



U.S. National Science Foundation
Pathways to Enable Secure
Open-Source Ecosystems

NSF PESOSE: Pathways to Enable Secure Open-Source Ecosystems

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Community-Powered Innovation

Open-sourced ecosystems accelerate innovation through shared, community-driven development.

Longstanding NSF Leadership

NSF has supported and expanded open-source infrastructure for decades.

PESOSE Advancement

TIP's PESOSE program strengthens and secures open-source ecosystems through a coordinated national effort.

NSF 26-506: Pathways to Enable Secure Open-Source Ecosystems (PESOSE)



"Supports the creation of **managing organizations for (these) ecosystems**, ensuring strong governance, distributed development, and broad user communities across academia, industry, and government.

"..supports the **translation** of open-source science and engineering-focused **research products** into **safe and sustainable ecosystems** that address **national and societal challenges**."

"...open-source tools such as software, hardware, machine learning models, languages, and data platforms **designed to be shared as they are publicly-accessible and modifiable**."

Dear Colleague Letter (NSF 26-015): AI Agent Protocol Ecosystems

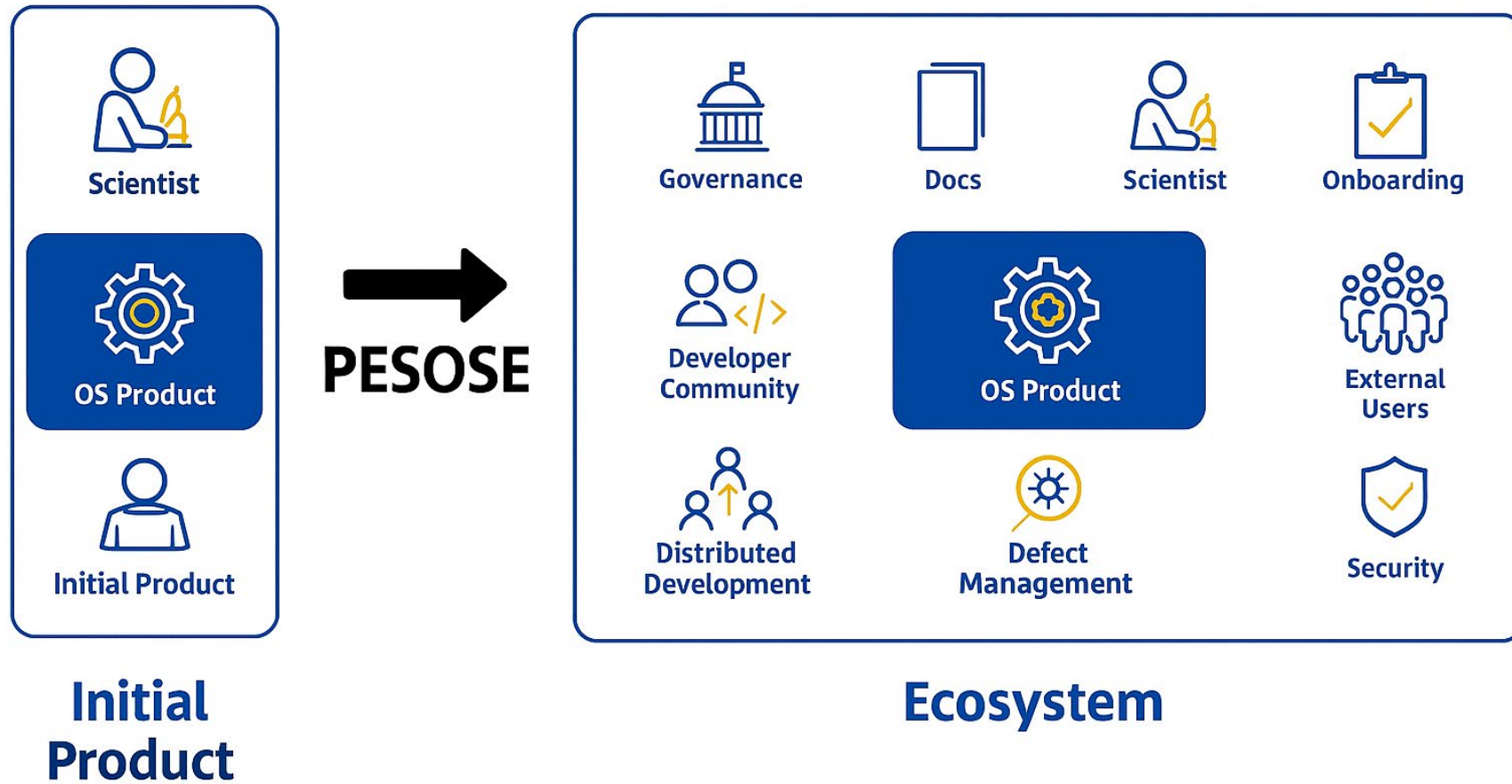


"Highlights **NSF's interest** in PESOSE proposals that similarly **advance the protocols for AI agent ecosystems**, strengthen open-source foundations and support growth across sectors.

...AI agents are moving beyond simple chat interfaces.
...These capabilities **rely on** open interfaces and shared standards that allow agents **to communicate with** tools, data sources, and each other.

An **AI agent ecosystem** is a **network of autonomous agents** that communicate, coordinate, and work together using common protocols. These protocols let agents - built by different organizations or using different frameworks - smoothly share data, and perform tasks across different environments..."

From Product to Ecosystem: What PESOSE Enables



What PESOSE Is (Not)



- Not intended to fund the **development of** open-source artifacts, tools or products
- Not intended to fund existing **well-resourced** open-source communities and ecosystems
- Not intended to support **open-source ventures** for which **profit is the primary motive**

TRACK 1: *scope and plan* the establishment of an Open-Source Ecosystem (OSE)

TRACK 2: *establish and expand* a sustainable OSE based on a robust, promising open-source product that meets an emergent societal or national need,

TRACK 3: *improve the safety, security, and privacy* of an existing OSE and its products.

TRACK 1: *scope and plan* the establishment of an Open-Source Ecosystem (OSE)

- ecosystem discovery.
- organizational and governance models.
- open-source ecosystem infrastructure.
- community building.

TRACK 2: *establish and expand* a sustainable OSE based on a robust, promising open-source product that meets an emergent societal or national need

- establishment of an organizational and governance model.
- establishment of continuous development, integration and deployment infrastructure.
- implementation of a long-term strategy for community building.
- clear sustainability goals with a corresponding evaluation plan

TRACK 3: *improve the safety, security, and privacy of an existing OSE and its products.*

- **Interoperability.** Develop open standards so agents can work across platforms and organizations without custom connectors.
- **Scalability.** Create architectures that support large networks of agents, tools, and services while keeping integration simple.
- **Security.** Design interoperable protocols with security features that enable agent operation across heterogeneous security regimes.
- **Open Science Applications.** Demonstrate and evaluate security features in AI ecosystem protocols that enable open science.
- **Partnerships.** Build collaborations among academic, nonprofit, industry, and government partners to accelerate appropriate adoption.
- **Education and Training.** Expand training for students and postdoctoral researchers to contribute to AI agent ecosystems, including security and reliability.

Award Estimates by Track



- **Track 1:** maximum \$300,000 per award, approximately 30 awards
- **Track 2:** maximum \$1,500,000 per award, approximately 10 awards
- **Track 3:** maximum \$1,500,000 per award, approximately 10 awards

- **Experiential Activities:** Track 1 or Track 2 awardee must participate in mandatory OSE experiential activities, known as "I-Corps for PESOSE."
- **Collaborations:** Although proposals may be multi-organizational, a single organization must serve as the lead and all other organizations as subawardees.
- **Restricted Eligibility:** The PESOSE solicitation restricts PI eligibility dependent on the submitting organization in order to ensure the PIs/Co-PIs have the proper authority, responsibility, continuity and oversight experience to lead the OSE efforts.

Due Dates: Two Annually



Full Proposal Deadline(s)

due by 5 p.m. submitting organization's local time

September 01, 2026

*First Tuesday in September, Annually
Thereafter*

March 02, 2027

*First Tuesday in March, Annually
Thereafter*

Measures of Success (to Advance)



Discovery and Innovation

- Data sets established or expanded
- Start-ups created
- New technologies or techniques established

STEM Education and Workforce

- Participants hired into a STEM related field

Research Infrastructure

- New infrastructure built

- a **pointer to the existing publicly-available open-source product** that is being transitioned (*note: as URLs may not be included in Project Description; proposers should use an in-line citation and an entry in the References Cited section to point to the open-source product*);
- **details** on the **current status** of the open-source product development and testing model, methods of dissemination, user base, and contributor base;
- a **description of the problem** being addressed; and
- a **strong justification** that makes the **case** that the team is qualified to conduct this work.

Tracks 1 and 2

- Make a case that OSE will address an **issue of significant societal or national importance**.
- Clarify the long-term **vision** for **sustaining the OSE**.
- Outline a recruitment **strategy** for **new contributors** to the ecosystem and for **growing the userbase**
- Be **specific** in your planning and evaluation, use **actionable list of milestones**. These should cover all components, beyond just the cyber technology.

Tracks 1 and 2

- Outline recruitment **strategy** for **building and retaining contributors** to the ecosystem and of **establishing a sustainable** organizational structure.
- Specify a **detailed licensing approach** for the open-source product that is the subject of the OSE.
- Describe **building and testing infrastructure**, and procedures to address quality control and security of new content.

Track 3

- Clarify the description of the **vulnerability landscape** for the OSE and its product(s).
- Outline plans for addressing critical vulnerabilities.
- Present clearly a **description on building and testing infrastructure, and procedure** to address quality control and security of new content.
- Create a **specific**, actionable list of milestones and evaluation plan.

Engage With NSF PESOSE

Please reach out to PESOSE@nsf.gov to:

- Tell us about an OSE
- Share your interest in open-source conference

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***Principal investigators (PI), co-PIs, or senior personnel may NOT serve as a reviewer on any panel for a program in which they have a pending proposal, (excludes supplements, creativity, extensions, workshops, conferences, etc.) in that program.*





THANK YOU!



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