U.S. DEPARTMENT *of* ENERGY

Office of Environmental Management

Genesis Mission

Informational Webinar:

Genesis Mission Request for Applications (RFA)

DE-FOA-0003612 Amendment 000001

Challenge #6. Transforming Nuclear Restoration & Revitalization

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Genesis Mission RFA Team (EM-3.2 and SC ASCR)

April 13, 2026

RFA Issue Date	March 17, 2026 (Amendment 000001, April 10, 2026)
Submission Deadline for FY 2026 Phase I Applications	April 28, 2026, at 11:59 PM Eastern Time | A Pre-Application is not required
Submission Application for FY 2026 Phase II Letter of Intent	April 28, 2026, at 5:00 PM Eastern Time | A Letter of Intent is strongly encouraged
Submission Deadline for FY 2026 Phase II Applications	May 19, 2026, at 11:59 PM Eastern Time
Submission Deadline for Phase II Applications Resulting from FY 2026 Phase I Awards	December 17, 2026, at 11:59 PM Eastern Time

Genesis Mission

AI will be used to address grand challenges, ignite innovations, and drive unprecedented progress for national and global impact.

Energy Dominance

AI will be used to accelerate sustainable fusion power, optimize advanced nuclear reactor design and operation, and enable a more intelligent and resilient electrical grid.

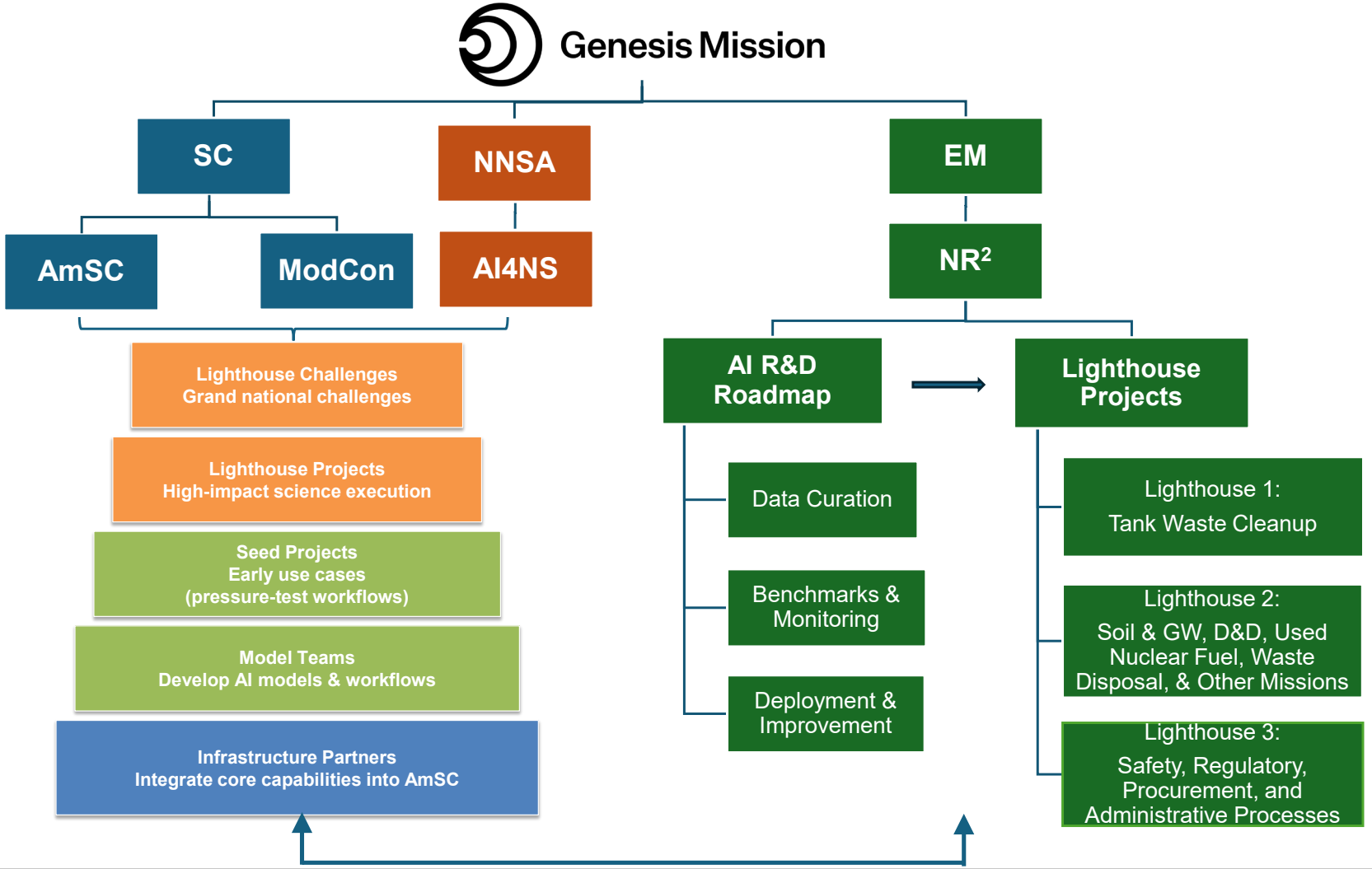
Discovery Science

AI will be used to illuminate molecular dynamics, unify data to understand the universe from quarks to cosmos, and generate new quantum algorithms.

National Security

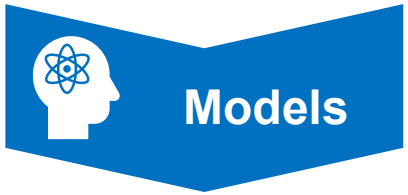
AI will be used to secure critical materials, accelerate advanced manufacturing, and discover mission-ready materials for defense and industry.

Genesis Mission and NR²



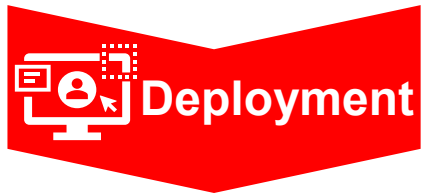
EM AI R&D Roadmap Scope of Work

- AI-Ready Datasets of Environmental Characterization, Remediation, Operations, and Monitoring
- Data accessibility across EM sites
- Integrated knowledge management systems



AI-Enhanced

- Adaptive & real-time monitoring for early warning systems for contamination and critical infrastructure failures
- Autonomous controls and robots in hazardous environments
- Optimization of waste treatment processes, remedial systems, waste disposition, and site operations
- Characterization (fractured systems, subsurface contamination, liquid waste)
- Operating & administrative procedures
- Integrated performance and risk assessment and risk-informed decision analyses
- CPARS analyses & best contract mechanisms
- Search for critical isotopes
- Environmental liability and financial forecasts

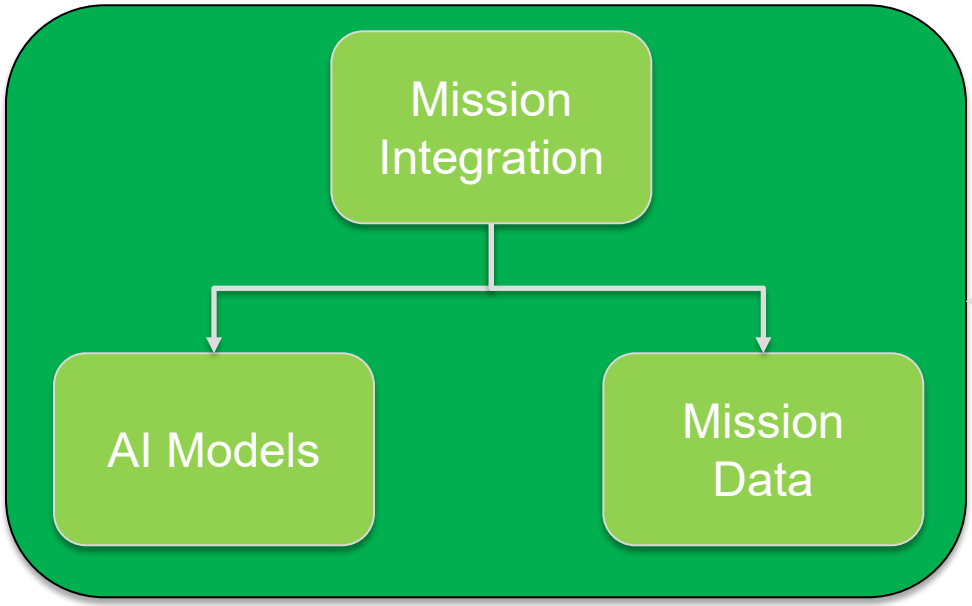


- Framework for rapid deployment across EM sites with regulatory alignment
- Testbeds and model validations
- Lifecycle maintenance for sustainability and security
- Policy recommendations & model use guidelines

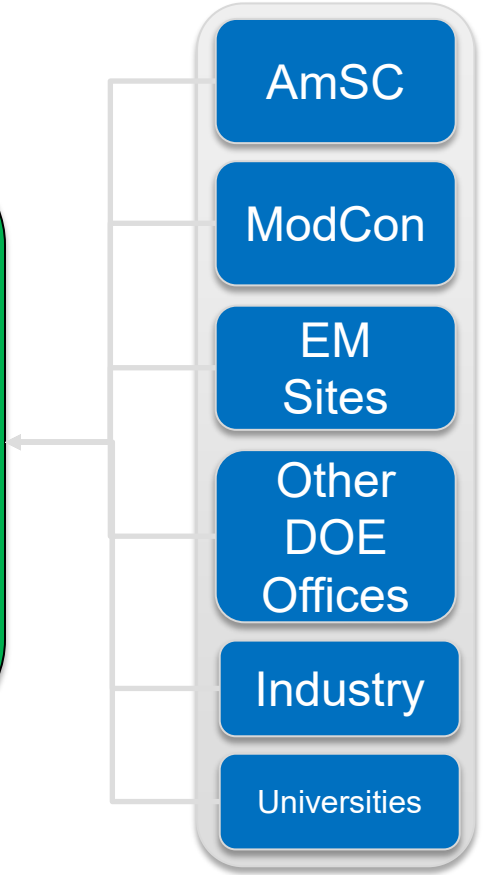
NNLEMS Team for EM AI R&D Roadmap

SRNL, Lead Laboratory	**Tom Danielson (Team Lead)**
	Emily Fabricatore
	Brian Looney
	Mike Stone
	Wes Woodham
ANL	Eugene Yan
	Jeremy Feinstein
	Young Park
INL	Anna Quach
LANL	Mohamed Mehana
	Daniel O'Malley
	Phillip Stauffer
LBNL	Ken Williams
	Charu Varadharajan
LLNL	Andy Tompson
	Chris Sherman
PNNL	Inci Demirkanli
	Matt Asmussen
	Anurag Acharya
	Nathan Hodas
SNL	Joshua S. Stein

Core EM AI R&D Roadmap Team Structure



Additional Entities for Consultation



National S&T Challenges Captured in RFA DE-FOA-0003612

1. Reenvisioning Advanced Manufacturing and Industrial Productivity (SC, CMEI)
2. Scaling the Biotechnology Revolution (SC, CMEI)
3. Securing America's Critical Minerals Supply (CMEI, SC)
4. Delivering Nuclear Energy that is Faster, Safer, Cheaper (NE, SC)
5. Accelerating Delivery of Fusion Energy (SC, NE)
6. **Transforming Nuclear Restoration and Revitalization (EM, SC)**
7. Discovering Quantum Algorithms with AI (SC)
8. Realizing Quantum Systems for Discovery (SC)
9. Recentering Microelectronics in America (SC, CMEI)
10. Securing U.S. Leadership in Data Centers (CMEI, SC)
11. Achieving AI-Driven Autonomous Laboratories (SC)
12. Designing Materials with Predictable Functionality (SC, CMEI)
13. Enhancing Particle Accelerators for Discovery (SC)
14. Unifying Physics from Quarks to the Cosmos (SC)
15. Predicting U.S. Water for Energy (SC, CMEI)
16. Scaling the Grid to Power the American Economy (OE, CMEI, SC)
17. Unleashing Subsurface Strategic Energy Assets (HGEO, SC)

Crosscutting Needs for the American Science and Security Platform

18. HPC Code Curation, Translation, and Development for Accelerated Scientific Discoveries (SC, CMEI)
19. AI for Scientific Reasoning (SC)
20. Cybersecurity for AI-driven Science Workflows (SC)
21. AI in Fluid Flow for Energy Components and Technologies (SC, CMEI)

RFA DE-FOA-0003612: Challenge #6 Transforming Nuclear Restoration & Revitalization – Participating Offices

- Office of Environmental Management (EM) – Office of Chief Technology Officer (EM-3.2)
- Office of Science (SC) - Advanced Scientific Computing Research (ASCR)

RFA DE-FOA-0003612: Challenge #6 Transforming Nuclear Restoration & Revitalization

- DOE's environmental cleanup mission faces an estimated $540 billion liability over eight decades with ~90 million gallons of highly radioactive tank waste requiring treatment and numerous assets requiring disposition that impedes site remediation and restoration crucial for revitalization of American energy, security, and innovation.

RFA DE-FOA-0003612: Challenge #6 Transforming Nuclear Restoration & Revitalization – AI Solution

- A multimodal AI foundation model will be trained on DOE EM's unparalleled 30+ years of operational data from unique nuclear processing facilities to predict scale-dependent behavior across lab, pilot, and full-scale systems.
- DOE/NNSA National laboratory experts will leverage Genesis Mission supercomputing capabilities and partner with industry experts for accelerated simulation architecture in development of the AI models.
- The goal is to use AI to enable mission acceleration to meet EM’s 2040 vision with significant liability reduction.

RFA DE-FOA-0003612: Challenge #6 Transforming Nuclear Restoration & Revitalization – Focus Areas

- **A. EM AI R&D Roadmap Implementation**: Coordinate AI investments across EM sites by identifying and prioritizing needs, converting historical data into standardized formats, and evaluating multi-modal data assets for AI applications.

- **B. Scale-Bridging AI Foundation Model**: Develop a multimodal AI model using EM operational data, accelerated simulation toolkits, and Genesis Mission supercomputing resources to predict scale-dependent behavior.

- **C. Treatment Process Optimization**: Implement AI-driven optimization of waste treatment facility throughputs to achieve completion milestones at EM sites such as SRS and Hanford.

Anticipated RFA Funding; Cost Share

FY2026 Base:	Up to $30M (EM) Up to $5M (SC ASCR)
Industry cost share:	20%, up to 50% for AI technology demonstrations

Schedule

EM AI R&D Roadmap:

Draft: 4/30/26

Final: 6/30/26

Public release: 7/2/26

DOE Genesis Mission RFA:

Phase I: 4/28/26 Application

Phase II: 4/28/26 LOI, 5/19/26 (or 12/17/26 for Phase I followup) Application

References

- DOE Funding Opportunities Website: https://science.osti.gov/Funding-Opportunities (Includes RFA; Templates; Frequently Asked Questions; Webinar Registration, Slides, and Recordings)
- Hanford Tank Waste Operations and Closure (H2C): https://hanfordtanks.com/
- Hanford Site Prime Contracts: https://www.hanford.gov/page.cfm/HanfordProcurementDivision/PrimeContracts
- Savannah River Mission Completion Contract: https://www.energy.gov/srs/savannah-river-mission-completion-integrated-mission-completion-contract
- Hanford Tank Waste Research and Development: https://www.energy.gov/em/hanford-tank-waste-research-and-development
- EM Program Plan 2022: https://www.energy.gov/sites/default/files/2022-09/EM Program Plan 9-20-22 FINAL.pdf
- EM 2025 Year End Highlights: https://www.energy.gov/em/em-2025-year-end-highlights
- EM President's Budget Request for FY2027: https://www.energy.gov/documents/doe-fy-2027-volume-5-em

Questions & Answers

- Video and slides will be available on the Funding Opportunities website (https://science.osti.gov/grants/FOAs/Open)
- A Frequently Asked Questions is available on the Funding Opportunities website. It will be updated periodically.
- Please submit questions using the Teams chat function, which is accessible at the top of your window
- If your question is not answered today, or you have additional questions, please submit via GenesisMissionNOFO@science.doe.gov

Disclaimer: This presentation summarizes the contents of the RFA pertaining to S&T Challenge #6 (Transforming Nuclear Restoration & Revitalization). Nothing in this webinar is intended to add to, take away from, or contradict any of the requirements of the RFA. If there are any inconsistencies between the RFA and this presentation or statements from DOE personnel, the RFA is the controlling document.

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