AI Workfest

Markus Diefenthaler (Jefferson Lab)

AI Town Hall on July 16: Scope and Goals

Purpose: Showcase the breadth of AI, machine learning, data science, and related computational activities across ePIC.

During Each Flash Talk, Consider

- What problem is the project addressing?
- How does it connect to ePIC workflows?
- What data, software, and infrastructure does it use?
- What is its level of integration in the ePIC software stack?
- What support or collaboration could help move it forward?

Broader Goal: Identify opportunities to:

- Integrate AI tools into the ePIC software stack and simulation campaigns.
- Share tools, data, expertise, and infrastructure.
- Build connections across related projects.

Topics span the full ePIC workflow, from detector design and simulation to reconstruction, validation, analysis, and workflow automation.

AI Town Hall: Strong Turnout

04:00

Introduction — *Dr Markus Diefenthaler*
Lecture Theatre 466, Gilbert Scott Building 04:00 - 04:10

AI-Based Multi-FPGA Data Reduction for DCR Noise Filtering and Bandwidth Control in the dRICH DAQ Stream
Cristian Rossi

Discussion
Lecture Theatre 466, Gilbert Scott Building 04:20 - 04:25

CNN-Based and Vision Transformer-Based PID for the ePIC dRICH System — *Deepak Samuel*
Lecture Theatre 466, Gilbert Scott Building 04:25 - 04:35

Discussion
Lecture Theatre 466, Gilbert Scott Building 04:35 - 04:40

FastML Applications for the EIC — *Dr Ming Liu*
Lecture Theatre 466, Gilbert Scott Building 04:40 - 04:50

Discussion
Lecture Theatre 466, Gilbert Scott Building 04:50 - 04:55

05:00

AID(2)E: AI-Assisted Detector Design for the EIC — *Dr Derek Anderson*
Lecture Theatre 466, Gilbert Scott Building 04:55 - 05:05

Discussion
Lecture Theatre 466, Gilbert Scott Building 05:05 - 05:10

AI Smart Search — *Alexandr Prozorov*
Lecture Theatre 466, Gilbert Scott Building 05:10 - 05:20

Exploring Usage of Agents for Data Analysis — *Henry Klest*
Lecture Theatre 466, Gilbert Scott Building 05:20 - 05:30

06:00

AI for Event Building — *Oliver Partridge*
Lecture Theatre 466, Gilbert Scott Building 06:00 - 06:10

AI/ML for Jet Energy Reconstruction — *Hemalata Nayak*
Lecture Theatre 466, Gilbert Scott Building 06:10 - 06:20

AI/ML for Imaging Cherenkov Reconstruction and Simulation — *James Giroux*
Lecture Theatre 466, Gilbert Scott Building 06:20 - 06:30

AI/ML-Assisted Optimization of B0 Tracker and Calibration of the Backward EMCAL — *Baptiste Fraisse*
Lecture Theatre 466, Gilbert Scott Building 06:30 - 06:40

GNN + Attention-Based Cluster Finding in Live Experiment — *Chi Kin Tam*
Lecture Theatre 466, Gilbert Scott Building 06:40 - 06:50

AI-Ready Data for BIC — *Maria Zurek et al.*
Lecture Theatre 466, Gilbert Scott Building 06:50 - 07:00

07:00

Deconvolution of Momentum Transfer Distributions Through Deep Learning — *Maci Kesler*
Lecture Theatre 466, Gilbert Scott Building 07:00 - 07:10

Hydra — *Thomas Britton*
Lecture Theatre 466, Gilbert Scott Building 07:10 - 07:20

FM4NPP — *Joe Osborn*
Lecture Theatre 466, Gilbert Scott Building 07:20 - 07:30

15 Contributions

Workfest on July 17

How can ePIC best leverage emerging AI initiatives and opportunities?

Which aspects of AI use should an ePIC AI policy address, and what should we discuss and agree on before drafting it?

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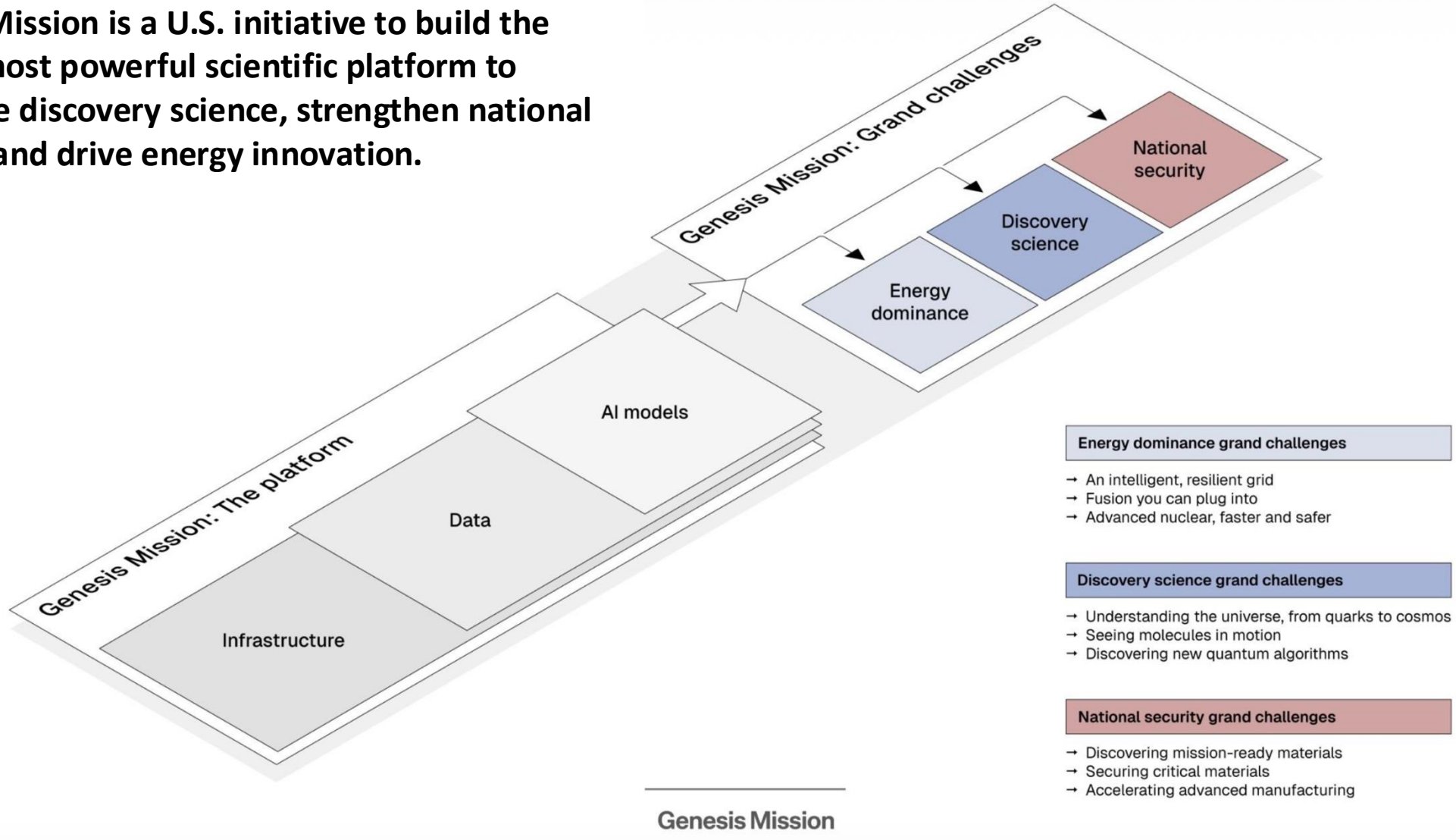
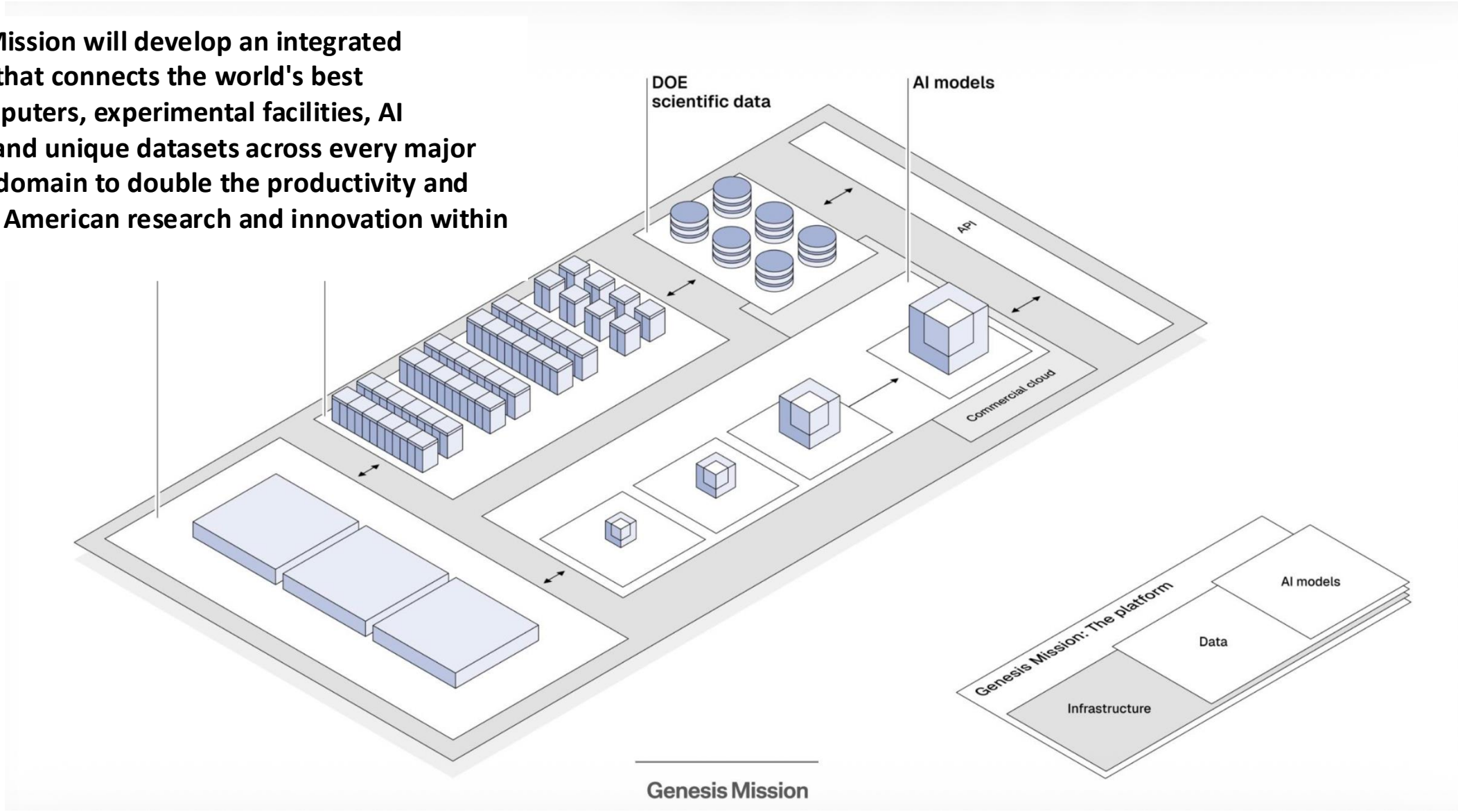
Genesis Mission Overview

Genesis Mission is a U.S. initiative to build the world's most powerful scientific platform to accelerate discovery science, strengthen national security, and drive energy innovation.

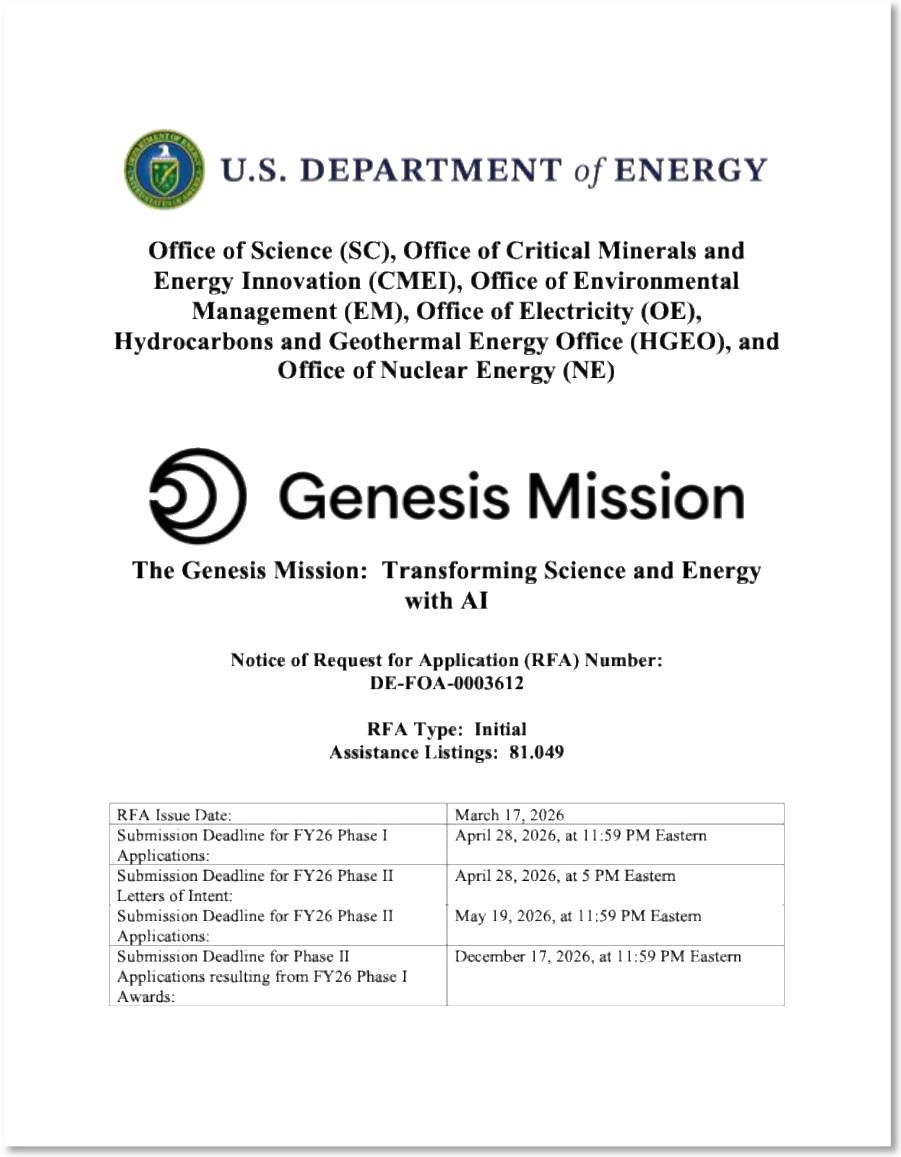


Genesis Mission Platforms

Genesis Mission will develop an integrated platform that connects the world's best supercomputers, experimental facilities, AI systems, and unique datasets across every major scientific domain to double the productivity and impact of American research and innovation within a decade.



Genesis Mission Proposal



U.S. DEPARTMENT of ENERGY

Office of Science (SC), Office of Critical Minerals and Energy Innovation (CMEI), Office of Environmental Management (EM), Office of Electricity (OE), Hydrocarbons and Geothermal Energy Office (HGEO), and Office of Nuclear Energy (NE)

Genesis Mission

The Genesis Mission: Transforming Science and Energy with AI

Notice of Request for Application (RFA) Number: DE-FOA-0003612

RFA Type: Initial
Assistance Listings: 81.049

RFA Issue Date:	March 17, 2026
Submission Deadline for FY26 Phase I Applications:	April 28, 2026, at 11:59 PM Eastern
Submission Deadline for FY26 Phase II Letters of Intent:	April 28, 2026, at 5 PM Eastern
Submission Deadline for FY26 Phase II Applications:	May 19, 2026, at 11:59 PM Eastern
Submission Deadline for Phase II Applications resulting from FY26 Phase I Awards:	December 17, 2026, at 11:59 PM Eastern

Soliciting applications from **interdisciplinary teams** addressing the Genesis Mission Challenges to accelerate scientific discovery and R&D workflows using novel AI models and frameworks.

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Expected total available funding	DOE anticipates a total of $293.76 million in prior and current fiscal year funds will be used to support awards under this RFA.
Expected number of awards	The exact number of Phase I awards will depend on the number of meritorious applications and the availability of appropriated funds.
Expected dollar amount of individual awards	Phase I: $500,000 to $750,000 Phase II: Envisioned as 3 to 5 times the Phase I award.
Expected award project period	Phase I: 9 months; Phase II: 3 years.

Proposal Priorities

- Demonstrate Advantages of AI
- Develop Scalable Workflows
- Build Strong Multi-Institutional Teams
- Integrate with the DOE Ecosystem

Proposal priorities align strongly with ePIC.

Why Genesis Mission Matters for ePIC?

Opportunities:

- Broader engagement with and in ePIC Software & Computing,
- Expand our workforce,
- Increase visibility of AI within ePIC.

Challenges:

- Impact depends on alignment with ePIC priorities.

AI Opportunities for ePIC: Examples

From the ePIC Perspective (Not AI-Focused)

14a) Foundation Models of Particle Interactions and Cosmic Physics (HEP, NP)

- Foundation models for event reconstruction
- Predict event kinematics from cluster and hit data
- Next step: Inclusive, semi-inclusive, and exclusive DIS kinematics from EICrecon output.

14c) Expedited Discovery from High-Complexity and Petabyte-Scale Datasets (HEP, NP)

- Classify streaming data into physics events and background
- Model background for analysis
- Next step: Demonstrate improved precision for one example measurement

18b) Automated Scientific Problem-to-Code Generation (ASCR)

- Connects to PCS demonstration.
- Translate physics requests into executable workflows.
- Enable HPC/HTC orchestration.

Several of these examples were presented during the AI Town Hall on July 16.

Genesis Mission Discussion

- Genesis Mission is an **opportunity for ePIC**.
- Success depends on **alignment with our priorities**.
- We expect to hear **which proposals were selected** on **July 22**.

- The Genesis Mission is not the only major AI initiative. We will also hear about initiatives in **Italy** and **Japan**.

Discussion: How should ePIC engage with these initiatives and projects?

Workfest on July 17

How can ePIC best leverage emerging AI initiatives and opportunities?

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CONSOLE.LOG()

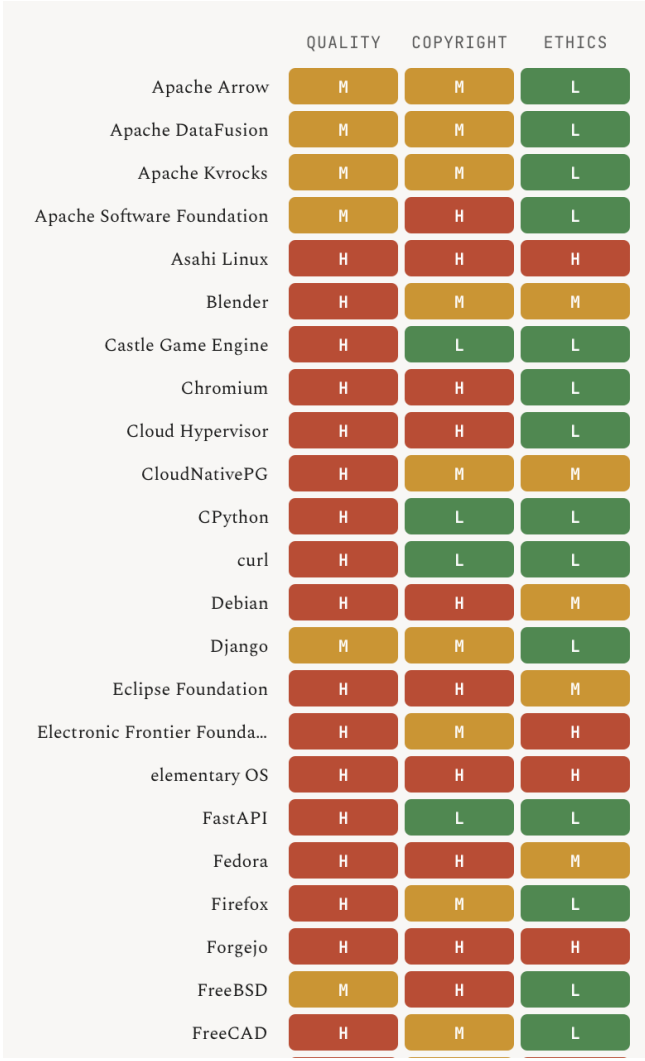
The Generative AI Policy Landscape in Open Source

By kate holterhoff | February 26, 2026

In a RedMonk article, Kate Holterhoff maps and clarifies how open source communities are responding to the rise of generative AI, especially in terms of governance and contribution policies.

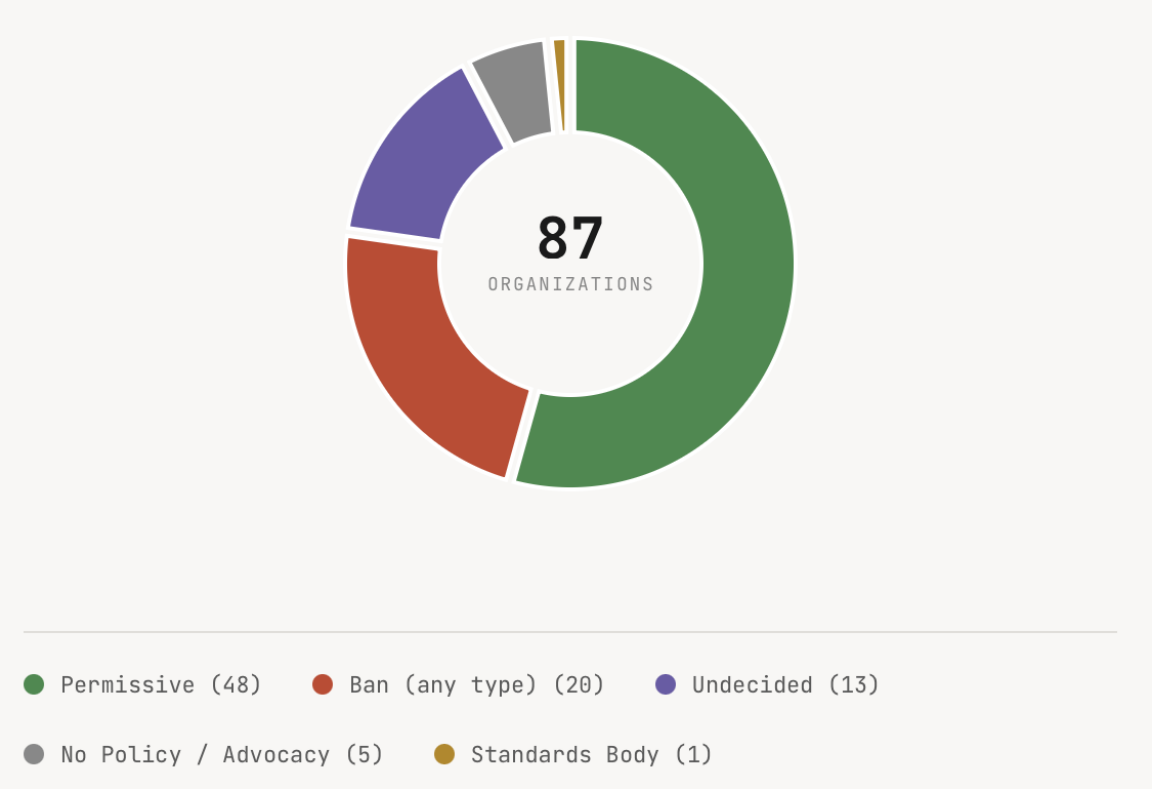
Rather than arguing for a single position, the author documents policies across 87 organizations and highlights emerging patterns, tensions, and open questions.

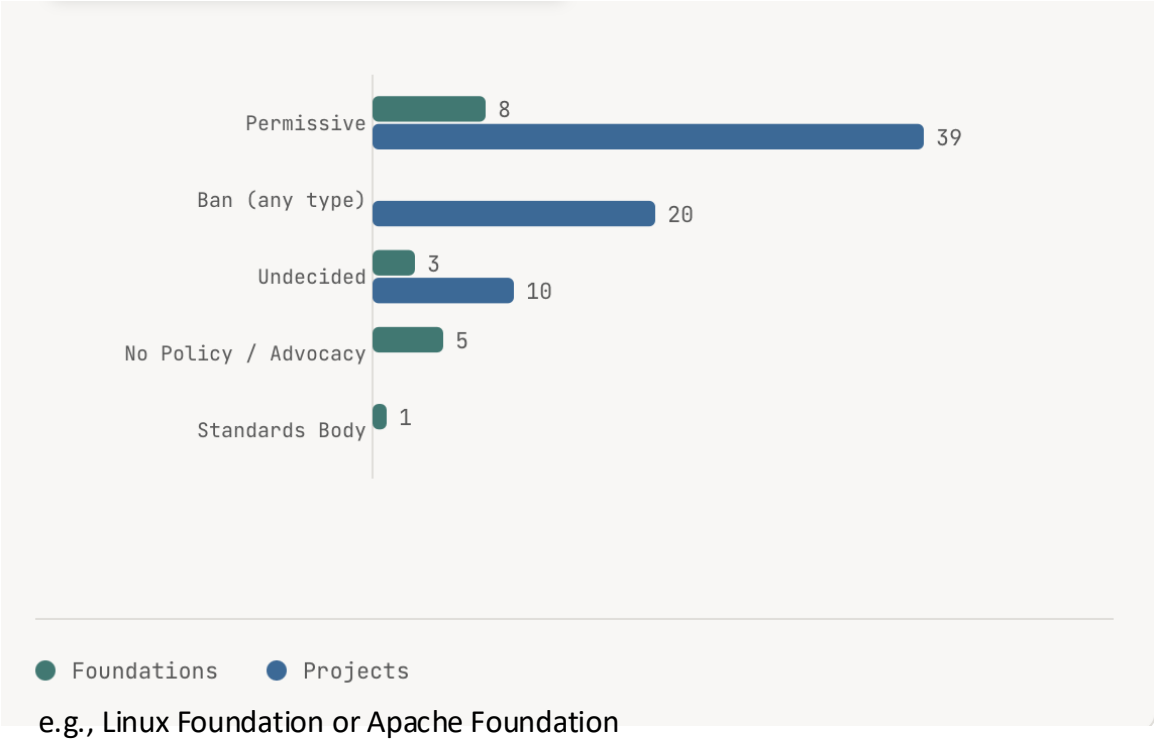
Using an empirical, survey-based approach, the article analyzes how open source foundations and projects are responding to generative AI, categorizing their policies and identifying key concerns such as legal risk, quality, and accountability, while emphasizing that the ecosystem remains fragmented and in transition.



	QUALITY	COPYRIGHT	ETHICS
Apache Arrow	M	M	L
Apache DataFusion	M	M	L
Apache Kvrocks	M	M	L
Apache Software Foundation	M	H	L
Asahi Linux	H	H	H
Blender	H	M	M
Castle Game Engine	H	L	L
Chromium	H	H	L
Cloud Hypervisor	H	H	L
CloudNativePG	H	M	M
CPython	H	L	L
curl	H	L	L
Debian	H	H	M
Django	M	M	L
Eclipse Foundation	H	H	M
Electronic Frontier Founda…	H	M	H
elementary OS	H	H	H
FastAPI	H	L	L
Fedora	H	H	M
Firefox	H	M	L
Forgejo	H	H	H
FreeBSD	M	H	L
FreeCAD	H	M	L

Policy Stance





e.g., Linux Foundation or Apache Foundation

No shared standard yet; governance is evolving independently across projects.

Policies Are Driven by Risk Concerns

Licensing and provenance are unclear for AI-generated code.

Maintainers report increased low-quality contributions (“AI slop”).

Accountability is ambiguous when issues arise.

Security and trust concerns are harder to manage.

Most policies are reactive responses to these risks rather than proactive design.

Three Emerging Policy Approaches

Restrictive: Limit or prohibit AI-generated contributions.

Permissive: Allow use with minimal guidance.

Conditional: Allow use with disclosure and human accountability requirements.

These categories show early patterns, but no dominant model has emerged.

Policies Are Driven by Risk Concerns

Traditional assumptions about authorship and licensing are breaking down.

Maintainers face increased workload and review pressure.

The “anyone can contribute” model is becoming harder to sustain.

Generative AI is leading to a reassessment of open-source governance practices.

The Landscape is Still Evolving

Policies are experimental and frequently changing.

Organizations are learning through trial and error.

Community norms around AI use are not yet established .

The ecosystem is in a transitional phase.

Takeaway

- Generative AI is forcing open source to rethink its governance model.
- Moving from implicit trust to explicit verification.
- Shifting from purely human authorship to hybrid contribution models.
- Requiring clearer policies where norms once sufficed.
- This is not just a tooling shift. It is a fundamental change in how open source operates.

What Does This Mean for ePIC?

- We aim for a vibrant developer community. AI tools can lower barriers to contribution, but they introduce ethical, legal, and technical risks.
- These risks should be addressed through a lightweight policy rather than strict restrictions.
- This is an evolving area, and we will coordinate with collaboration leadership and host labs on how to approach this.

Initial direction for software development workflows

- **Submitters**
  - We do not plan to restrict which tools contributors use in PRs.
  - We encourage transparency and have an optional field in the PR template to disclose AI-assisted contributions.
  - Contributors remain responsible for understanding and validating all submitted changes.
- **Reviewers**
  - The role of AI tools in code review remains under discussion.
  - Experience with CodeRabbit in sPHENIX and our evaluation of SonarQube will help inform the ePIC approach.

AI Considerations Extend Beyond Software Development

This is not only about software development:

- **AI-assisted writing** of technical documents, papers, and presentations
- **AI-assisted analysis**, e.g., agentic workflows for detector and physics studies
- **Use of ePIC data with AI tools**, e.g., documents, Mattermost discussions, and simulation data
- **Equitable access to AI tools and capabilities** across the collaboration

Before we draft a policy:

- What uses of AI should the policy cover?
- What risks and responsibilities should it address (legal risk, quality, and accountability)?
- Where is collaboration-wide guidance needed?
- How can be help with equitable access and participation?