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Annual Review for CI Working Group

Presentation to the ASWF TAC
Jean-François Panisset
June 25, 2025

CI Working Group

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Brief Description:

The CI WG is a forum to discuss and help move forward infrastructure and tooling topics common to ASWF projects. We also maintain the aswf-docker project which provides VFX Platform compliant build containers used by several ASWF projects (and possibly more generally).

WG Chairperson:

Jean-Francois Panisset panisset@gmail.com

WG Frequent Attendees (recent):

Larry Gritz, OSL / OIIO / ...

Andrew Grimberg, LF Release Engineering

Jean-Christophe Morin, Rez

Stephen Mackenzie, Rez

Jeff Bradley, DreamWorks

Key Links:

Github:

https://github.com/AcademySoftwareFoundation/wg-ci

https://github.com/AcademySoftwareFoundation/aswf-docker

Slack:

https://academysoftwarefdn.slack.com/channels/wg-ci

Our Goals

- Provide and maintain VFX Reference Platform compliant build environments to be used by anyone requiring a common, reproducible Linux CI build process
- Provide expertise and consulting on tooling and CI processes for ASWF projects
- Identify common patterns between projects that can be factored out and reused.
- Support for Mac and Windows builds -> very much a TODO
- Support for multi-platform GPU-enabled build and testing
- Support for additional CPU architectures build and testing
- Support for integration of commercial applications and libraries for testing purposes
- Help integrate ASWF projects with established package management systems
- Provide a forum for the exchange of ideas between individuals interested in all aspects of the tooling and processes involved in software development, building and distribution

Our Scope

- Revision control / GitHub
- Build toolchains
- CI build environments
- Testing
- Packaging and distribution

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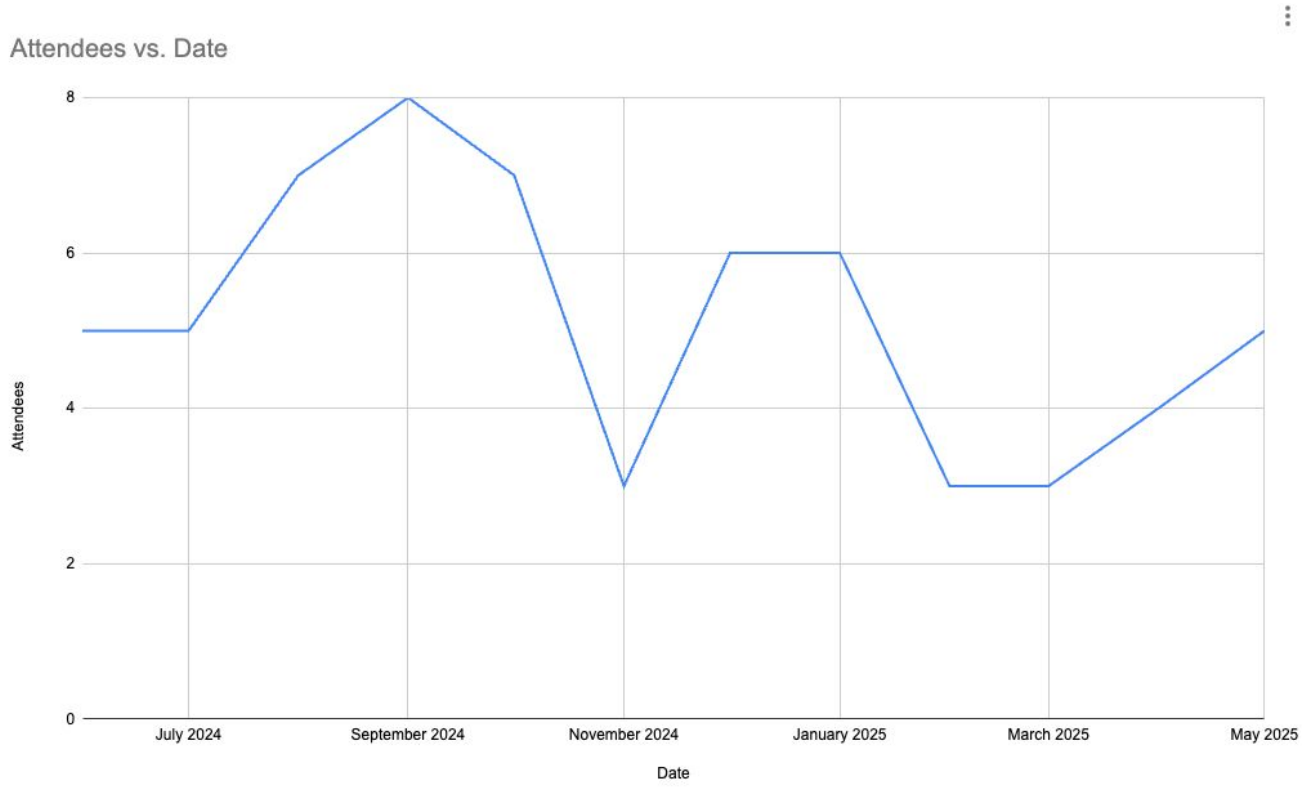
Monthly Meetings

- Monthly on Wednesday at 13:00 Pacific Time, off cadence from TAC (challenge of overlap with USD WG)
- Notes in wg-ci repo
- Presentation to USD WG in April 2025
- Trying to have more guests (we had someone from GitHub Actions team), but difficult with small attendance
- 5ish attendees on average:



Slack / Confluence

- #wg-ci at 383 subscribers
- Reasonably active, helps in preparing monthly agenda
- Some interesting discussions:
  - Coordinate fix for EOL of GHA runner node.js version on CentOS 7
  - Alert projects to "surprised" update to CMake 4.0 in GHA runners
- A few more articles in our Confluence

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Key Achievements in the past year

New Logo! We now have an identity, thank you LF.

CONTINUOUS INTEGRATION WG

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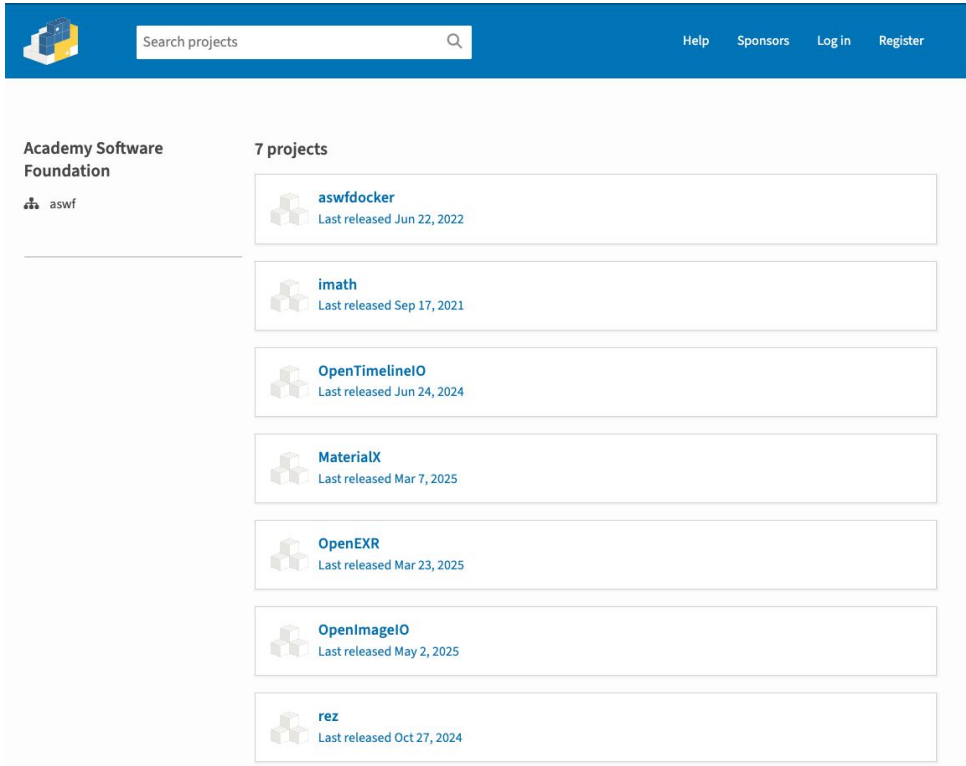
Key Achievements in the past year

PyPI ASWF organization : https://pypi.org/org/aswf/

- Help distinguish official Python bindings / modules
- Assure business continuity
- GH Issues filed against projects
- OTIO plugins happening soon
- OCIO / OpenAssetIO next?



Key Achievements: Larger Runners

- Linux (free) and Windows (paid) ARM runners
  - How much interest?
- Custom Images for paid runners (alternative to aswf-docker?)
- OpenVDB to use AWS CodeBuild for access to newer GPUs
  - Still WIP, will follow up if there are still blockers
  - GHA supposed to add newer GPU models "soonish"
- $1,500 monthly budget for paid larger runners

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Key Achievements: GPU Runners

- OpenShadingLanguage running OptiX Test Suite
  - runs-on: ${{ (github.repository_owner == 'AcademySoftwareFoundation' && 'ubuntu-20.04-gpu-t4-4c-16g-176h') || 'ubuntu-latest' }}
  - container:
  - image: ${{ matrix.container }}
  - options: -e NVIDIA_DRIVER_CAPABILITIES=compute,graphics,utility --gpus all

```
277    53/1121 Test   #23: array-copy.rs_bitcode ..............................   Passed    0.46 sec
278            Start   25: array-copy.opt.rs_bitcode
279    54/1121 Test   #24: array-copy.opt ......................................   Passed    0.34 sec
280            Start   26: array-copy.optix
281    55/1121 Test  #500: noise-generic.rs_bitcode ............................   Passed    0.79 sec
282            Start  501: noise-generic.opt
283    56/1121 Test   #25: array-copy.opt.rs_bitcode ...........................   Passed    0.32 sec
284            Start   27: array-copy.optix.opt
285    57/1121 Test  #501: noise-generic.opt ...................................   Passed    0.70 sec
286            Start  502: noise-generic.opt.rs_bitcode
287    58/1121 Test   #26: array-copy.optix ....................................   Passed    1.35 sec
288            Start   28: array-copy.optix.fused
289    59/1121 Test   #27: array-copy.optix.opt ................................   Passed    1.33 sec
290            Start   29: array-derivs
```

Key Achievements: New Tools

At request of Rez, evaluating Semgrep https://semgrep.dev/ for static analysis

- In addition to SonarCloud already in use
- Offers good flexibility and visibility in creating your own scanning rules
- Would create an ASWF org to aggregate all project results
- Accessed via org-level "secret" env var

Key Achievements: aswf-docker

aswf-docker: create container images implementing VFX Reference Platform

- Shortcut used by projects to build in yearly VFX Platform env
- Protects against arbitrary Ubuntu runner changes (CMake 4)
- A stack of layered containers:
  - ci-common : base Rocky Linux env, CUDA, compilers
  - ci-base : adds multiple non-ASWF packages used by ASWF projects, including Qt / PySide
  - ci-openexr, ci-openvdb...: project-specific build containers (including a ci-usd)
  - ci-vfxall : everything pre-built

Key Achievements: aswf-docker 2024.x

- 2024.1 release (Sept 2024)
  - oiio build container
  - minor version bumps
- 2024.2 release (Oct 2024)
  - Qt builds qtwebengine (contribution from OpenRV)
  - minor version bumps

Key Achievements: aswf-docker 2025.0

- 2025.0 release (April 2024)
  - implements 2025 VFX Platform except oneTBB
  - Rocky Linux 8.10, CUDA 12.6.1, LLVM 18.1.8 / 19.1.1
  - major transition to Conan 2
    - minimize differences for vendored recipes
    - use wrapper recipes for system components
    - getting close to everything built as Conan package

Key Achievements: aswf-docker 2025.1

- 2025.1 release (May 2024)
  - adds missing transition to oneTBB
  - smaller base images by 2GB (trim CUDA components)
  - pull NVIDIA OptiX headers from new optix-dev repo
  - minor version updates
    - USD 25.05 now compatible with MaterialX 1.39.3

Looking forward: aswf-docker 2026

VFX Platform moves to new glibc, new gcc. Want to get started early to have EA version late summer / early fall

- Rocky 9, CUDA 12.9.x based
- Complete transition to Conan packages (can EOL code to produce temp container packages)
- Better documentation (including various use cases)
- Additional platform support (ARM? Windows?)
- Support for GitHub Container Registry

Areas the project could use help on

- Participation levels are somewhat concerning
  - Unclear how this compares to other WGs
  - Would a leadership transition help?
  - Guidance on "how to attract and retain talent"?
  - Still a useful and unique forum

Areas the project could use help on

- A Working Group with Release Artifacts
  - Ongoing discussion on transition from WG to full project
  - Would help with legal structure
  - But unlikely to help with resources?

Areas the project could use help on

- Developers Developers Developers Developers!
  - So much more could be done with aswf-docker
    - Mostly 1 dev contributing, only spare time contributions
  - Ongoing effort required to keep with with VFX Platform releases
    - Ideally want release to line up with end-of-SIGGRAPH deadline
  - Not a very different situation than most other projects

Feedback on working with ASWF

- CI Working Group (including aswf-docker deliverables) only really makes sense in context of ASWF
- Collaboration with projects / solving problems across multiple projects is the most rewarding part of the effort
- An effort worth pursuing and encouraging (right?)

TAC Open Discussion