

# CI setup for multi-platform software project

**Marek Piłkuła** · ORConf 2024 · Gothenburg · 2024-09-14

Samsung R&D Institute Poland

**SAMSUNG**

# CI setup for the *pixman* project

①

## A lot of platforms

Pixman has a lot of platform-specific SIMD implementations (MMX, SSE2 SSSE3, ARMv6 SIMD, ARMv7/v8 Neon, LoongSon MMI, PPC VMX, MIPS DSPr2, RISC-V).

②

## Existing CI

The previous CI setup was *lacking*. Testing only single backend on x86-64.

③

## The Plan

Execute tests on all architectures and backends, and provide a summary coverage report.

# Types of targets

①

## “Code coverage” native target

Used to generate code coverage summary.

Uses QEMU for running native Docker images with all optional dependencies.

②

## “Platform coverage” cross target

Used to test if tests pass on platforms without official distro support.

Cross-compiled with tests run under QEMU or Wine.

Both test GNU and LLVM toolchains.

## docker



docker

15

## build

- ✓ build:linux-386 2
- ✓ build:linux-amd64 2
- ✓ build:linux-arm64-v8 2
- ✓ build:linux-arm-v5 2
- ✓ build:linux-arm-v7 2
- ✓ build:linux-mips64el 2
- ✓ build:linux-mips: [gnu]
- ! build:linux-mips:failing: [llvm]
- ✓ build:linux-mipsel: [gnu]
- ! build:linux-mipsel:failing: [llvm]
- ✓ build:linux-ppc64 2
- ✓ build:linux-ppc64le 2
- ✓ build:linux-ppc 2
- ✓ build:linux-riscv64 2
- ✓ build:windows-686 2
- ✓ build:windows-amd64 2
- ✓ build:windows-arm64-v8: [llvm]

## test

- ✓ test:linux-386 3
- ! test:linux-386:failing 3
- ✓ test:linux-amd64 6
- ✓ test:linux-arm64-v8 2
- ✓ test:linux-arm-v5: [gnu, arm-neon, arm1136]
- ! test:linux-arm-v5:failing: [llvm, arm-neon, ...]
- ✓ test:linux-arm-v7 2
- ✓ test:linux-mips64el: [gnu, , Loongson-3A4...]
- ! test:linux-mips64el:failing: [llvm, , Loongs...]
- ! test:linux-mips:failing: [gnu, , 74Kf]
- ✓ test:linux-mipsel: [gnu, , 74Kf]
- ! test:linux-ppc64:failing 2
- ✓ test:linux-ppc64le: [gnu, , power10]
- ! test:linux-ppc64le:failing: [llvm, , power10]
- ! test:linux-ppc 2
- ✓ test:linux-riscv64 8
- ✓ test:windows-686 6
- ✓ test:windows-amd64 6
- ✓ test:windows-arm64-v8: [llvm, , max]

## summary

- ✓ summary

## Build fails:

- MIPS with LLVM

## Test fails (LLVM):

- All x86
- ARMv6 NEON
- LoongSon MMI
- PPC VMX

## Platform fails:

- MIPS32 (be)
- PPC
- PPC64 (be)

## Interesting targets:

- Windows on ARM

# Thank you!

## Questions?



Recent pipeline run

[m.pikula@partner.samsung.com](mailto:m.pikula@partner.samsung.com)

[linkedin.com/in/marek-pikula](https://www.linkedin.com/in/marek-pikula)

[github.com/MarekPikula](https://github.com/MarekPikula)



**SAMSUNG**