Apereo Foundation

Open Agentic Development

CLAC Agentic AI Mindshare

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This presentation was developed with open source software exclusively.

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...at the intersection of open source and higher education.

EDUCAUSE Openness CG

Local School Board

Brandeis Technology Management Advisory Board

OW2

Moodle

Massry School of Business

NSF

SC@LE

Jasig

OSCON

FOSSY

Sakai

Apereo

Director, UCLA Media Lab

Director of Technology, SUNY Learning Network

CIO, SUNY Delhi

CTO, Umass Office of the President

General Manager Open Source Initiative

Adjunct Professor SUNY Albany

Executive Director Apereo

QUIZ: Which projects have origins with universities?

Apache Web Server

Audacity

BigBlueButton

BSD

Central Authentication Service

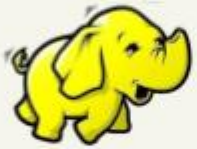
Drupal

FileZilla

Firefox

GNOME Desktop

GNU


Hadoop

Linux

MediaWiki

Moodle

PostgreSQL

Python

R

Sakai

VLC Video

WordPress

Xen

QUIZ: Which projects have origins with universities?

Apache Web Server
University of Illinois, Urbana-Champaign

Audacity
Carnegie Mellon University

BigBlueButton
Carleton University

BSD
University of California, Berkeley

Central Authentication Service
Yale University

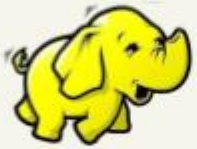
Drupal
University of Antwerp

FileZilla
RWTH Aachen University

Firefox
University of Chicago

GNOME Desktop
Universidad Nacional Autónoma de México

GNU
Massachusetts Institute of Technology



Hadoop
University of California, Berkeley

Linux
University of Helsinki

MediaWiki
University of Cologne

Moodle
Curtin University

PostgreSQL
University of California, Berkeley

Python
Centrum Wiskunde & Informatica

R
University of Auckland

Sakai
University of Michigan

VLC Video
École Centrale Paris

WordPress
University of Houston

Xen
University of Cambridge

The source for open source in higher education.

Fiscal Sponsorships & Sustainability:
Administrative/Back-office services, legal services, fundraising, infrastructure (e.g., CRM), mentorship...

OSPO-as-a-Service:
Supporting campus-based projects with principles & practices, community management, sustainability, professional development...

Research & Resources:
Incubation, OSS Assessment Tool, OSS in Higher Education Report, Sustaining OSS in the Research Enterprise, OSS Grant Funding Prioritization Framework

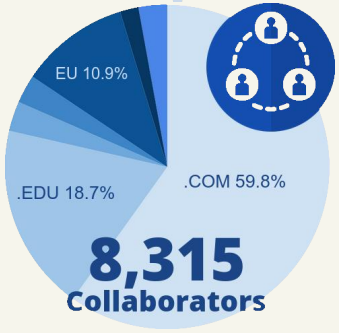
Advocacy & Policy:
Software Bill of Materials, Cyber Resiliency Act, Age Attestation, Open Letter to the Higher Education Community, Open Renaissance Group, ***Open Source AI Definition***...

Apereo

25 YEARS EXPERIENCE

95 Committing Institutions

700+ Contributors



ROLES:
Director/Manger, 45%
C-Level/Executive, 19%
Faculty/Researcher, 18%
Developer/Technologists, 14%

15 SOFTWARE PROJECTS | 9 COMMUNITIES OF INTEREST

bedework · BookLooky · CAS · dat.ecosystem · HAX · KARUTA · MULTITOOL FORGE · onTask · OPENCAST · openEQUELLA · Sakai · samvera · UniTime · uPortal · Xerte

9000+ INDIVIDUALS | 500+ INSTITUTIONS | 60+ COUNTRIES

AXIES · EDUCAUSE · NSF · OPEN edX · OCW2 · OPEN SOURCE CONGRESS · open source week_

AI Impact on Open Source

Everyone is a Contributor

Policy and practice related to the submission of code, bugs/issues, documentation, and other resources developed through the use of AI.

- Project readiness
- AI slop
- Overwhelming submissions
- Software Bill of Materials
- Licensing
- Community erosion
- More, more, and more...

Open Source AI Definition

Published by the Open Source Initiative, states that an open source AI system must grant four core freedoms: to use, study, modify, and share the system and its components.

- Project readiness
- Openwashing
- Compliance
- Ethos vs. productivity
- More, more, and more...

Open Agentic Development

An approach to AI in which openness applies in to the development of an AI agent and to the development performed by that agent.

- Project readiness
- Fauxpen source
- Openness vs. privacy
- Reproducibility and model drift
- Maintainer overload
- Standards/Quality
- More, more, and more...

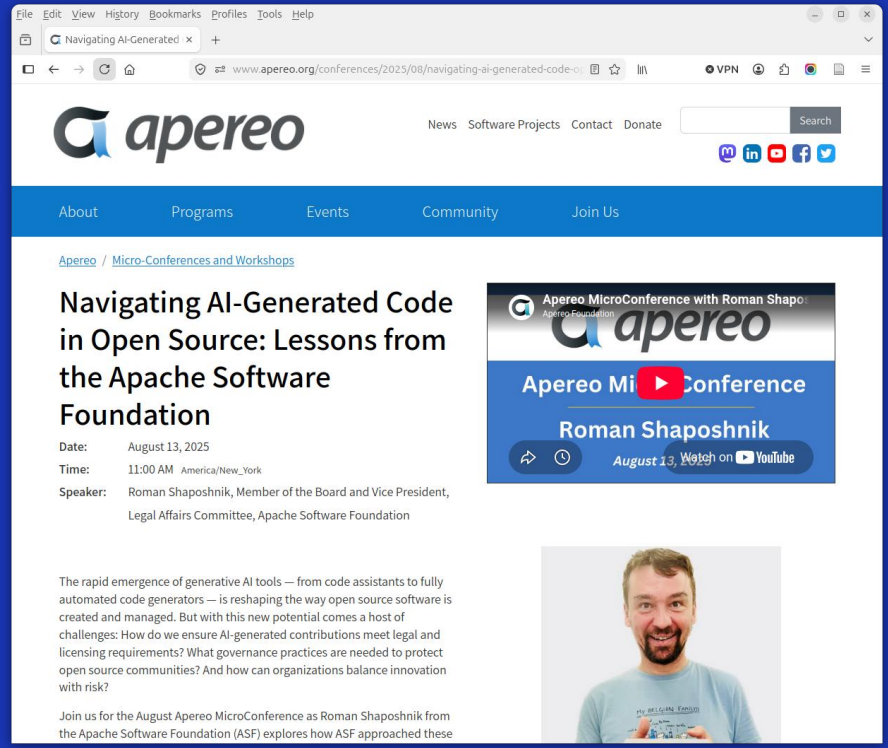
AI Impact:
Everyone is a now Contributor

CLAC Mindshare Attendees:

How many here--faculty, instructional designers, system admins, genral IT staff, and other “non-traditional” developers are now developing agents on their campus?

AI Impact: Everyone is a now Contributor

Roman Shaposhnik,
Member of the Board of Directors
Vice President, Legal Affairs Committee,
Apache Software Foundation



AI Impact: Open Source AI Definition

- **Use** the system for any purpose and without having to ask for permission.
- **Study** how the system works and inspect its components.
- **Modify** the system for any purpose, including to change its output.
- **Share** the system for others to use with or without modifications, for any purpose.

- **Data Information:** Sufficiently detailed information about the data used to train the system so that a skilled person can build a substantially equivalent system.
- **Code**: The complete source code used to train and run the system...available under OSI-approved licenses.
- **Parameters**: The model parameters, such as weights or other configuration settings, shall be made available.

Facilitating an Open ecosystem is an important part of our approach at Intel. An open approach to AI can foster greater collaboration across the community, drive innovation and enhance transparency. We applaud OSI's efforts to expand their definition to include AI models and datasets.

- Arun Gupta, Open Ecosystem, Intel

AI Impact: Open Source AI Definition

In academics and research...

- **Enables reproducible research.**
- Makes AI systems transparent and understandable, supporting independent assessment and validation
- Facilitates peer review beyond publications; perpetual innovation beyond initial collaborators.
- **Allows reusable/derivative works (self-organizing/organized), research, resources.**
- Encourages collaborative innovation.
- **Reduces duplication of effort.**
- Advances/promotes responsible data governance.
- **Supports accessible, equitable and inclusive AI.**
- Builds communities of (best) practice.
- Strengthens long-term stewardship of knowledge.
- **Extends openness to agentic development:** *As AI agents increasingly participate in software engineering and research, openness should* ***apply to not only the agents themselves but also to their work products.***

Open Agentic Development

Openness applies both to the development of the agent and to the development performed by the agent.

Development *of* the agent (model engineering):
how, why, and for whom/what the agent is designed, built, evaluated, governed, and maintained.

Development *by* the agent (harness engineering):
the tools, methods, practices, decisions, and resources used, and the artifacts produced when the agent performs work.

*There is a way forward—it is to design models that are **inherently interpretable**.*

- Cynthia Rudin

Gilbert, Louis, and Edward Lehrman
Distinguished Professor of Computer Science
Duke University

*Trustworthy AI depends upon **accountability**. Accountability presupposes **transparency**.*

- NIST

Transparency & Openness

Transparency permits people to see something.
Openness gives them meaningful rights and practical capacity to:

- Access and study it, then modify and adapt it...
- Use and execute it, then share and redistribute it...
- Understand how and why it was made, then influence its development
- See into the community that made it, then participate in its governance

Transparency & Openness

Transparency permits people to see something.
Openness gives them meaningful rights and practical capacity to:

- Access and study it
- Use and execute it
- Modify and adapt it
- Share and redistribute it
- Contribute improvements
- Participate in its governance

...inclusive and permissionless
or permission granted in advance.

- Simon Phipps

Former OSI Board Chair
"Open source and the DevRel origin myth," DevRelCon London 2018

Development *of* the agent

- The **motivations and needs** that led to the agent's creation
- Intended **users, use cases,** and expected public or community **benefits**
- System **architecture, models, tools, frameworks**, and technical **dependencies**
- **Prompts, instructions, policies, configurations, and orchestration methods**
- **Data** sources, data assumptions, selection criteria, and known limitations
- **Evaluation** methods, benchmarks, test suites, and validation results
- Security, privacy, accessibility, safety, and **risk assessments**
- **Governance** structures, contribution processes, and **decision-making** authority
- **Version** histories, issue records, design discussions, and change documentation
- **Licensing** terms governing use, study, modification, contribution, and redistribution

Development *by* the agent

- Requirements, specifications, task definitions, and project **plans**
- **Source code, documentation, datasets, media, models, and other deliverables**
- Architectural **decisions** and design **rationale**
- **Algorithms**, **workflows**, and implementation **logic**
- **Data** models, schemas, transformation rules, and processing **pipelines**
- API designs, interfaces, and integration **decisions**
- **Sources, citations, evidence, and provenance records**
- **Testing** frameworks, validation suites, and quality assurance **results**
- **Build** processes, deployment workflows, and operational **configurations**
- Model, tool, dependency, and environment **versions**
- **Assumptions, constraints, alternatives considered, and selection criteria**
- **Human** reviews, interventions, revisions, approvals, and unresolved **concerns**
- Logs, traces, and evaluation records appropriate for **auditing and reproduction**

Review, Revision, and Reuse

Agents and agent-generated contributions should be subject to expectations comparable to those applied to human contributions in open development communities. They should be **open to peer review**, **criticism**, **correction**, **adaptation**, and **continuous improvement**.

Humans and other agents should be able to:

- **Inspect** work and its provenance
- **Challenge** assumptions and decisions
- **Identify** errors, bias, risks, and omissions
- **Reproduce** or rerun the process
- **Revise** the methods or outputs
- **Reuse** components in other contexts
- **Contribute** improvements through documented community processes

Value for Education & Research

Open Agentic Development is especially important in education and research, where scrutiny, attribution, reproducibility, academic integrity, and peer review are fundamental.

Open agentic practices make it possible to:

- Assess agents and their outputs to authenticate student, instructional, and scholarly work
- Distinguish generated, retrieved, adapted, and human-authored material
- Examine the methods and evidence underlying agent activities and agent-generated results
- Develop AI literacy through critical engagement rather than dependence on opaque systems
- Reproduce experiments, analyses, and educational outcomes
- Validate effectiveness through shared benchmarks and transparent evaluation methods
- Identify errors, bias, unsupported claims, and inappropriate uses
- Share successful workflows, methodologies, tools, and lessons across institutions
- Build upon prior work while preserving attribution, provenance, and licensing information

In practice, some examples?

Discoverability: documented, indexed, described, and published where others can find it before beginning similar work, reducing unnecessary duplication and redundant work.

Publish purpose, capabilities, limitations, source materials, documentation, metadata, interfaces, licensing, and current development status in searchable and accessible locations. it.

Transparency: Project code, discussions, bug reports, decisions, and road-maps are open for anyone to view and examine online.

The agent makes its purpose, instructions, capabilities, limitations, dependencies, workflows, and decision criteria visible. It records what it did, which tools and sources it used, and how its outputs were produced.

Iteration: Projects improve through small, continuous changes rather than relying only on large, infrequent releases.

The agent breaks complex work into reviewable stages, shares intermediate artifacts, tests assumptions early, and revises its work incrementally as new evidence or feedback becomes available.

Peer Review: Contributions are examined by others before they are accepted or released.

The agent submits its code, analysis, documentation, and other outputs for human or agent review. It provides sufficient evidence, tests, and documentation for reviewers to evaluate the work meaningfully.

In practice, and more...

Collaboration | Public Access | Open Licensing | Rapid Feedback

Merit-Based Participation | Participation

Shared Governance | Accountability | Documentation

Decision Records | Provenance | Version Control | Reproducibility

Testing and Validation | Continuous Integration | Issue Tracking

Modularity | Interoperability | Forkability and Adaptability

Open Roadmaps | Community Stewardship | Knowledge Sharing

Security Through Review | Privacy and Responsible Openness

Accessibility | Sustainability | Continuous Improvement

Thank you!

Questions, Comments, Critiques

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Partner with Apereo:

Support campus open source development and communities.

Student groups and academic programs.

Open source for research and researching open source.

Awareness, adoption, and implementation.

Policy & practice.