



Tizen Platform Development Process and Infrastructure

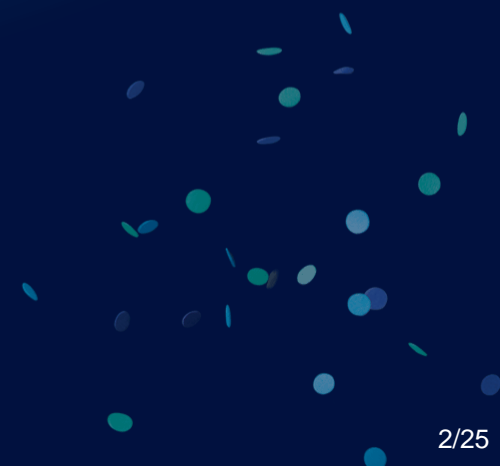
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Software Center, Samsung Elec.

Tizen Platform Development Process and Infrastructure

Tizen Development Process is perceived by users and developers as a black box where magic is happening

- Idea of this presentation is to give more information on how it built, what principles it uses and how people can replicate and customize it for own needs
- We will help you
 - to contribute Tizen
 - to define your own Tizen profile
 - to develop Tizen products



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Part I. Tizen Platform Development Process

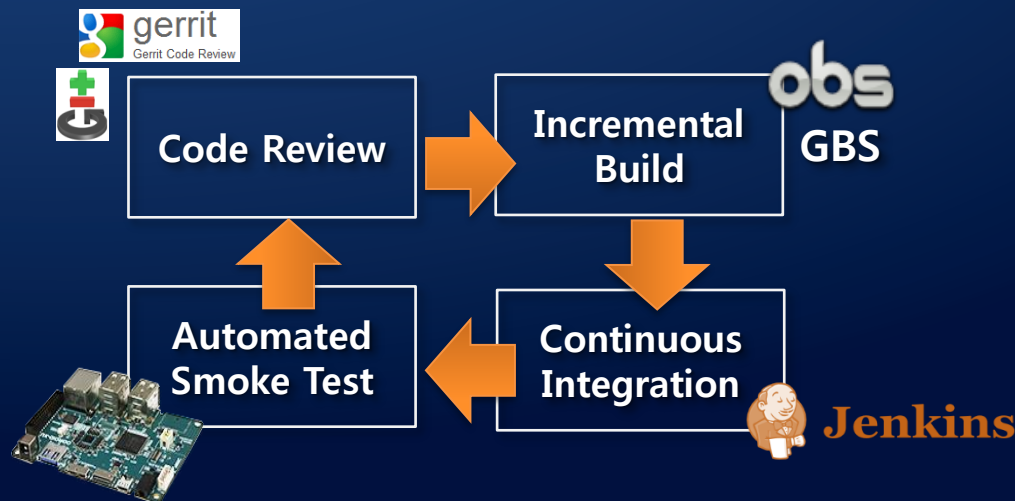
Part 2. Customizing Development Process

Q & A



Part I. Tizen Platform Development Process

Brief Tizen Platform Development Process

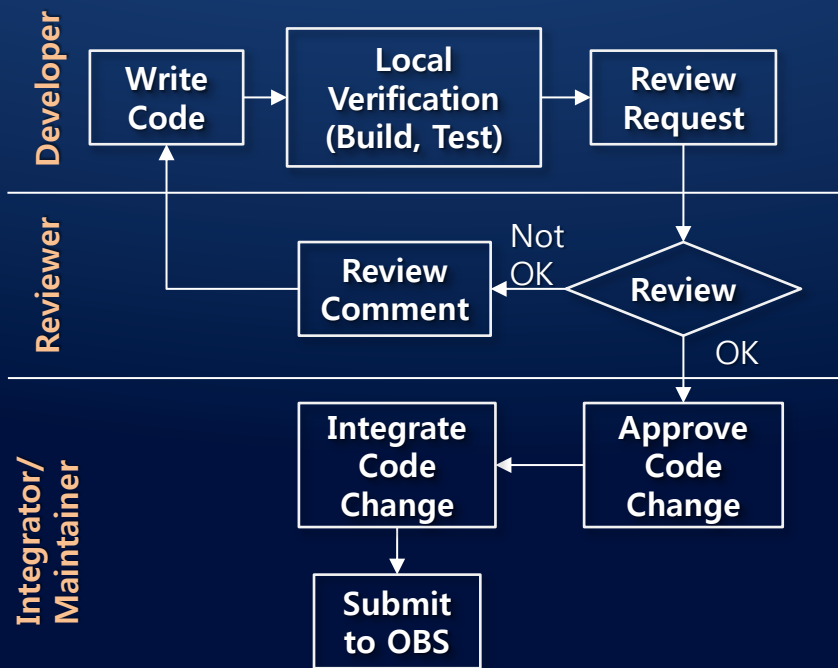


*) OBS: Open Build Service by OpenSUSE

**) GBS: Git Build System by Tizen

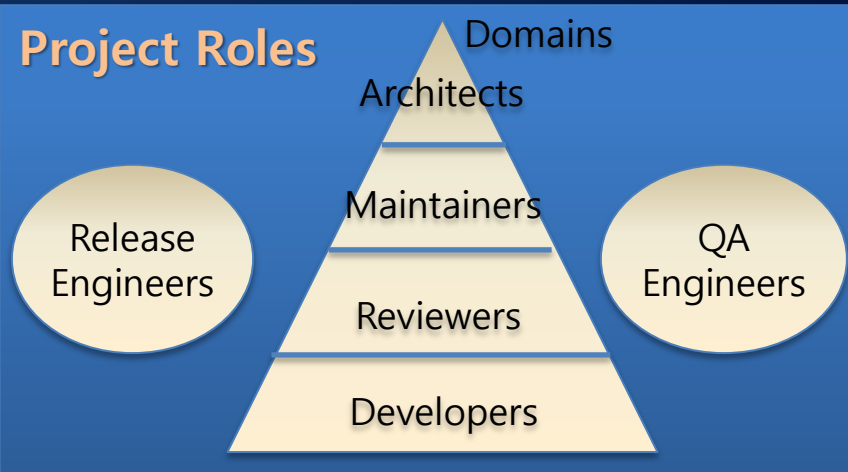
Code Review with Tizen Governance

Gerrit projects are grouped and ruled by "Domain"



https://wiki.tizen.org/wiki/Tizen_Governance

Project Roles

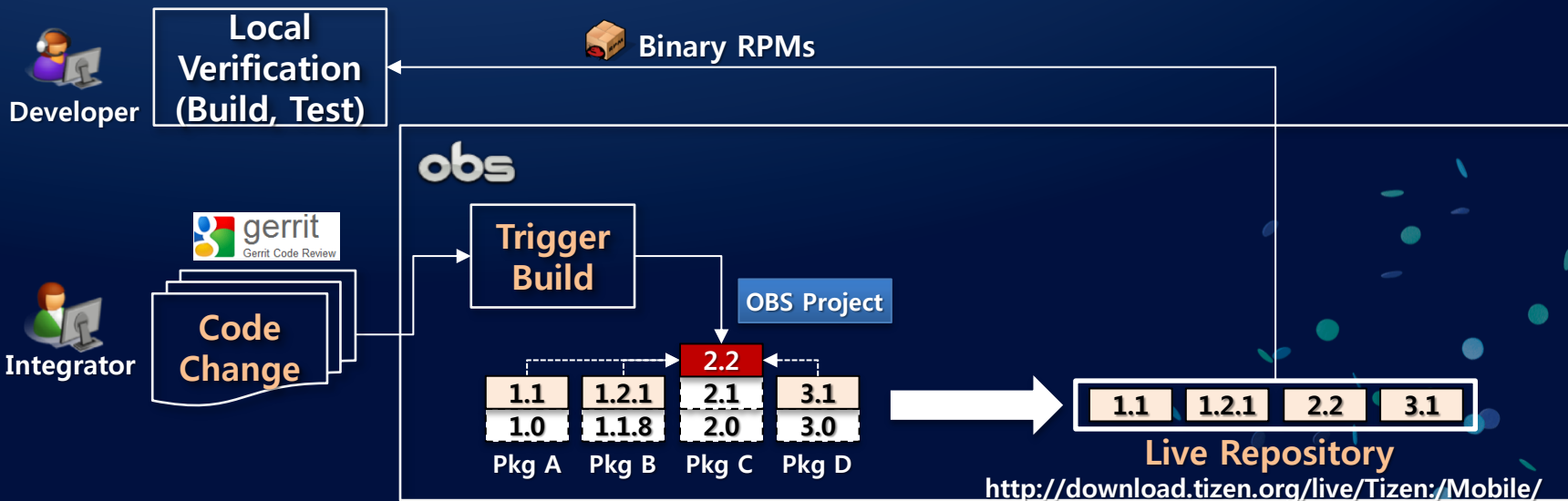


Incremental Build

Each gerrit project of Tizen composes a RPM package

When a package changed, OBS triggers build using its dependent packages

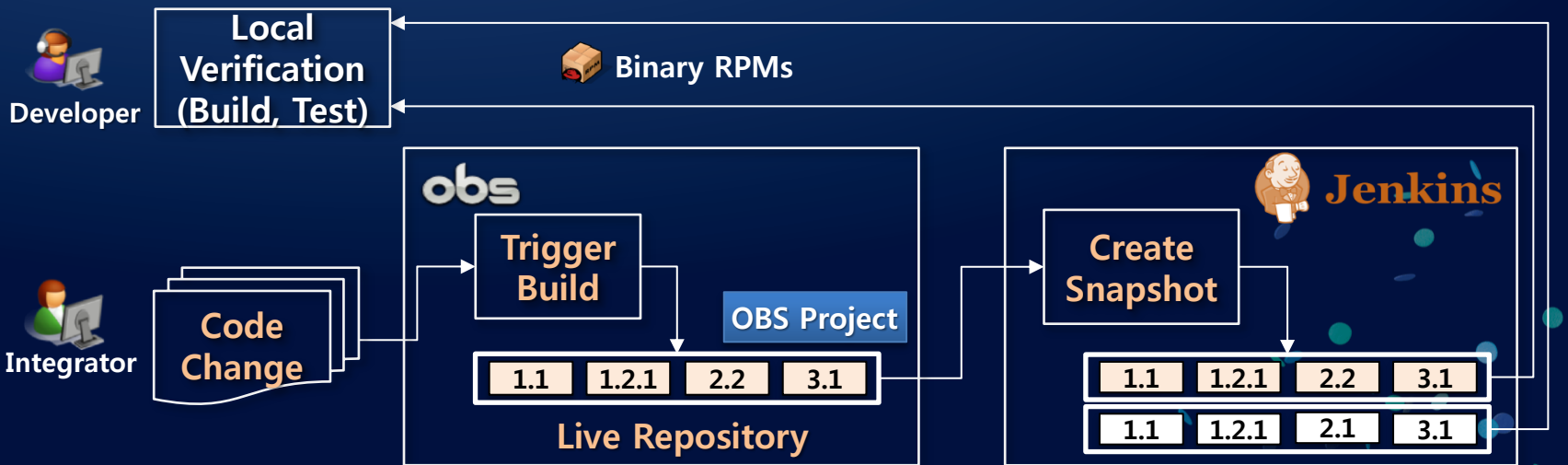
- No need to compile other source codes – reduce build time to verify a change
- Packages are stored in and updated to Live repository of OBS



Snapshot

Version Control for the daily development

- A certain state of all packages after group of changes are merged
- Snapshot ID - <Tizen Project>-<date>-<index>





Repository Difference and Changelogs

[Go back...](#)

Difference between [mobile_20150901.2](#) and [mobile_20150902.1](#)

Highlights

Added Packages: 0
Removed Packages: 0
Modified packages: 52
Packages with Rebuilds: 253

Added Packages

Removed Packages

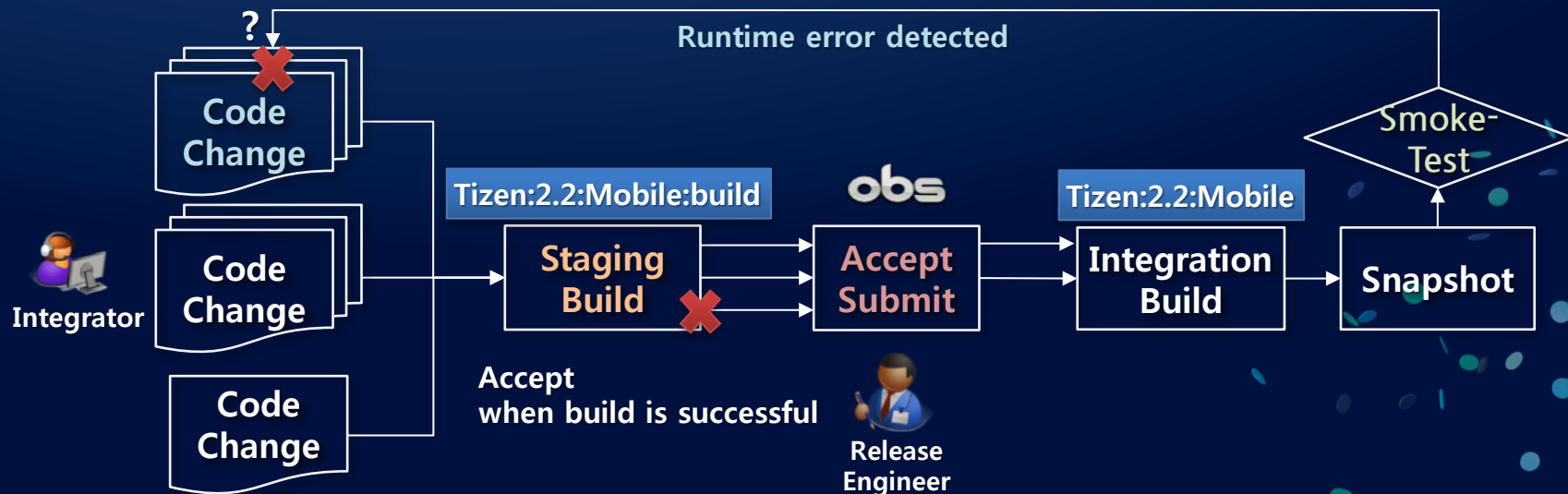
Modified Packages

Package	Old Version	New Version	GitPath	Old CommitId	New CommitId
pkgmgr-info-parser-devel	0.1.0-51.2	0.1.0-52.1	platform/core/apptfw/pkgmgr-info	f22b9d524188f3f5aac58f88ecafda276e69ad2	b6978bad1d52b2666750a2302d882856cc5f4dd4
pulseaudio-module-filter	5.0-29.1	5.0-30.1	platform/upstream/pulseaudio	325d72bbf963a937d9a34dd65d969b28ca3ad15f	eff2ba11a2b8dc384146f971ab0a10780a2391fd
pulseaudio-utils	5.0-29.1	5.0-30.1	platform/upstream/pulseaudio	325d72bbf963a937d9a34dd65d969b28ca3ad15f	eff2ba11a2b8dc384146f971ab0a10780a2391fd
libmm-utility-devel	0.13-14.3	0.14-15.1	platform/core/multimedia/libmm-utility	f53459f2141d22a9034c47e04efc39780b197805	f3da126457a6596b47195a40abe0384a986a5ff4
alarm-server	0.4.178-19.6	0.4.178-20.1	platform/core/apptfw/alarm-manager	51b432e318eba952ad7f0fd19ea2bb078eeee189	1c8f280cc120f90e3ee6f782a5ceebe26a44ed867
pulseaudio-module-raop	5.0-29.1	5.0-30.1	platform/upstream/pulseaudio	325d72bbf963a937d9a34dd65d969b28ca3ad15f	eff2ba11a2b8dc384146f971ab0a10780a2391fd
capi-media-camera-devel	0.2.3-4.46	0.2.5-5.1	platform/core/api/camera	9f9b7f0b1c84c648f6e62ff10cc12b6e02e8ebac	64263aeec5eaaafa154b5af6e4b89add4497862
toybox-symlinks-dhdp	0.5.1-3.1	0.6.0-4.1	platform/upstream/toybox	3caa87343ee020f95f3bce84eab8664ac5cc1640	b7d6e1f0e1a5df95e2950beaf9269932f895269a
libmm-utility-tool	0.13-14.3	0.14-15.1	platform/core/multimedia/libmm-utility	f53459f2141d22a9034c47e04efc39780b197805	f3da126457a6596b47195a40abe0384a986a5ff4
toybox-symlinks-syslogd	0.5.1-3.1	0.6.0-4.1	platform/upstream/toybox	3caa87343ee020f95f3bce84eab8664ac5cc1640	b7d6e1f0e1a5df95e2950beaf9269932f895269a
tpk-backend	1.7-33.1	1.8-34.1	platform/apptfw/app-installers	dd57400d45da87b48f3c471de01bd9157d8f0b9c	2456fbae6f22cd290e707c157a77b086c83b39f
pulseaudio-realtime-scheduling	5.0-29.1	5.0-30.1	platform/upstream/pulseaudio	325d72bbf963a937d9a34dd65d969b28ca3ad15f	eff2ba11a2b8dc384146f971ab0a10780a2391fd
pulseaudio-docs	5.0-29.1	5.0-30.1	platform/upstream/pulseaudio	325d72bbf963a937d9a34dd65d969b28ca3ad15f	eff2ba11a2b8dc384146f971ab0a10780a2391fd
pulseaudio-module-null-source	5.0-29.1	5.0-30.1	platform/upstream/pulseaudio	325d72bbf963a937d9a34dd65d969b28ca3ad15f	eff2ba11a2b8dc384146f971ab0a10780a2391fd

Legacy Release Process

Staging build to verify submitted changes are acceptable

- No build break is accepted by this process
- Problem: changes are built in one place
 - hard to identify which relationship among changes
 - hard to identify which changes cause problems
 - smoke test is triggered after release engineer



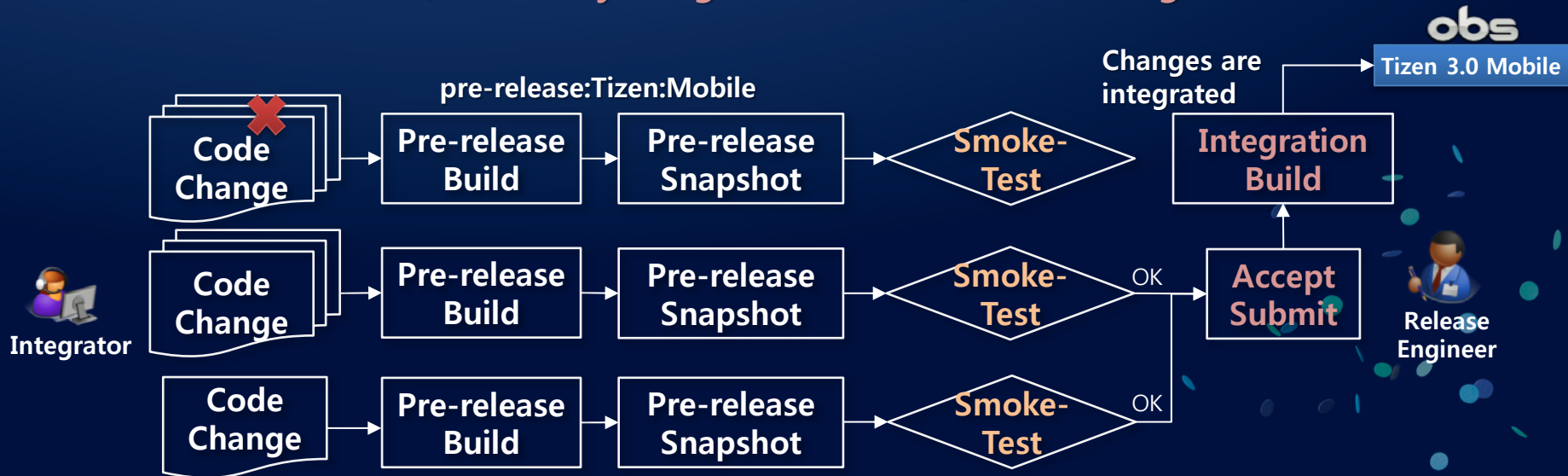
Pre-release Process

Changes are verified as a group

Smoke test is triggered before Release Engineer

Release Engineer accepts the changes when:

- No build break, All binary images are created, No test regression

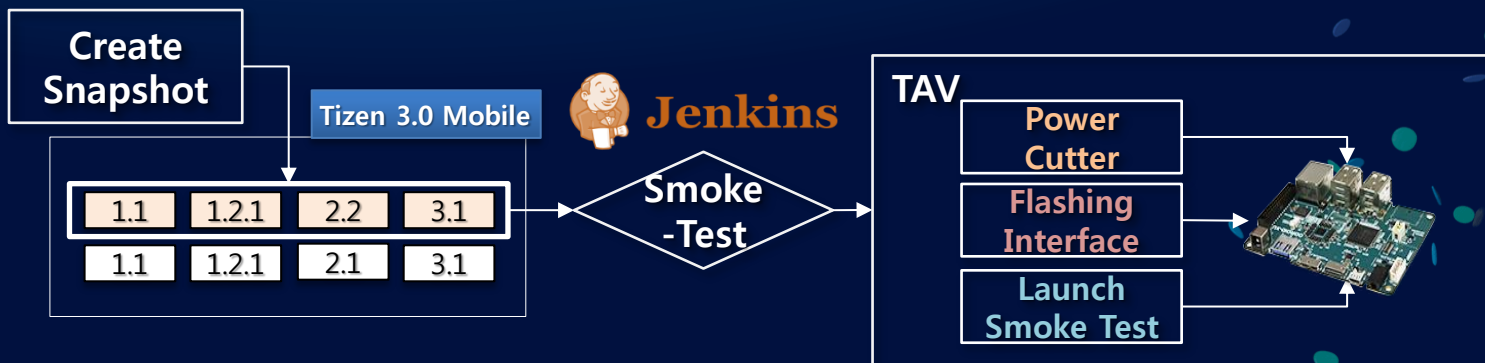


Smoke Test (Build Verification Test)

When new snapshots are created, smoke test is triggered

- Reboot the device
- Download and flash new binary image
- Launch smoke test cases (verifies major daemons are alive)
 - Can be extended to launch any TCs including TCT (Tizen Compliance Test)

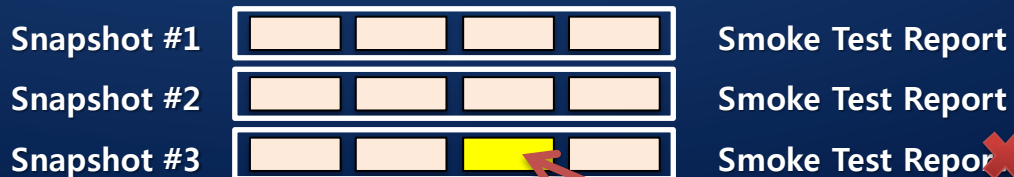
TAV(Tizen Automated Verifier) is designed for no modifications in binary images and fully automated process (will be released soon)



Snapshot and Smoke Test

Easy to find the origin of the error

- In Tizen platform, we have ≈900 of packages



Snapshot Diff with #2

- Added packages: ...
- Removed packages: ...
- Modified packages: ...
- Packages with rebuild: ...

3. Survey changed packages only

2. Same error is repeating until #3



Release Engineer

1. Error is discovered

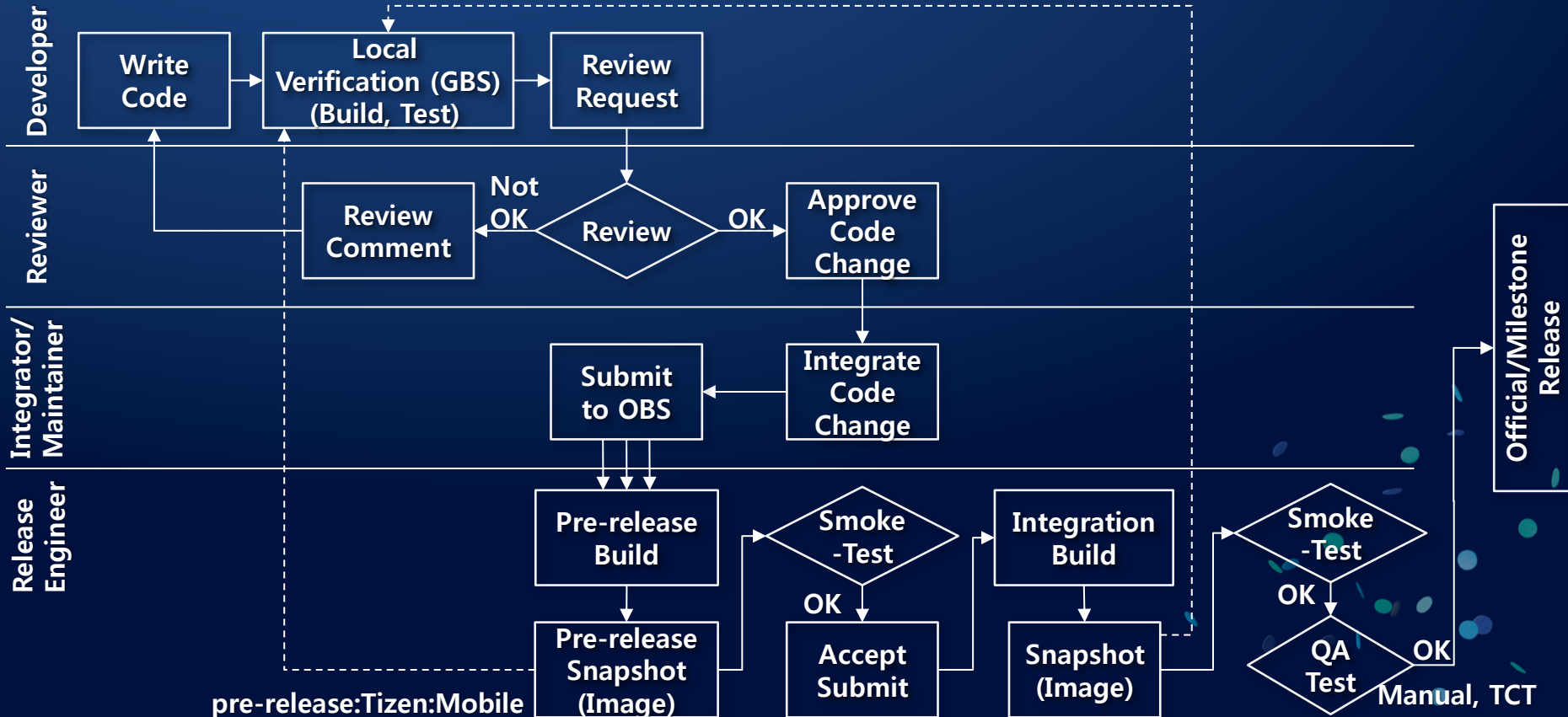
Local Verification (GBS)

GBS(Git Build System) supports you

- to build one or multiple git repositories with dependent packages
- incremental build using local repo
- to create binary images (using MIC, MIC Image Creator)
- to submit changes to OBS to trigger build



Tizen Platform Development Process





Part 2. Customizing Development Process: Recipes

Recipes with Docker

To support your customization, we prepared Docker VM Images



https://wiki.tizen.org/wiki/Setup_of_Tizen_Infrastructure_with_Docker

Recipes



GBS with your local git/rpm repository

- Recommended to single developers



GBS local fullbuild with your local git/rpm repository

- You can use Jenkins to operate fullbuild process



GBS local fullbuild with Gerrit server

- Fullbuild process by Jenkins, Code Review by Gerrit



Build Data

OBS with Build Data

- Build Data of Tizen to reduce initial build time
- You can change Build Data with your own needs

Size of Your Team



Recipes: For Large Team

Full set of Tizen Infrastructures are ready with Docker (except smoke test)

- In Jenkins, continuous integration processes are implemented
- So, you can choose which process you will operate



Demo: Tizen Infrastructure with Docker

https://wiki.tizen.org/wiki/Setup_of_Tizen_Infrastructure_with_Docker



Your Team Grows...

You Need to Scale and Optimize Performance of Your Infrastructure

- For GBS Local fullbuild with Jenkins, you can consider:
 - More Jenkins slave nodes to operate fullbuild
 - tmpfs for BUILDROOT to dramatically reduce build time
- For OBS, you can consider :
 - More build workers
 - powerhost (special build worker with higher configurations) to reduce build time of bottleneck packages
 - to extend backend of OBS server to add more and more workers
 - high-speed network among OBS servers and workers

Conclusion

Tizen development process is designed:

- to provide automated process with less human-intervention
- with many open source tools and services

Future plans

- Enhance performance and add developer-friendly functions to the tools and services of Tizen
- Infrastructure by VM still needs configurations → VM with templates
- Prepare more operation manuals for each recipes

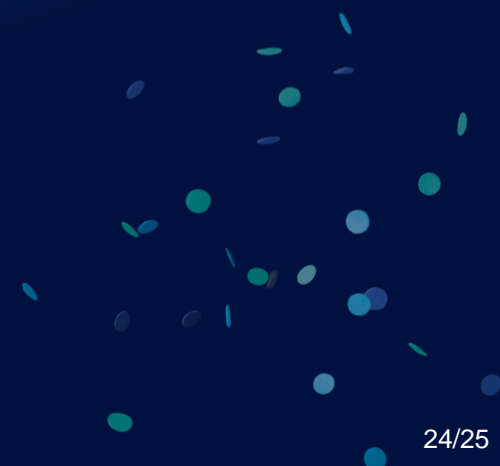
If you need supports:

- Leave JIRA tickets to <https://bugs.tizen.org/jira/projects/TINF>
- Contact Jong Woo, Chae (jongwoo.chae@samsung.com)

References

- https://wiki.tizen.org/wiki/Tizen_Governance
- https://wiki.tizen.org/wiki/Setup_of_Tizen_Infrastructure
- https://wiki.tizen.org/wiki/Setup_of_Tizen_Infrastructure_with_Docker
- https://wiki.tizen.org/wiki/GBS_local_full_build_Docker_image
- https://wiki.tizen.org/wiki/GBS_Performance
- https://wiki.tizen.org/wiki/OBS_Performance
- <http://download.tizen.org/docker>

Q & A



Thanks!!!

