

Open Source at CERN and WLCG

Giacomo Tenaglia for CERN OSPO - WLCG OTF - 2025-02-11

Open Source

Software and Hardware

- Open Source Software ([definition](#)):
 - Uses copyright to permit the 4 freedoms of software (use, study, share, improve) via *special licenses*.
- Open Source Hardware ([definition](#)):
 - Applies to hardware designs adding the freedom to manufacture.
- [CERN Academic Training Open Source lecture series](#).

Why focus on Open Source

- Accelerate technology evaluation and adoption.
- Standardise sites partnerships & collaborations.
- Attract engineering talent.
- Ease on-boarding process.
- Showcase impact and contributions to funding agencies and the public.

Open Source at CERN

Milestones

- 1970: First CERN Computing and Data Handling School.
- 1978: H-BOOK collaboration / re-distribution with HEP sites.
- 1983: HEPVM tape distributed freely to more than 30 sites.
- 1984: CERN makes Cernlib “freely available” to other labs.
- 1994: “Licensing the Web” as Open Source.
- 2011: CERN Open Hardware License released.
- 2012: CERN Open Source License Task Force report.
- 2019: MALT project.
- 2022: CERN Open Science Policy.
- 2023: Creation of CERN Open Source Program Office.

CERN OSPO

- Official body at CERN ([mandate](#)) to support open-source hardware + software.
- A few on-going initiatives:
 - [Technical website](#).
 - [Project with Software Heritage](#): measuring impact.
 - CERN-made software/hardware catalogues.
 - Track dependency on OSS components for critical services.
 - Finding ways to contribute back to OSS we rely on

Open Source Software at WLCG

- Most (all?) SW used in WLCG is open-source.
- HEP-specific: developed and maintained by sites
 - CTA, dCache, EOS, HTCondor, IAM, ROOT, Rucio, ...
- Off the shelf infrastructure components:
 - Grafana, Linux, Kubernetes, Puppet, ...
- “Long tail” of software dependencies.

Outbound focus

Producing Open Source Software


- Recommended publishing/project management practices:
 - License of choice, how to accept contributions, ...
- Code repository presence and “branding”:
 - Gitlab/Github/HEPforge/...
- Automated on license & ©:
 - The [REUSE framework](#).

Inbound focus

Consuming Open Source Software

- Identification of dependency “long tail”:
 - Software Composition Analysis/SBOM/...
- Analyse & remediate shared dependencies health:
 - Get involved vs. fund vs. replace.
- Watch OSS trends in the WLCG problem space.

Internal/external collaboration

-  Raise awareness.
- Internal WLCG Open Source experts network/WG:
 - What's the state of OSPOs across sites?
 - Work on common items/synergies.
- Coordinated outreach initiatives (conferences/blogs/...).

Thank you!

<https://ospo.docs.cern.ch>

CERN OSPO Technical
Documentation

Open.Source@cern.ch

CERN OSPO

Giacomo.Tenaglia@cern.ch

My contact