for Jenkins Global Libraries (codecov.io)
    - Snap improvements – build optimizations
    - Support for –race flag with goals to address with Go 1.15 …*but there are options*

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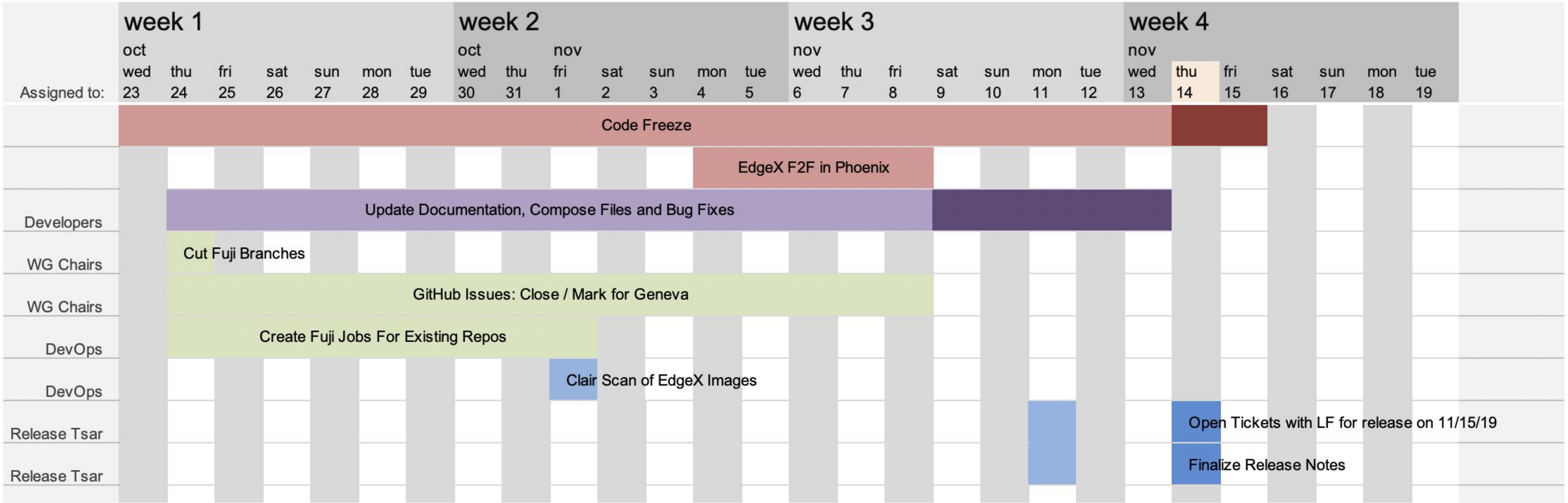
Geneva Planning

Scope Discussions

Fuji Release

- Freeze: Oct 23rd (Wednesday)
- Release: Nov 15th (Friday)

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



Geneva – DevOps

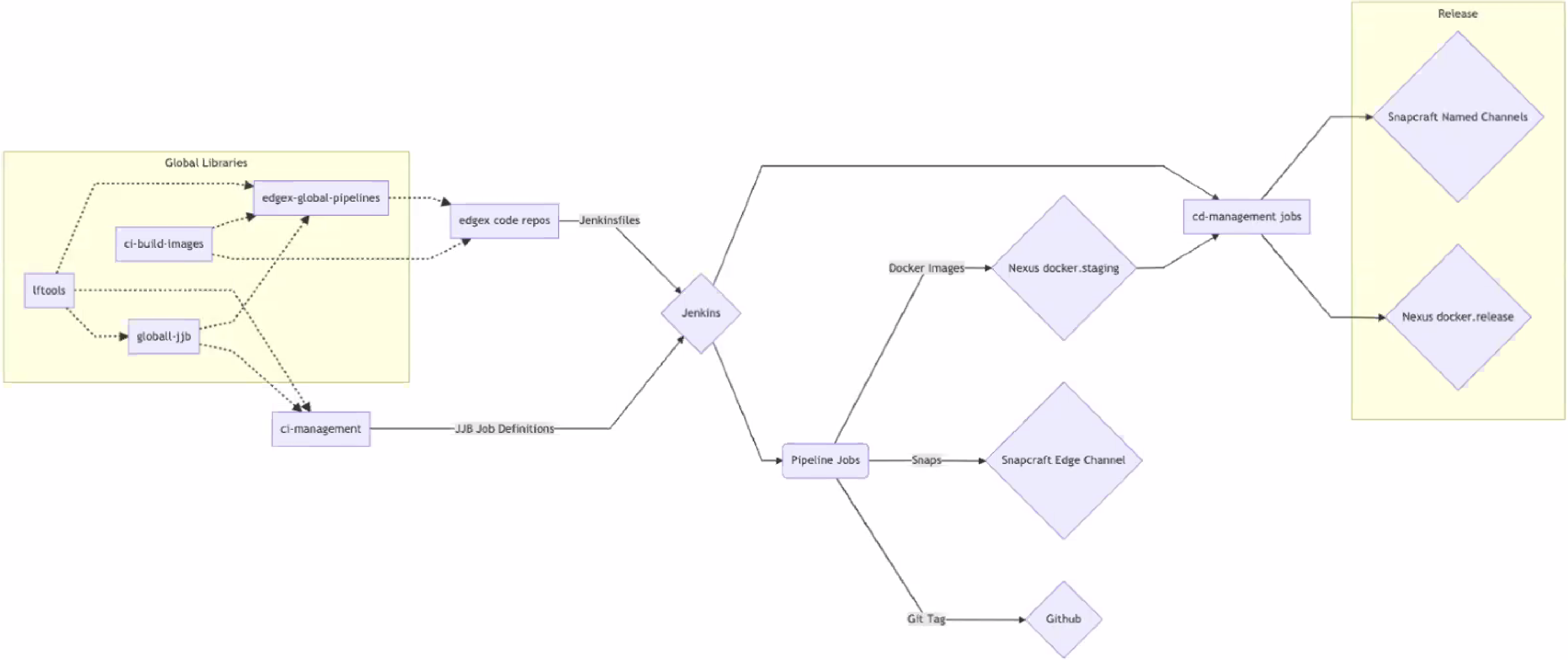
In

- 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

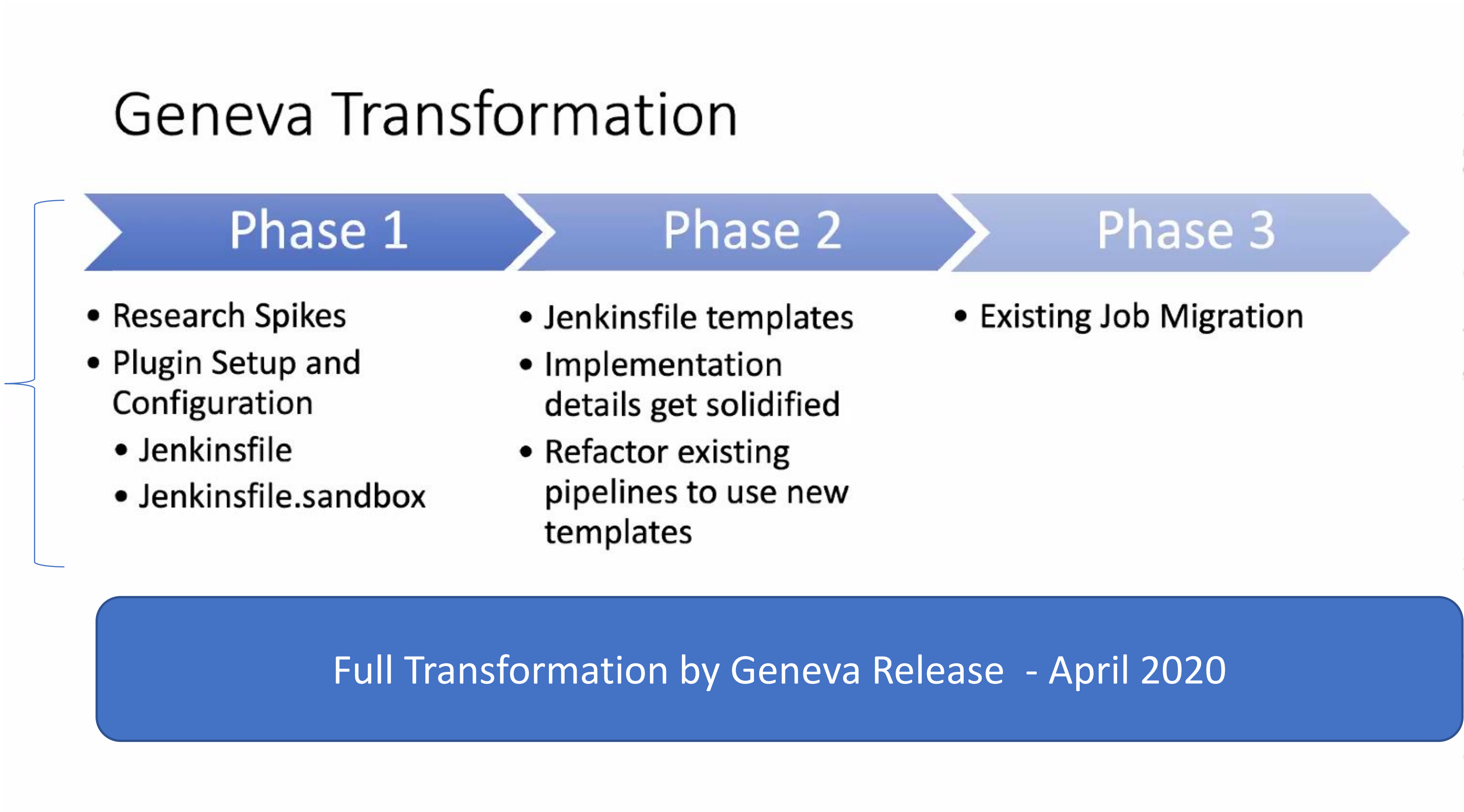
- Alternate deployment/orchestration
  - Beyond Docker/Snaps
  - Kubernetes
  - Kata Containers
  - …
- Integration Test Pipelines
- Code signing / Artifact signing **

Geneva Transformation: Architecture



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

Phase 1
Work in Progress
Q3 2019



Geneva Transformation

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: • Adding Pipelines for EdgeX Foundry base build images • Allow base build images to be managed locally within Nexus • Leverage PyPi Proxy for local pip dependencies	🟢
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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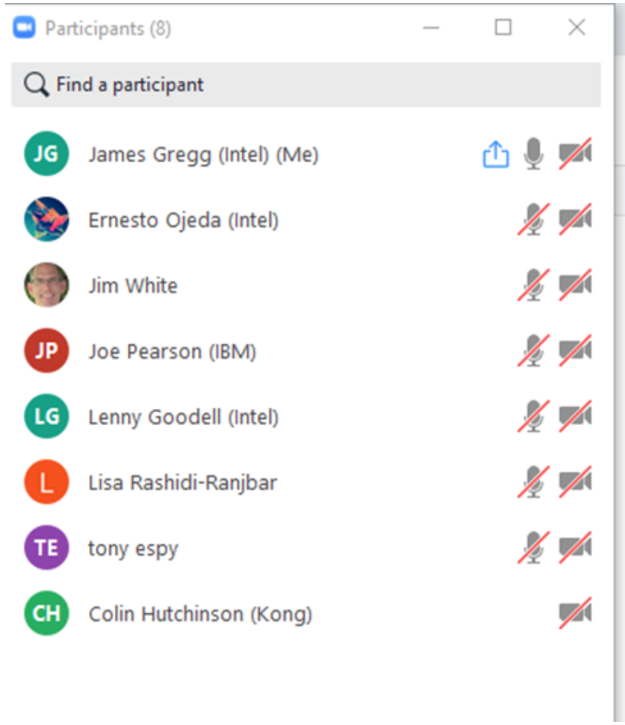
Past / Future Agenda Topics

	Size change to use Ubuntu / Debian base build images to support –race flag for Go Lang
	Clair scan findings – Discussion developer community if we want to break the build when there’s findings - Bring into Security WG for discussion
	Open Horizons enablement
	Alignment to new LF roadmap self-service offerings – EdgeX use case for handling holding repositories
	Release automation - key learnings and sharing with LF
	Explore use of Buildkit
	Explore use of Kanico
	Snyk Dashboard Review

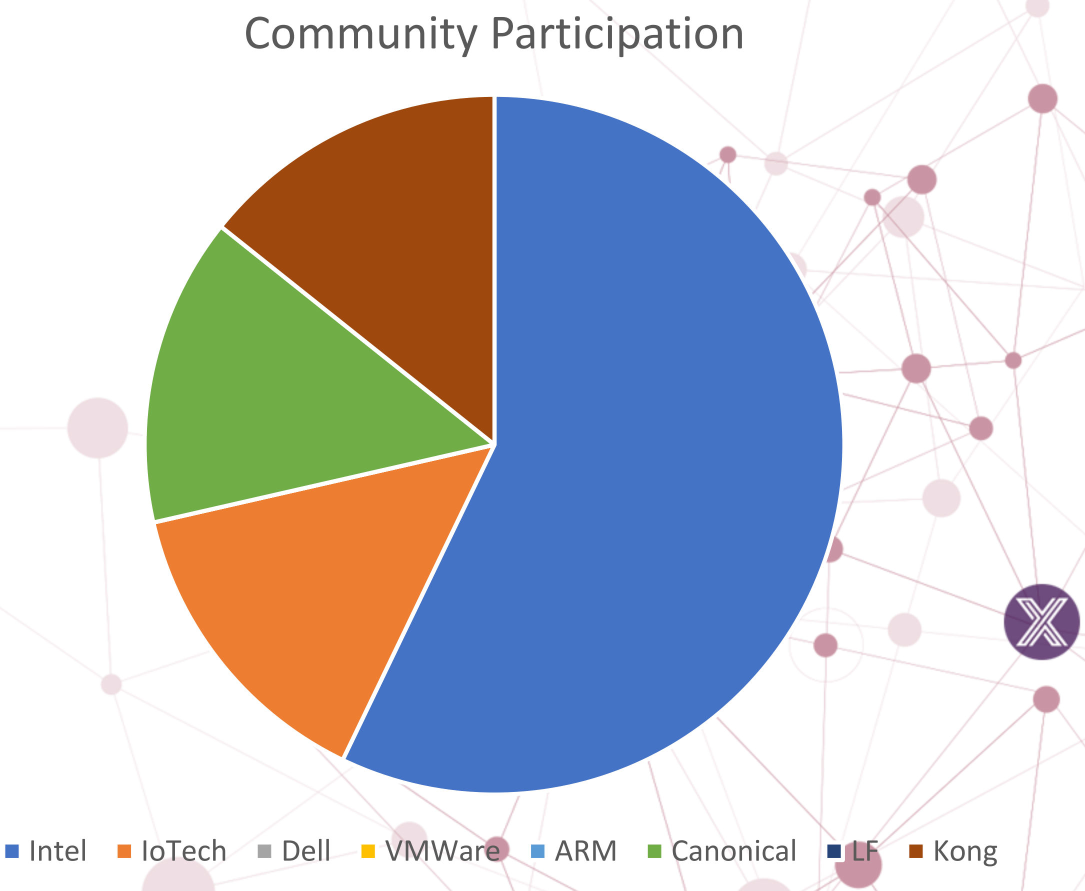
Attendees & Community Participation – ww14



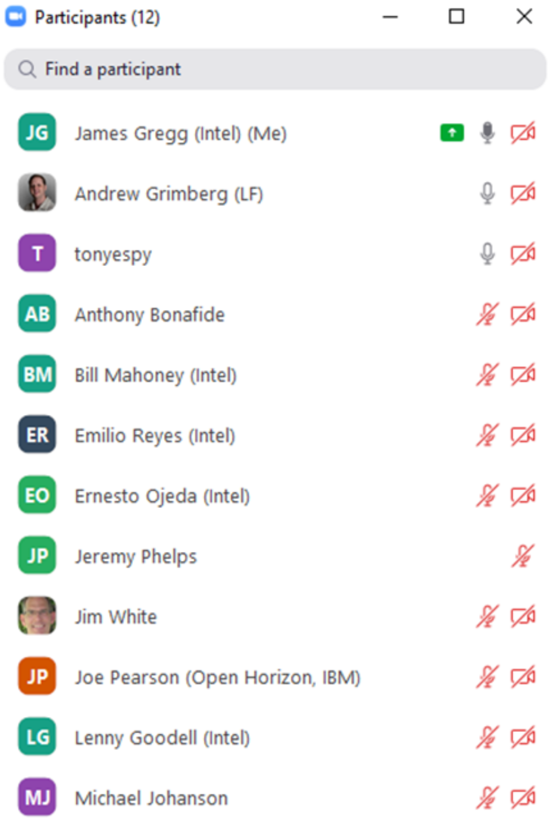
Participants (8)

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)



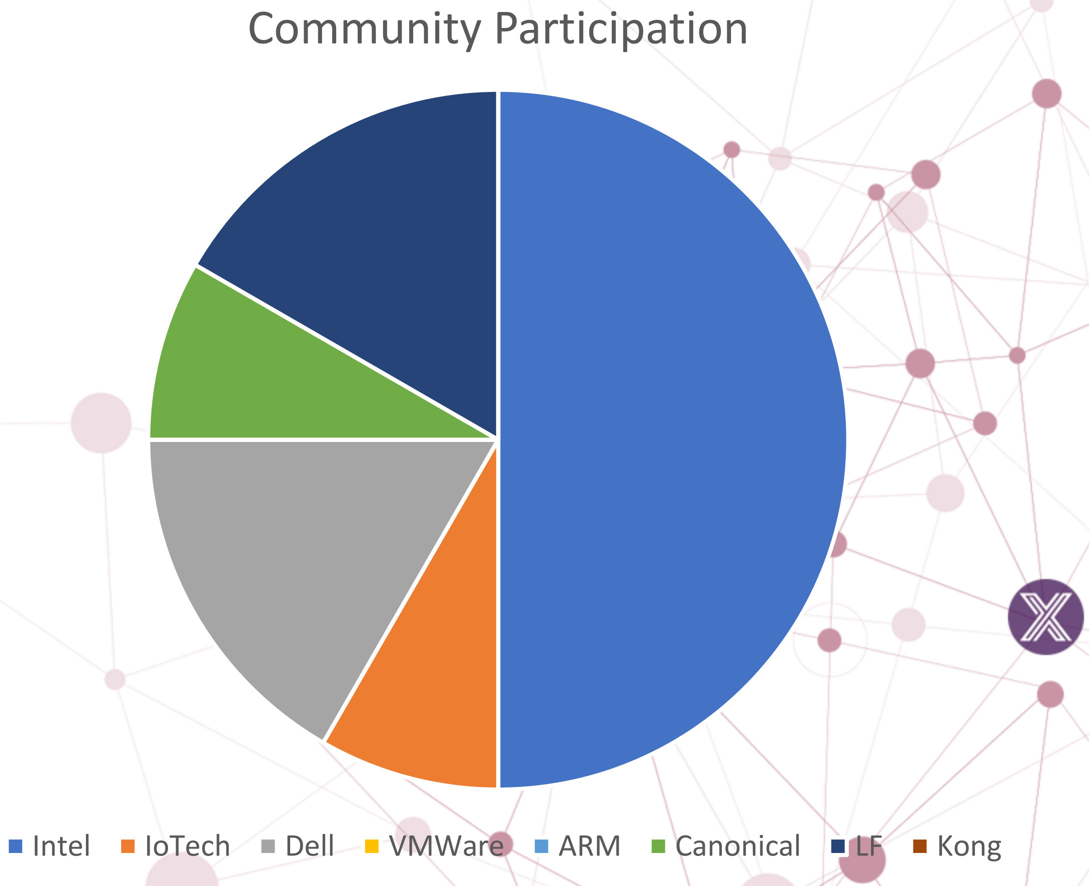
Attendees & Community Participation – ww15



Participants (12)

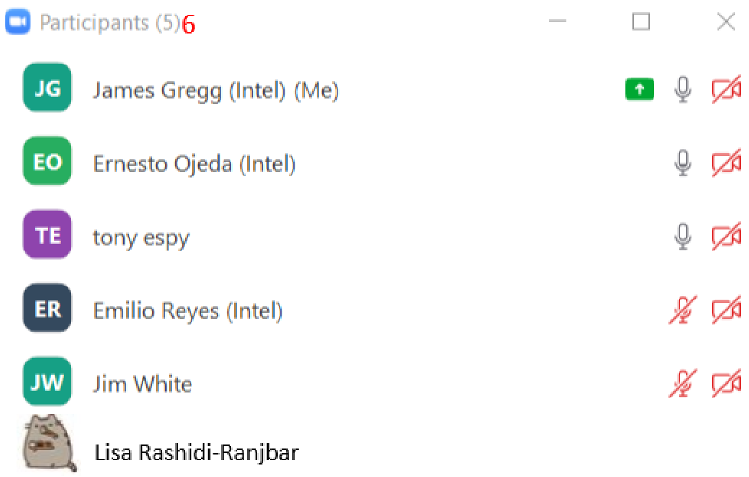
Find a participant

- James Gregg (Intel) (Me)
- Andrew Grimberg (LF)
- tonyespy
- Anthony Bonafide
- Bill Mahoney (Intel)
- Emilio Reyes (Intel)
- Ernesto Ojeda (Intel)
- Jeremy Phelps
- Jim White
- Joe Pearson (Open Horizon, IBM)
- Lenny Goodell (Intel)
- Michael Johanson



Attendees & Community Participation – ww16

Attendees



Participants (5)6

- JG James Gregg (Intel) (Me)
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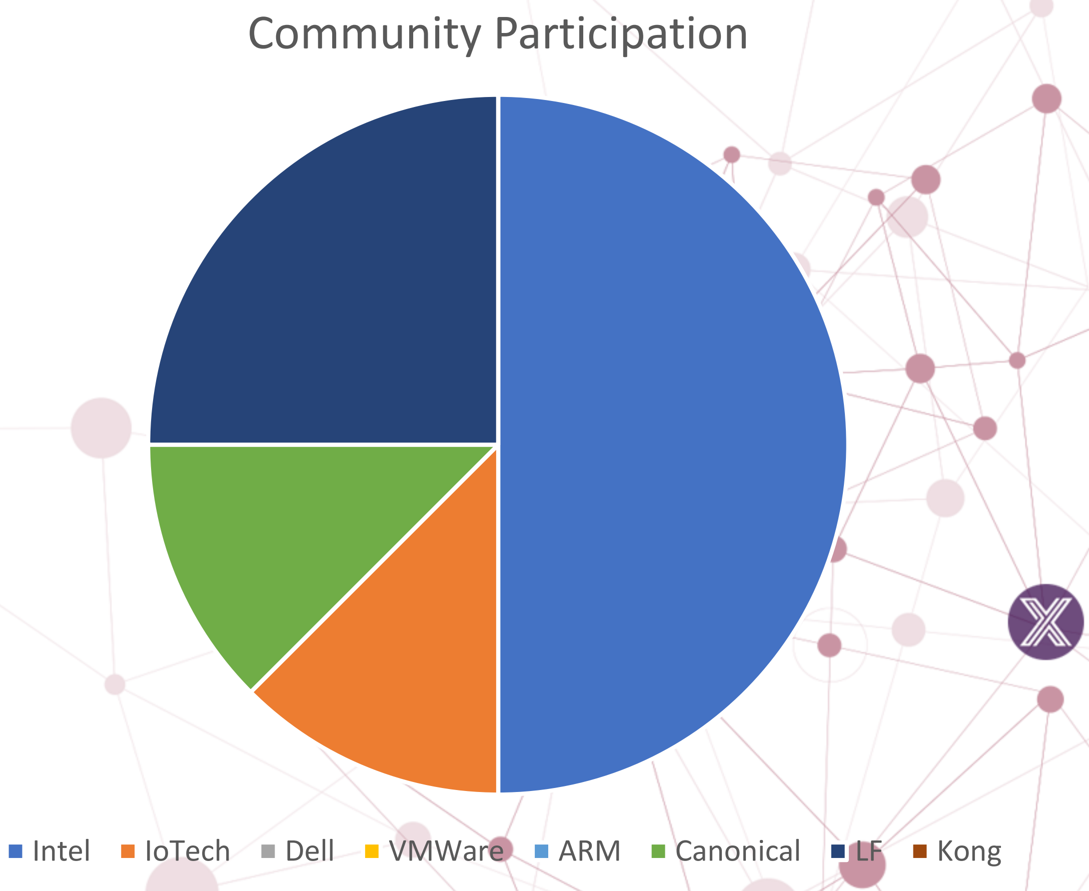
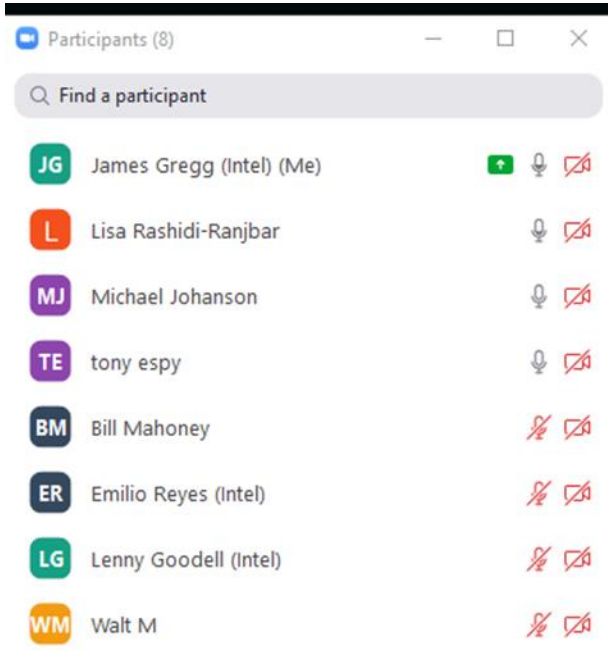
- ER Emilio Reyes (Intel)
- JW Jim White
- Lisa Rashidi-Ranjbar



Attendees & Community Participation – ww17



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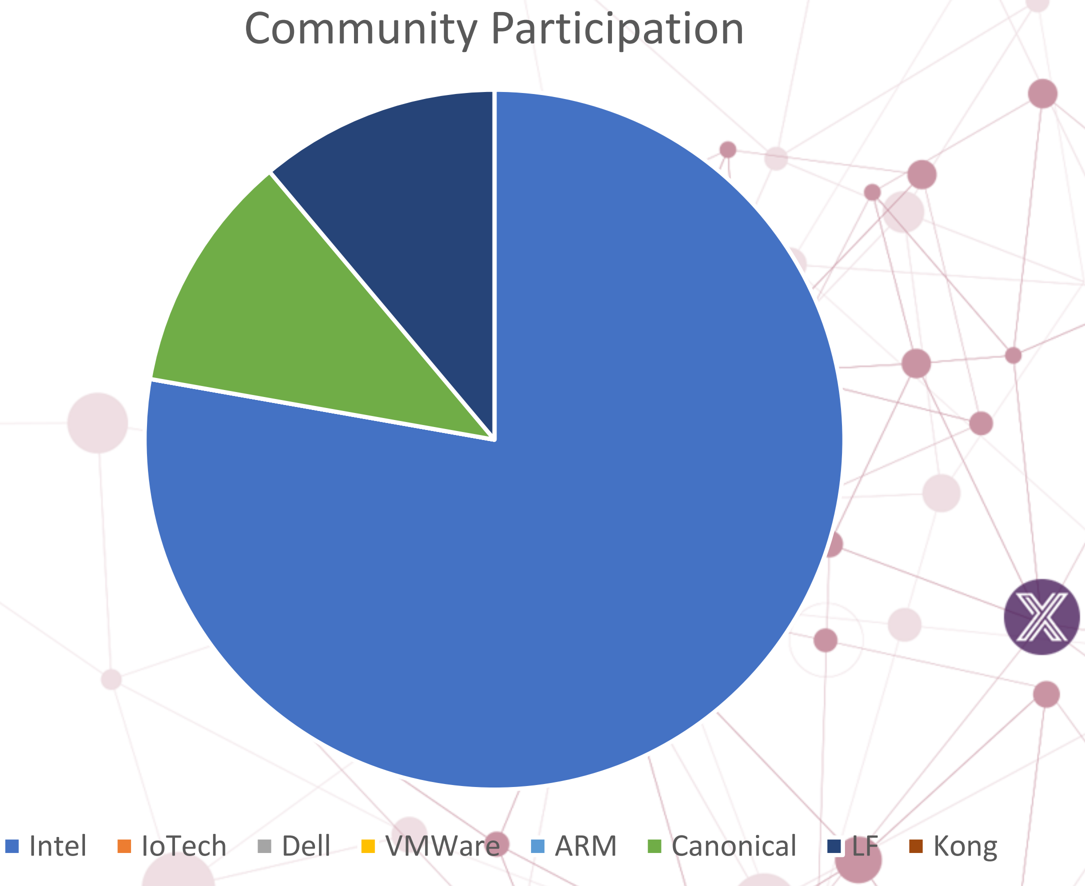
- LG Lenny Goodell (Intel)
- WM Walt M


Community Participation