LLVM RELEASE PROCESS

Order out of chaos

TOBIAS HIETA

Ubisoft

Toolchain Maintainer

Release Manager

- Why make releases?
- How do we make a Release?
- How to get involved.
- How to improve the process.

WHY MAKE RELEASES?

- Why not just develop and integrate at HEAD?
- Releases takes focus away from development
- "We" already integrate it daily/weekly

LLVM Development is happening at a furious pace.

- 100-150 commits / day
- ~17000 commits / release
- API breaks

We need to provide a stable point for integrators

- Distributions
- Vendors
- Third-party development
- Focus points

Deprecations can be helped by releases

Easier communication about changes

Provide "points of break"

RELEASE MANAGERS

- Shepherd the release
- Triage issues
- Communicate with the community
- Improve the release workflow

and … a lot of nagging.

TOM STELLARD, REDHAT

Even releases (14, 16, 18)
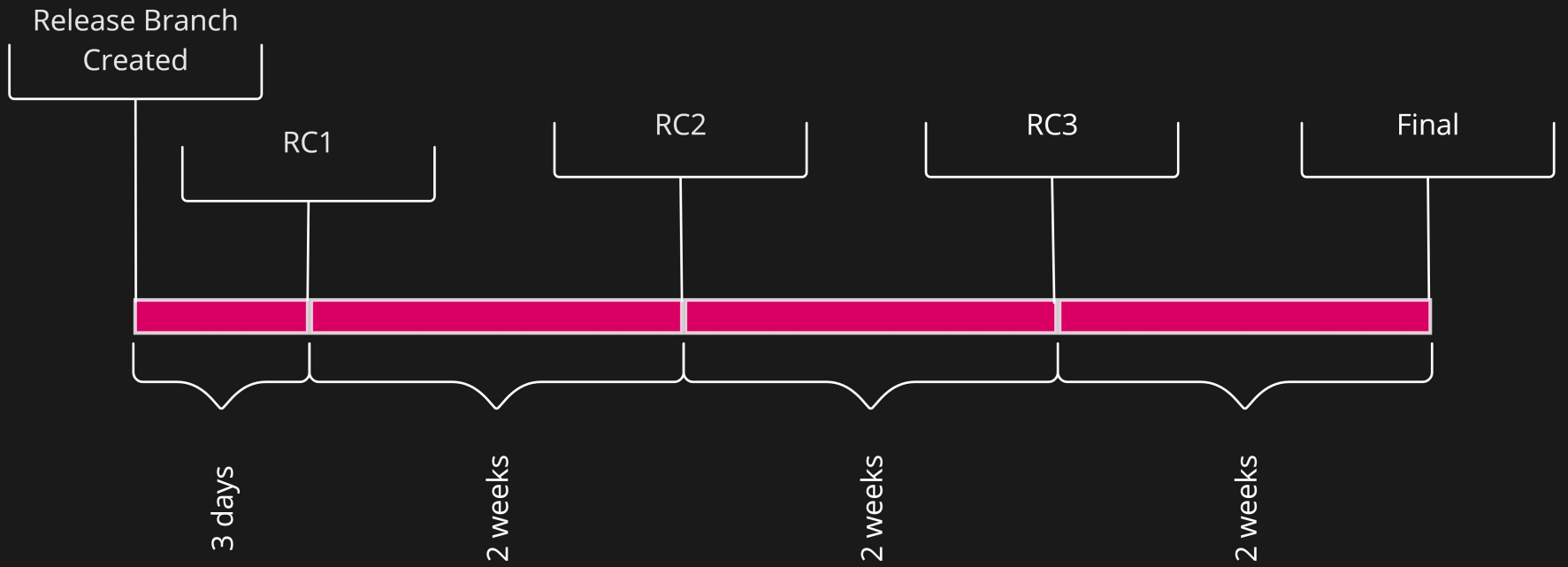
TOBIAS HIETA

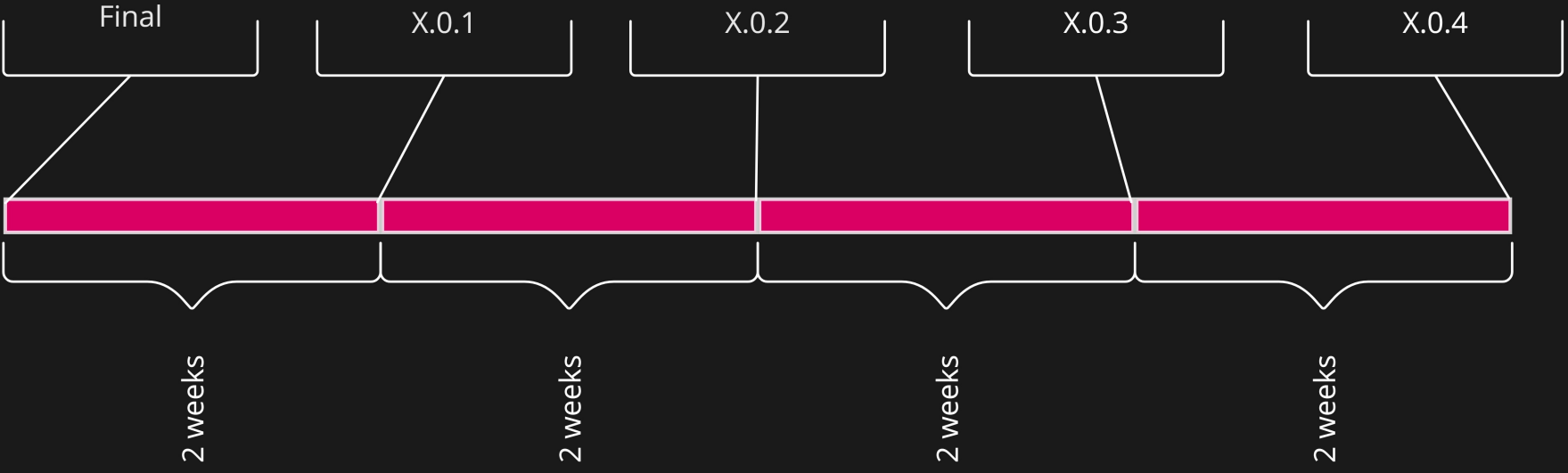Odd releases (15, 17, 19)

2 releases per year, 6 months apart
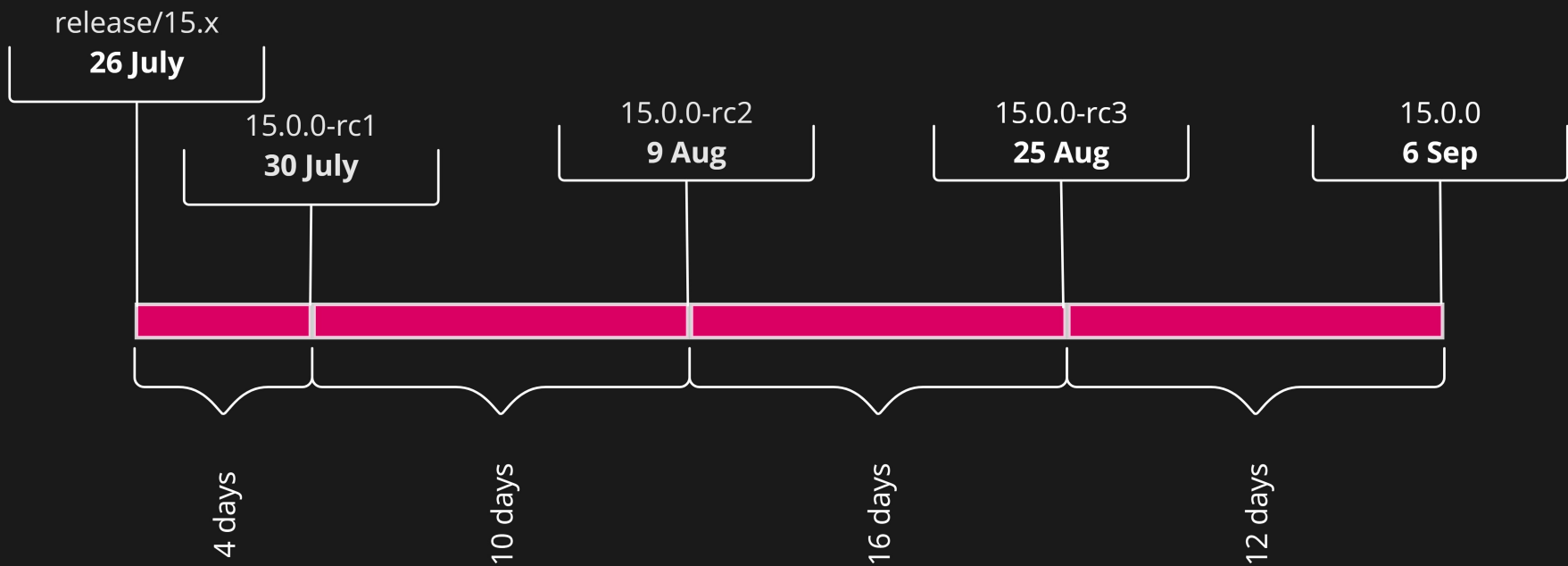
Even releases:

4th Tuesday of Janury

Odd Releases:

4th Tuesday of July

Release Branch
Created

RC1

RC2

RC3

Final

3 days

2 weeks

2 weeks

2 weeks

PLAN, MEET REALITY

15.0.0
6 Sep

15.0.1
20 Sep

15.0.2
4 Oct

15.0.3
18 Oct

15.0.4
2 Nov

15.0.5
16 Nov

15.0.6
29 Nov

2 weeks

2 weeks

2 weeks

2 weeks

2 weeks

2 weeks
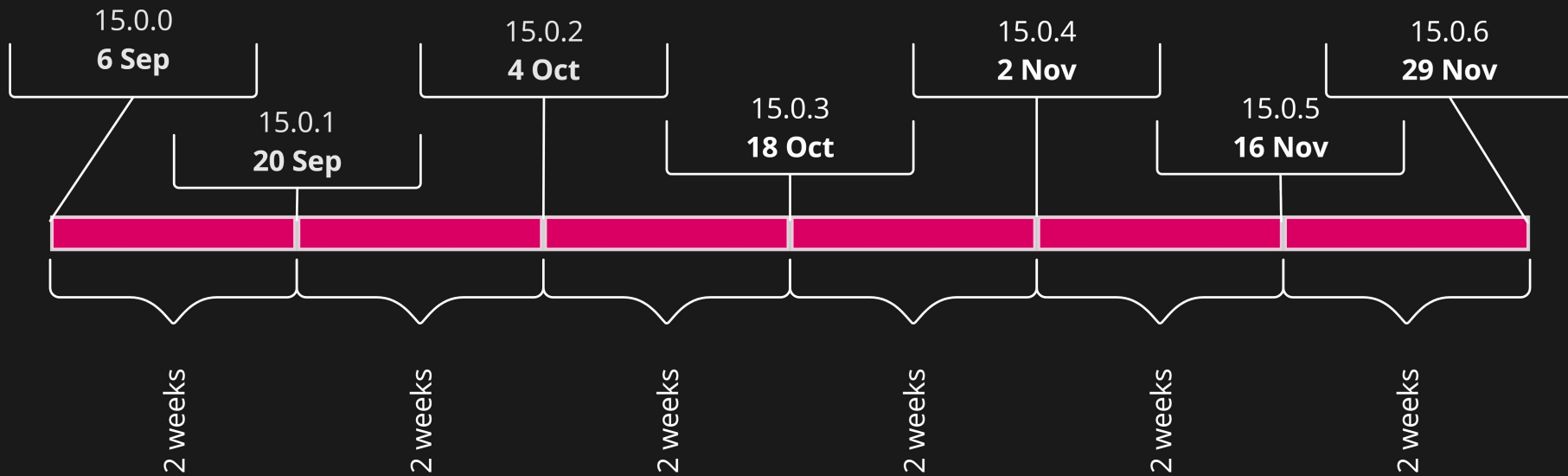
Like a clock

RELEASE TESTING

10+ GitHub Actions

Release Testers

The Community

```
┌─────────────────┐ User      ┌─────────────────┐ User     ┌─────────────────┐ RM
│                 │           │ Added to Milestone│         │ Added to Project │
│  Issue created  │ ────────► │  (Release 16.x)  │ ───────► │  (LLVM Release) │
│                 │           │                  │          │                 │
└─────────────────┘           └──────────────────┘          └─────────┬───────┘
                                                                       │
        ┌──────────────────────────────────────────────────────────────┘
        │
        ▼
┌─────────────────┐ Dev       ┌─────────────────┐ Dev      ┌─────────────────┐ Dev
│  Fix uploaded to│           │  Fix approved in │          │                 │
│   Phabricator   │ ────────► │   Phabricator    │ ───────► │Fix merged to main│
│                 │           │                  │          │                 │
└─────────────────┘           └──────────────────┘          └─────────┬───────┘
                                                                       │
        ┌──────────────────────────────────────────────────────────────┘
        │
        ▼
┌─────────────────┐ Dev       ┌─────────────────┐ GH       ┌─────────────────┐ Owner
│                 │           │  PR created by   │          │                 │
│/cherry-pick <sha>│ ───────► │     Action       │ ───────► │   PR approved   │
│                 │           │                  │          │                 │
└─────────────────┘           └──────────────────┘          └─────────┬───────┘
                                                                       │
        ┌──────────────────────────────────────────────────────────────┘
        │
        ▼
┌─────────────────┐ RM        ┌─────────────────┐ RM
│                 │           │                 │
│   PR Merged     │ ────────► │Done, issue closed│
│                 │           │                 │
└─────────────────┘           └─────────────────┘
```
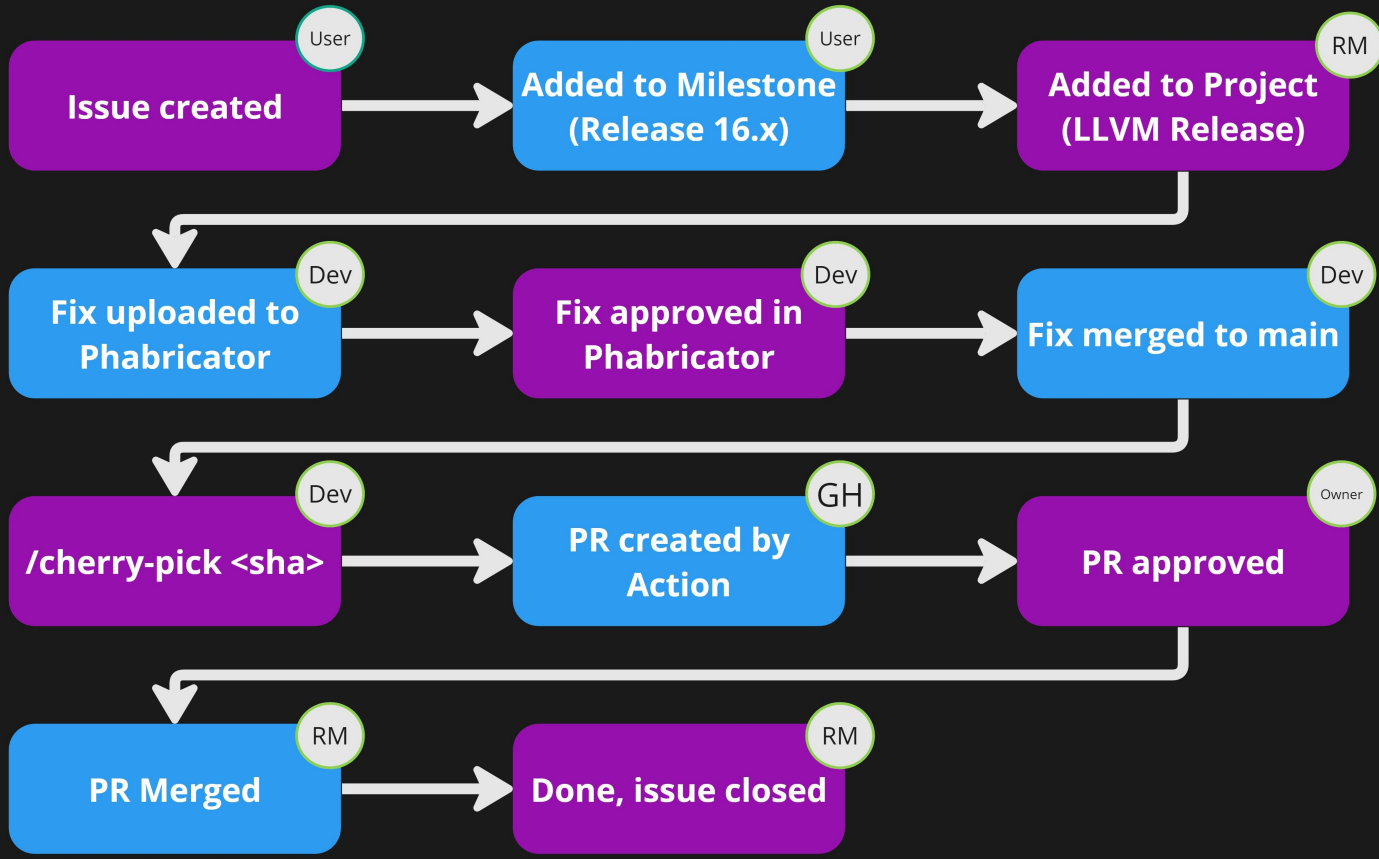
WHAT WE APPROVE

ALWAYS

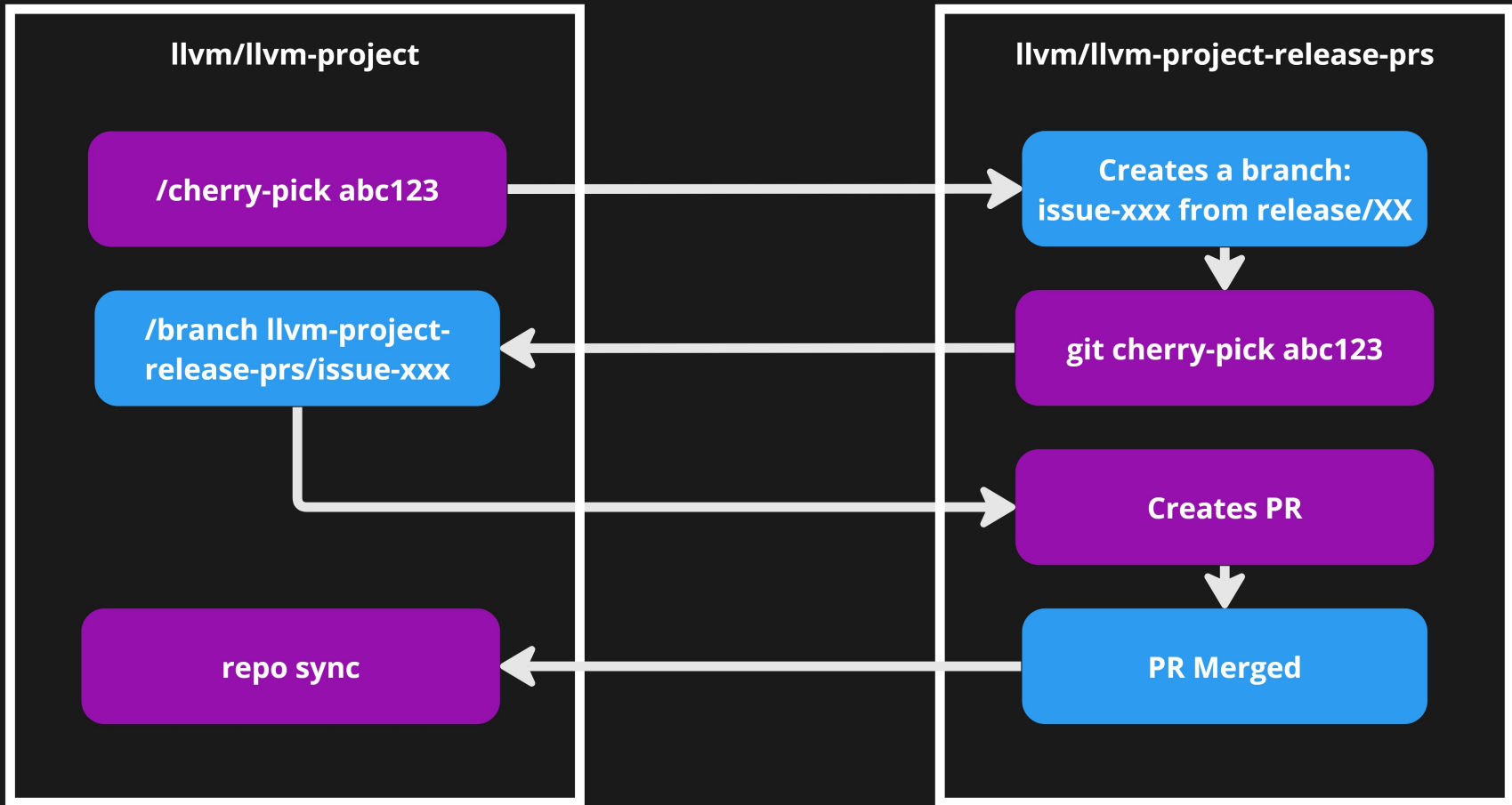Regressions, Crash fixes

EARLY RC

Optimization, Finish Features

POST RELEASE

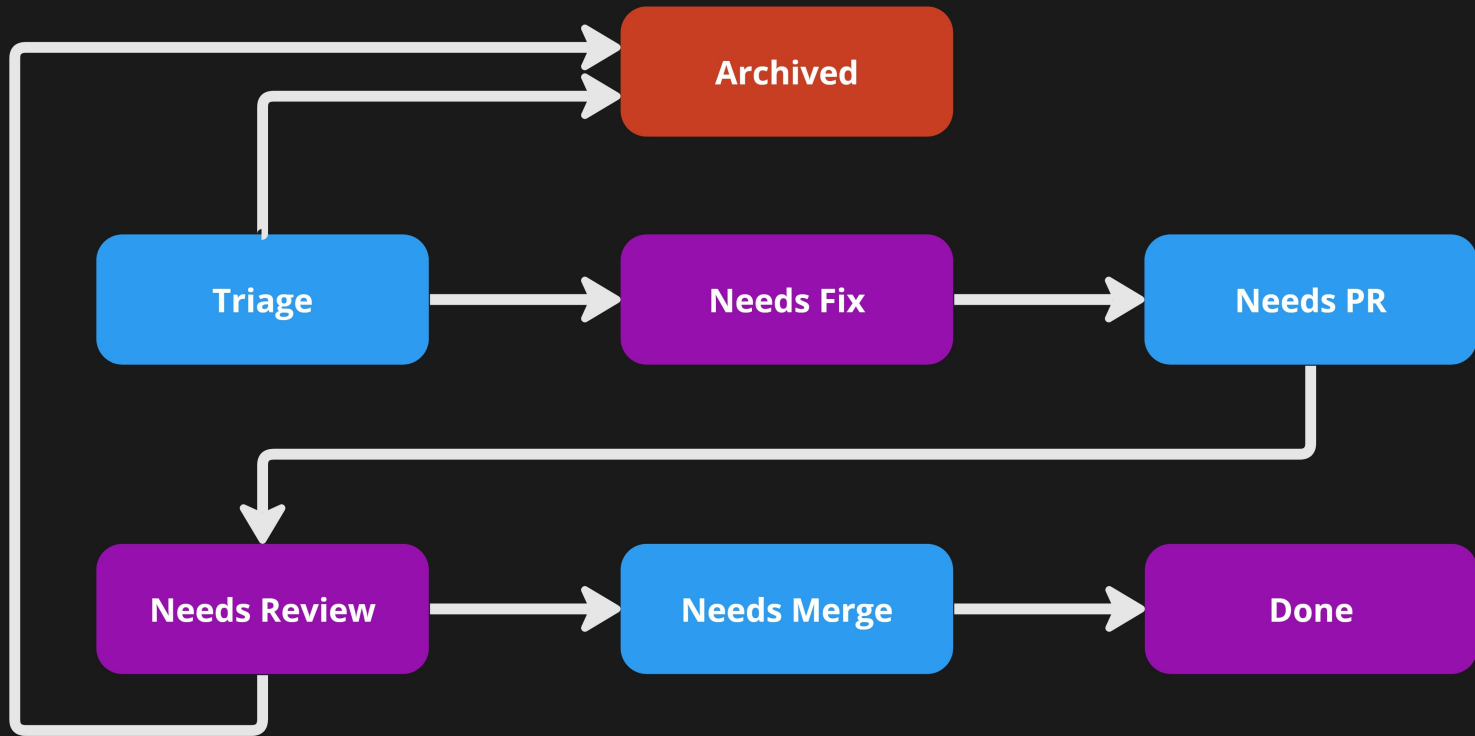Safe fixes, ABI/API comptiable

NO HARD RULES!

The Release Manager decides!

But we usually work with the code owners to find the best solution to each issue.

llvm/llvm-project

/cherry-pick abc123

/branch llvm-project-release-prs/issue-xxx

repo sync

llvm/llvm-project-release-prs

Creates a branch: issue-xxx from release/XX

git cherry-pick abc123

Creates PR

PR Merged

⊕ LLVM Release Status

| ⊞ Everything Table | 匹 Everything Board | ⊞ Regressions | ⊞ Action Items | ⊞ LLVM 16.0.x ⌄ | + New View |

☰ milestone:"LLVM 16.0.X Release"   31 ⊗   Discard   Save

	Title	⋯	Assignees	⋯	Status
⌄ Needs Fix ④					
18	⊙ [OpenMP] slow linking and huge memory consumption on AMDGPU #60494		🧑🧑 jdoerfert and jhuber6 ⌄		Needs Fix
20	⊙ depdendent projects fail to build with cmake 3.25 and llvm 16-rc4 #61436		⌄		Needs Fix
21	⊙ perl print_long_double test fails on ppc64le with -mabi=ieeelongdouble #61913		⌄		Needs Fix
22	⊙ Cannot represent a difference across sections due to debuginfo #61932		🧑 DianQK ⌄		Needs Fix
+	Add item				
⌄ Needs Review ⑦					
23	⊙ Regression with -D_FORTIFY_SOURCE=2 #61691		🧑 serge-sans-paille ⌄		Needs Review
24	⊙ Cherry-pick fix for crash in ASTWriter / Bad construction of ConceptSpecializationExpr t... #61801		⌄		Needs Review
25	⊙ Merge a78816a6b6debb548efbf1717aeeb490df42f401 into 16.0.X #62077		⌄		Needs Review

cherry-pick fc4494dffa54 to release/16.x #62119
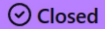
✓ Closed   **nickdesaulniers** opened this issue last week · 2 comments · Fixed by llvm/llvm-project-release-prs#418

---

nickdesaulniers commented last week   Member   •••

/cherry-pick `fc4494d`

(This is necessary to fix boot failures in the Linux kernel when built with stack protectors. It also reduces code size for C++ code built without exceptions or which contains `noexcept` `noreturn` functions when built with stack protectors).

☺

🏷 **nickdesaulniers** added the `release:backport` label last week

⊟ **nickdesaulniers** added this to the **LLVM 16.0.2 Release** milestone last week

llvmbot commented last week   Member   •••

/branch llvm/llvm-project-release-prs/issue62119

☺

↗ **llvmbot** mentioned this issue last week

   PR for llvm/llvm-project#62119 llvm/llvm-project-release-prs#418   ⑂ Merged

llvmbot commented last week   Member   •••

/pull-request llvm/llvm-project-release-prs#418

Assignees   ⚙

No one—assign yourself

Labels   ⚙

`llvm:codegen` `release:backport`
`release:merged`

Projects   ⚙

▦ LLVM Release Status
Status: Done ▾

Milestone   ⚙

LLVM 16.0.X Release

Development   ⚙

Successfully merging a pull request may close this issue.

⑂ PR for llvm/llvm-project#62119
   llvm/llvm-project-release-prs

Notifications   Customize

🔕 Unsubscribe

You're receiving notifications because you modified the open/close state.

3 participants

Projects

⚙️

▦ **LLVM Release Status**

Status: Done ▼

Milestone

⚙️

LLVM 16.0.X Release

Development

⚙️

nickdesaulniers commented last week

/cherry-pick `fc4494d`

(This is necessary to fix boot failures in the Linux kernel when buil
built without exceptions or which contains `noexcept` `noreturn` fu

☺

llvmbot commented last week   Member   ···

/branch llvm/llvm-project-release-prs/issue62119

🙂

llvmbot mentioned this issue last week

PR for llvm/llvm-project#62119 llvm/llvm-project-release-prs#418   ⑂ Merged

llvmbot commented last week   Member   ···

/pull-request llvm/llvm-project-release-prs#418

PR for llvm/llvm-project#62119 #418

🔀 Merged · **tru** merged 1 commit into `release/16.x` from `llvm-issue62119` 🗗 last week

💬 Conversation 3 · ⦿ Commits 1 · ☑ Checks 15 · ± Files changed 3

llvmbot commented 2 weeks ago · ⬤ Member · ⋯

resolves llvm/llvm-project#62119

☺

⦿ 🍔 [StackProtector] don't check stack protector before calling nounwind … ⋯ · ✕ 2bbbece

llvmbot commented 2 weeks ago · ⬤ Member · ⬤ Author · ⋯

@xiangzh1 What do you think about merging this PR to the release branch?

☺

llvmbot commented 2 weeks ago

@xiangzh1 What do you think about merging this PR to the release branch?

🤖 tries (and fails 🥺) to find the approver via Phabricator API

efriedma-quic commented 2 weeks ago   Member ···

Cherry-pick seems fine. It's relatively high-impact for a cherry-pick, but given the reported regressions I think it makes sense.

owenca commented 2 weeks ago   Member ···

> @mydeveloperday @rymiel @owenca OK to merge?

Yep.

Reply as you want!

TLDR

- File an Issue 📁
- Set the correct Milestone 💎
- Land the fix normally via Phabricator 🏝️
- `/cherry-pick <sha>` 🍒
- Reply to the bots pinging you! 🤖
- Congratulations you have landed a fix! 🚀

WHEN THINGS GO WRONG

- Additional commits in your PR
- cherry-pick (🍒) failed
- Need to add additional commits to PR

ADDITIONAL COMMITS IN PR

This happens when `llvm/llvm-project` and `llvm/llvm-project-release-prs` are out of sync.

Ignore it! It's harmless!

🍒-PICK FAILED

- Create a branch in your `llvm-project` fork. (`tru/llvm-project/myfix`)
- Reset to `release/16.x` (or whatever release)
- 🍒-pick tcommit and fix merge issue.
- Push to fork
- comment: `/branch tru/llvm-project/myfix`

ADD MORE COMMITS TO PR

`/cherry-pick abc123 321cba`

This also overwrites, since it always resets to the latest release branch.

HELP WANTED

- Become a Release Tester
- Help triage issues
- Reply to the 🤖

RELEASE TESTERS

- Runs `test-release.sh` on their platform
- Reports any test issues in GitHub
- Upload binaries to GitHub

TRIAGE ISSUES

- Check the release milestone
- Review Fixes, especially in your "area"
- Reproduce issues and confirm fixes

REPLY TO THE 🤖

Please.

QUESTIONS?

IMPROVE RELEASE PROCESS

- Working on automatic binaries
- When we move to GitHub PR's everything will be better 😊
- Better way to get approval for fixes?

- https://llvm.org/docs/HowToReleaseLLVM.html
- Discord: `#release` / `thieta`, `tstellar`
- Forums: `Project Infrastructure/Release Testers`

THANKS!

tobias@hieta.se