ModCon and AmSC Interconnections

How we partner to build transformational AI & data for Genesis Mission

Esnet Confab26 - May 12th, 2026

Court Corley, PhD
ModCon Deputy Director
Chief Scientist for AI @ PNNL

Genesis Mission

Genesis Mission

ModCon: delivers transformational AI and data capabilities

Mission

- AI and data research and development to accelerate technical development and scientific discovery for Genesis
- Develop and deliver cross-cutting services as an engine for transformational AI model development
- Leverage partners from industry, academia, and internationally to accelerate AI development and adoption

Four Core Teams

deliver support to Model Teams

IPPF
Partnerships and IP Management

DBS
Data Brokers & Standards

BPSW
Best Practices for Scientific Workflows

BASE
Cross-Cutting AI Capabilities

What We Deliver

AI-Ready Data Pipelines
Transform raw scientific data into training-ready datasets

Scientific Workflows
Leaderboards, workflows, and upskilling for continuous discovery

Transformational Capabilities

- Core agentic framework
- Self-improving models harness
- Multimodal reasoning frontends
- Safety, security, assurance
- Evaluation

Deployed on Genesis Mission Infrastructure
The American Science Cloud

Partners
17 DOE Labs + industry + academia

Genesis Mission Mapping
Data, models, and partnerships teams

U.S. DEPARTMENT of ENERGY

Genesis Mission

Governance and DOE Engagement

Lab Council, ALDs, DOE Lab Reps

Partnership Council, External | Executive Voice

MODCON OFFICE

Director
Rick Stevens, Argonne

Deputy Director
Court Corley, PNNL

Project Management
Emily Dietrich, Argonne

Model Team Coordinator
Tom Brettin, Argonne

AmSC Coordination
Neeraj Kumar, PNNL

CROSS-CUTTING CAPABILITIES

IPPF: IP & Partnership Foundation
Megan Clifford, Argonne | Daniel Ratner, JLab
Jason Hales, INL

BPSW: Best Practices for Scientific Workflows
Frank Cappello, Argonne
Rafael Ferreira Da Silva, ORNL

DBS: Data Broker Standards
Lauren Biven, JLAB | Jeren Browning, INL
Ray Grout, NLR

BASE: BASELINE AI R&D CAPABILITIES

Stefan Wild, LBNL | Nathan Hodas, PNNL

CAF: Core Agentic Framework
Ian Foster, Argonne

EVAL: Evaluation
Stefan Wild, LBNL

SAFE: AI Security & Safety
Nathan Hodas, PNNL

SIM: Self-Improving Models
Ana Gainaru, ORNL

DATA: AI-Ready Data
Shreyas Cholia, LBNL

MM: Multimodal Reasoning
Sandeep Madireddy, Argonne

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16 early seedling mission-enabling model teams shaped requirements for the Genesis Mission Platform

AIForHPC
AI-Driven Code Dev
Andrew Siegel | ANL

Microelectronics
AI Co-Design
Valerie Taylor | ANL

AI4Quantum
Quantum Algorithms
Salman Habib | ANL

COMB-FLOW
Combustion & Fluids
Sibendu Som | ANL

CM²US
Critical Minerals
Frank Alexander | ANL

Quarks to Cosmos
HEP & Cosmology
Salman Habib | ANL

AXESS
Specs-to-Silicon
Nhan Tran | FNAL

Prometheus
Nuclear Power
Peter Suyderhoud | INL

SYNAPS-I
Light Sources
Alex Hexemer | LBNL

MOAT
Accelerators
Jean-Luc Vay | LBNL

GridAI
Power Grid
Benjamin Kroposki | NLR

MAIQMag / QCAD
2D Quantum Magnets
Yongqiang Cheng | ORNL

FAMOUS
Biological Systems
Chris Oehmen| PNNL

Fusion-FM
Magnetic Fusion
Shantenu Jha | PPPL

ISAAC
Scientific User Facility | Dimos Sokaras | SLAC

Alphafold for Microelectrontics
Subramanian Sankaranarayanan | ANL

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The last quarter of work demonstrated the intentional focus on integration through three hackathons, working to one platform

January 22 · Onboard

5

Seed Model Teams

- AmSC SSO, data catalog, compute access stress-tested
- ModCon core teams (DBS, CAF, BPSW) embedded
- Auth gaps, catalog friction, API gaps identified

February 18 · Validate

10–11

Model Teams

- End-to-end: data → compute → model registry
- Reusable workflow templates applied at scale
- Readiness signals captured per team

April 7–9 · ModCon Integrate

180+

Participants

- Full scale: all MTs + ModCon + AmSC in one room
- Agentic workflows, eval, cross-facility compute
- Six live demos on Frontier, Polaris, NERSC, SLAC

Each hackathon built on the last — from onboarding to end-to-end integration at scale

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Demonstration from ModCon/AmSC April hackathon
integrated agentic workflows with ALCF IRI API

End-to-end demo showing an AI agent (Claude Code) autonomously running ML training on Polaris through the ALCF IRI API — from a single natural-language prompt.

Demo video: https://drive.google.com/file/d/1rxZYMTAffWCzYj3XJYY6MwpXyXq4fgF3/view?usp=sharing

What it does: A researcher types *"run MNIST training on Polaris"* and the AI agent:

1. Writes a PyTorch training script and PBS job script
2. Authenticates with ALCF IRI API and Globus
3. Transfers files to Eagle via Globus Transfer
4. Submits a job on Polaris via the IRI Compute API
5. Monitors the job until completion
6. Retrieves and displays the results and generate a report

The entire workflow completed in under *2 minutes* with zero manual intervention. Final result: 99.3% accuracy on MNIST, trained in 14.3s on an A100 GPU.

Tech stack: Claude Code + MCP Server + ALCF IRI API + Globus Transfer + Polaris. All production systems — no prototypes or mocks.

Why it matters: This removes the HPC expertise barrier (PBS scripts, module systems, Globus commands, queue configs) and lets domain scientists describe *what* to compute in plain English while the agent handles *how*. The same architecture scales to parameter sweeps, multi-step pipelines, cross-facility workflows, and self-correcting experiments.

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Globus services and the Genesis Mission

Deployed

- Globus transfer use through AmSC Data Movement Service
- Globus Auth for federated authentication and token service for AmSC platform
- ALCF Facility IRI API is secured using Globus Auth
- Globus Compute for code execution

In progress

- Use of AmSC login with Globus platform services
- Globus streaming for memory to memory transfer across facilities
- Globus Groups reflecting AmSC projects for permission management

Globus capabilities are broadly available across the Genesis platform

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Six Live Demos: End-to-End Science and Crosscutting teams on AmSC Infrastructure

Agentic Workflow on Polaris

Zheng (COMB-FLOW-AI), Pei · AmSC AI Services

Agent autonomously ported MATEY from Frontier to Polaris. Resolved 6 runtime errors. Built software environment. Executed training workload in 55 min — no manual compute intervention.

✓ Agent-driven HPC job on Polaris

ISAAC + IRI API on NERSC

Shreyas (Modcon Base) + Dimos (ISAAC/SLAC)

VASP calculations submitted to NERSC Perlmutter via IRI API. IRI Agent Skills deployed into ISAAC's Claude setup. Zero to running pipeline in ~2 hours. Jobs managed via Discord.

✓ Natural language → NERSC job

Leaderboard + ModCon Eval

Franck (Modcon Core) + AmSC Platform team

ModCon evaluation infrastructure connected to AmSC platform. Benchmarking harness demonstrated end-to-end. Model scoring pipeline validated against AmSC compute and catalog.

✓ Eval harness on AmSC proven

CM2US + AmSC Data Services

Karlo (AmSC Data) + Nancy Washton (CM2US)

95 CSV files uploaded → schema auto-detected → 90 Iceberg tables in AmSC HPDF lakehouse. All auto-synced to catalog. Built end-to-end in under 2 hours from scratch.

✓ Data catalog end-to-end in <2 hrs

Prometheus: Agentic Workflows on AmSC

Jeren/Brandon (Modcon) + Prometheus team

Integrated AmSC AI Model API, MLFlow, and Data Catalog search into Prometheus. Agents search AmSC catalog for RAG, query AI models, auto-send traces to MLFlow.

✓ RAG + inference + tracing live

SYNAPS-I + Globus Compute

Kyle/Ian (Modcon) / Yadu (SYNAPS-I)

Upgraded to Argonne Inference Endpoint. Re-architected ALS Knowledge Agent with Academy framework. Deployed agents to Polaris Globus Compute Endpoint. Done in one afternoon.

✓ Agent on Globus Compute endpoint

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Hackathon Integration Findings: What Worked vs. Gaps to Close

What Worked	Gaps to Close Before October
• **IRI API:** Agent-driven job submission on Frontier, Polaris, and NERSC validated • **Data Catalog:** Schema auto-detection + 90 Iceberg tables in <2 hrs • **AI Model API:** OpenAI-compatible endpoint integrated by Prometheus in hours • **Globus Compute:** Agent deployed to multi-user endpoint on Polaris • **MLFlow:** Tracing and experiment tracking integrated with Prometheus • **Agent autonomy:** Self-recovery from 6 runtime errors without human intervention • **Data card/model card:** Autonomous generation demonstrated on AmSC resources	• **Federated SSO:** Per-facility accounts still required. Single AmSC token is critical for scale • **Whitelisting:** Manual Globus ID process. Must be automated for 100+ Genesis teams • **Job status API:** Agents misread stalled vs. running jobs. Reliable status needed • **Data provisioning:** S3 space/policy setup is manual. Must become self-service • **MyAmSC portal:** Facility status + workflow visibility not fully operational yet • **Model registration:** Card extraction works; pipeline not connected to catalog yet • **Data transfer:** Globus Transfer for cross-facility data movement needs automation


ModCon Core
Baseline AI Research & Development
BASE
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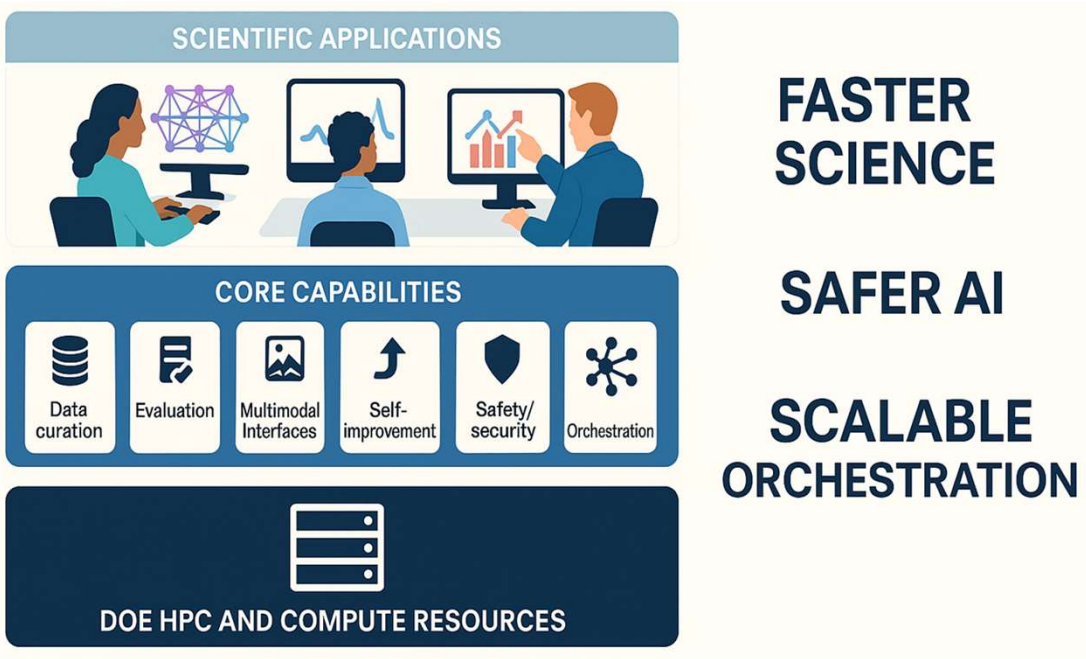
Base R&D is delivering cross-cutting AI capabilities to the Genesis Mission

- Providing reusable methods, frameworks, and tools that underpin every Model Team
- Responsive to the requirements set by the Genesis Mission crosscuts
- Collaborating directly with Model Teams and American Science Cloud

We are also:

- Genesis Mission's crosscutting AI dev team
- Filling in what is missing from the current AI ecosystem
- Helping inspire others to use the command line



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Base/CAF: Building the Core Agentic Framework


Ian Foster
(ANL)


Kyle Chard
(ANL)


Yadu Babuji
(ANL)


Matt Baughman
(PPPL)


Tanwi Malllick
(ANL)

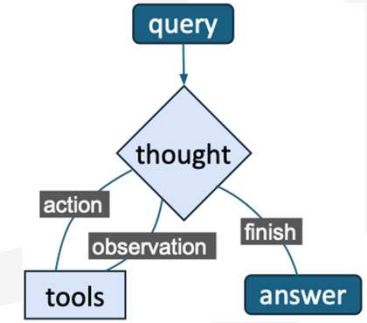

Fred Suter
(ORNL)

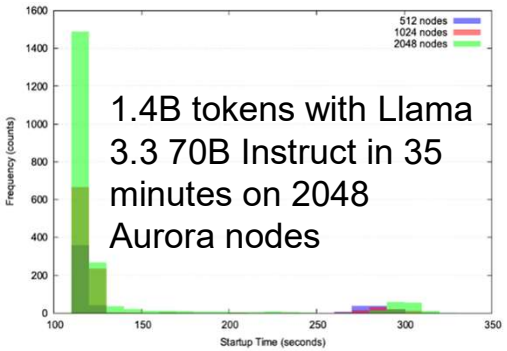

Bella Yang
(ANL)

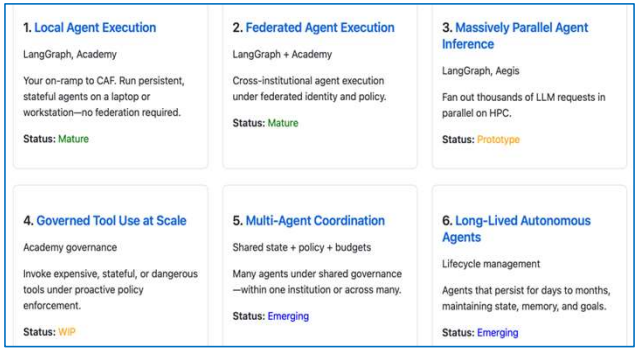
Agents enable **closed-loop, autonomous scientific workflows** across complex, distributed systems

To enable agentic AI applications across AmSC at unprecedented scales, CAF is:

- **Developing scalable agentic orchestration** (1000s of concurrent LLMs, agents, tool calls; flexible inter-agent comms)
- **Promulgating best practices** for agent use in DOE environments







https://agents4science.github.io/Capabilities
https://gitlab.osti.gov/genesis/genesis-skills

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Base/Safe: Model Safety and Security

Nathan Hodas
(PNNL)

Robin Cosbey
(PNNL)

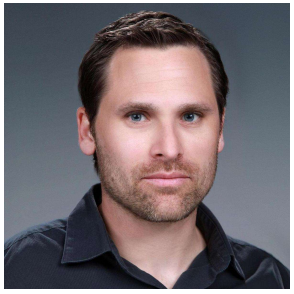
David Florey
(PNNL)

Natalie Isenberg
(PNNL)

Steven Goldenberg
(JLAB)

Olivera Kotevska
(ORNL)

Reilly Raab
(PNNL)



Malachi Schram
(JLAB)

Developing rigorous frameworks, scalable methods, and institutional safeguards that guarantee safety and security across the scientific AI lifecycle

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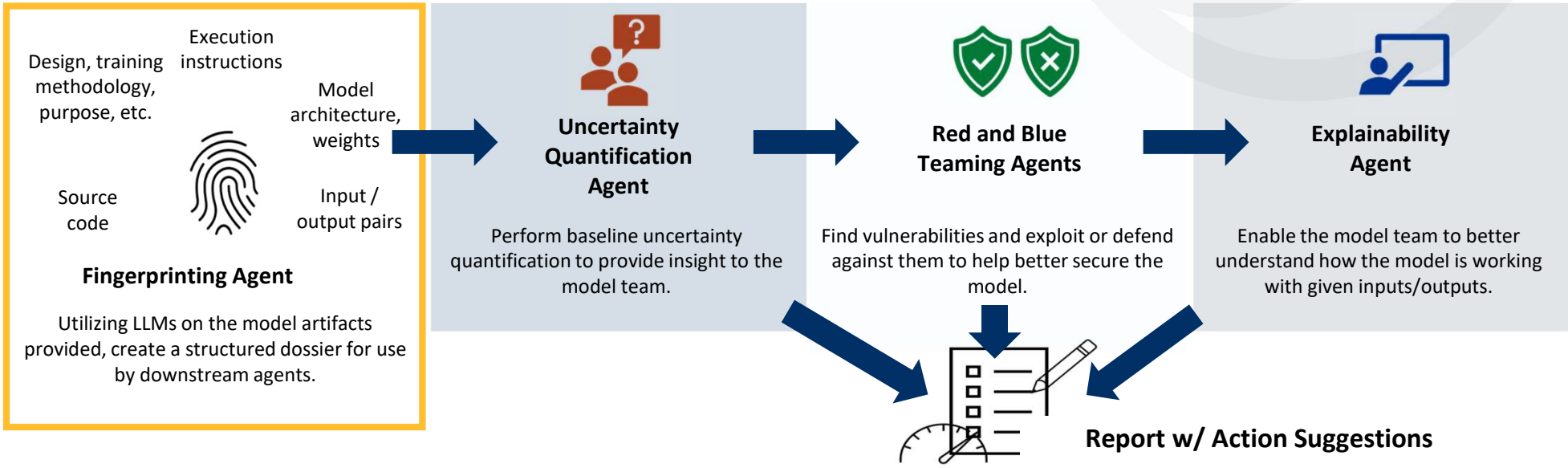
Base/Safe: Agentic Framework with Flexible Execution Strategy for Model Teams

On Model Team (MT) laptop: Either through command-line or embedded within VS Code IDE. Provides rich analysis tools directly in coding environment.

As a Continuous Integration (CI): Enables MT's to focus on functionality while the Base/Safe Agents focus on providing safety, uncertainty, and explainability insights.

Within testing environment: This fully integrated approach enables more real-world analysis and insights.



https://gitlab.osti.gov/modcon-base/base-safe/

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Base/Eval: Model Assessment and Evaluation


Stefan Wild (LBNL)


Eric Chagnon (LBNL)


Neil Getty (ANL)


Fernando Llorente (BNL)


Zarija Lukic (LBNL)


Emily Saldanha (PNNL)


Shashank Subramanian (LBNL)


Fred Suter (ORNL)


Angel Yanguas-Gil (ANL)

+ AmSC & BPSW embedded liaisons
(Wahid Bhimji, Nhan Tran, Rafael Zamora-Resendiz)

Developing tools, benchmarks, and protocols that assess robustness, generalizability, reproducibility, and scientific validity under evolving data and uncertain ground truths

- Track multi-metric progress over time
- Serve as peer reviewer, ultimately with SME-HitL
- Integrating with AmSC UI/Infrastructure
- Key principles
- Open-source framework, multiple techlanes
- Address non-language modes, domain-specific info
- Build to evolve and scale

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Base/Eval: Delivering a Comprehensive Evaluation Suite

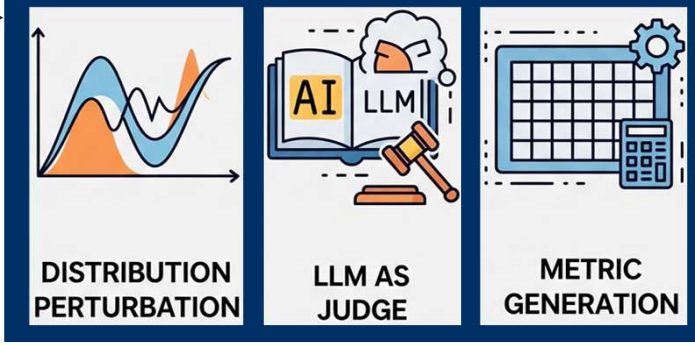
Model
(or agentic pipeline)

Benchmark
Tasks, data, metrics, …

Registered on AmSC AMERICAN SCIENCE CLOUD

GM Proving Ground
Eval Harness

MLFlow, NeMo,
lm-evaluation-harness



Performance Metrics
accuracy, precision, recall, F1, ROC-AUC, confusion matrix, …

Visualizations

Logs

Error Analysis & Auditing
anomalous responses, tail instances, constraint violations, …

SME-HitL review

Leaderboard

…

S.I.M

BASE EVAL leaderboard in partnership with BPSW and AmSC:
https://benchmarks-dev.american-science-cloud.org/

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Base/Data: Automating the Data Preparation Pipeline

Lead: Shreyas Cholia (LBNL)

Jean Luca Bez (LBNL)

Jong Choi (ORNL)

Rohith Varikoti (PNNL)

Kyle Parfrey (PPPL)

Andrew Tritt (LBNL)

Aaron Tuor (PNNL)

Developing an AI-agent driven data curation pipeline that autonomously transforms raw scientific data into AI-ready form

Contact:

SCholia@lbl.gov

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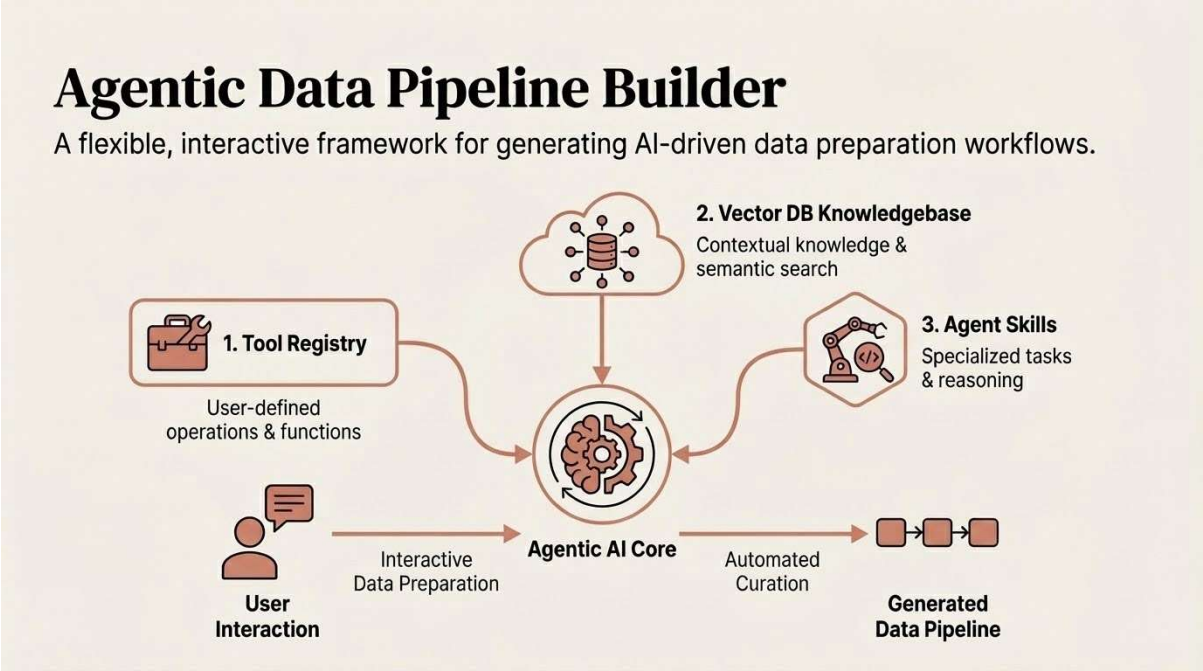
Base/Data: Composable Data Pipeline Framework



Data Science Agent Toolkit (DSAGT): Agentic harness to manage data preparation pipeline

- Use your favorite interactive LLM agent (Claude, Codex, OpenCode, Goose etc.)
- Support for data tool execution, RAG knowledge-bases, agent skills
- Use of "Skills" for agentic tasks: data card generator, HDF5 data ...

https://github.com/AI-ModCon/BaseData_pipeline_agent

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Base/MM: Multimodal Scientific Reasoning Models

Sandeep Madireddy
Argonne National Lab

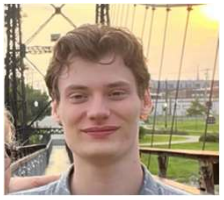
Adarsha Balaji
Argonne National Lab

Guojing Cong
Oak Ridge National Lab

Patrick Emami
National Lab of the Rockies

Ben Erichson
Lawrence Berkeley National Lab

Neil Getty
Argonne National Lab

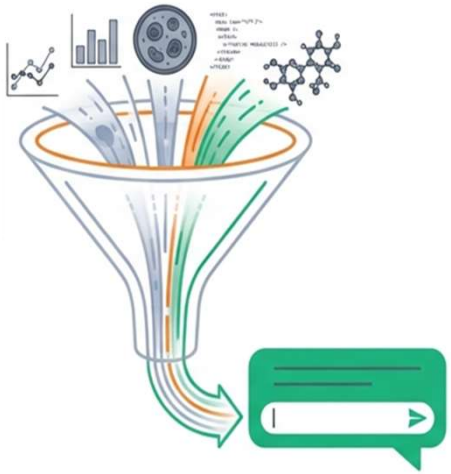


Sam Wheeler
Argonne National Lab

Fangfang Xia
Argonne National Lab

AmSC
AMERICAN SCIENCE CLOUD

At-Scale Services / MLOps



Goal: *Develop multimodal scientific reasoning models and an intelligent conversational interface that accepts inputs across modalities, performs cross-modal reasoning, to answer complex scientific questions*

Software: https://github.com/AI-ModCon/BaseMM_PRISM/
Contact: Sandeep Madireddy (smadireddy@anl.gov)

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Base/SIM: Enabling Self-Improving Models

APEIRON
SELF-IMPROVING MODELS

mlflow

Goals

Develop an agent first approach to keep domain-specific AI models synced to new experimental data and methods that emerge

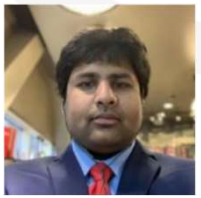
Monitor workflow runs
Detect data and model drift
Trigger continual learning
Monitor performance


Ana Gainaru
ORNL


Steffen Schotthoefer
ORNL


Anna Quach
INL


Zilinghan Li
ANL


Krishnan Raghavan
ANL


Rafael Zamora-Resendiz
LBNL


Auralee Edelen
SLAC


Andrew Ayres
ORNL


Alvaro Sanchez-Villar
PPPL

Software: https://github.com/AI-ModCon/BaseSIM_APEIRON
Contact: gainarua@ornl.gov

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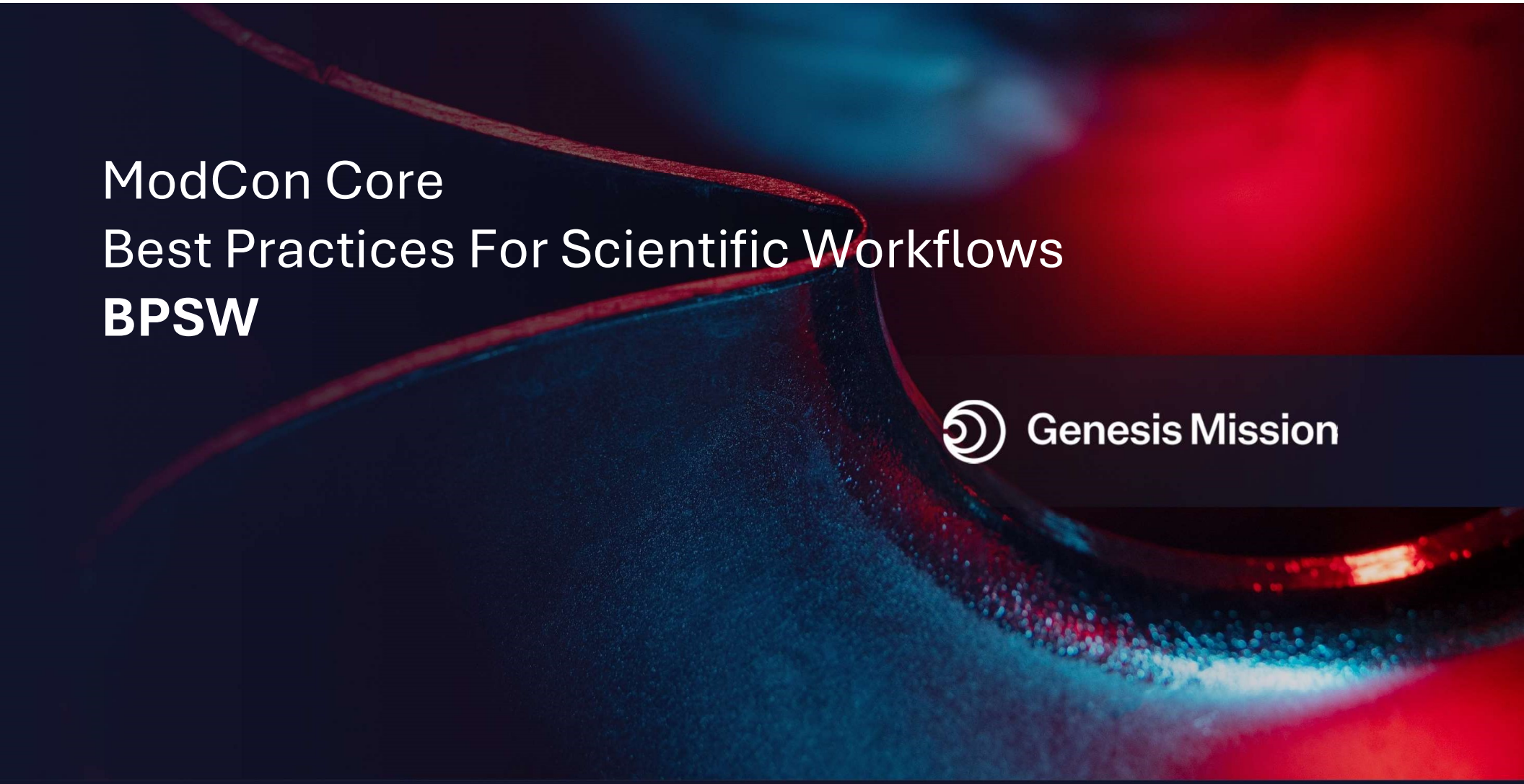
ModCon Core
Best Practices For Scientific Workflows
BPSW



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BPSW : Best Practices for Scientific Workflows
23 members from 11 DOE labs


Franck Cappello, **Co-lead,** ANL


Rafael Ferreira da Silva, **Co-lead**, ORNL


Robert Underwood, **Extended Team Lead,** ANL


Massimiliano Lupo Pasini, **Extended Team Lead,** ORNL


Rinku Gupta, **Extended Team Lead**, ANL


Neil Getty, ANL


Murat Keceli, ANL


Nagi Rao, ORNL


Mikhail Titov, BNL


Jong Youl Choi, ORNL


Helia Zandi, ORNL


Nathan Tallent, PNNL


Natalie Isenberg, PNNL


Anna Giannakou, LBNL

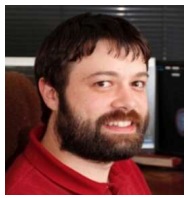

Dan Gunter, LBNL


Mohammad Abdo, INL


Long Qi, AMES


Joseph Smith, NLR


Nhan Tran, FNAL


Thomas Britton, JLAB


Shantenu Jha, PPPL


Thorsten Hellert, LBNL


Amith Murthy, SLAC

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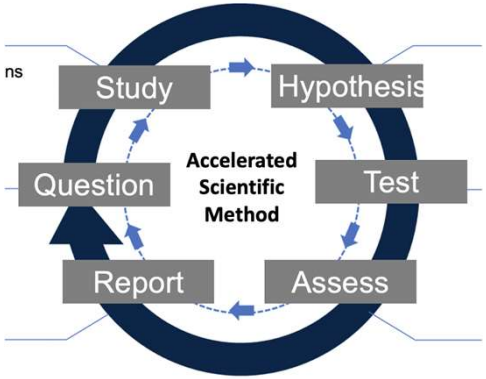
Best practices for scientific workflows works across the discovery science continuum to shape AI acceleration

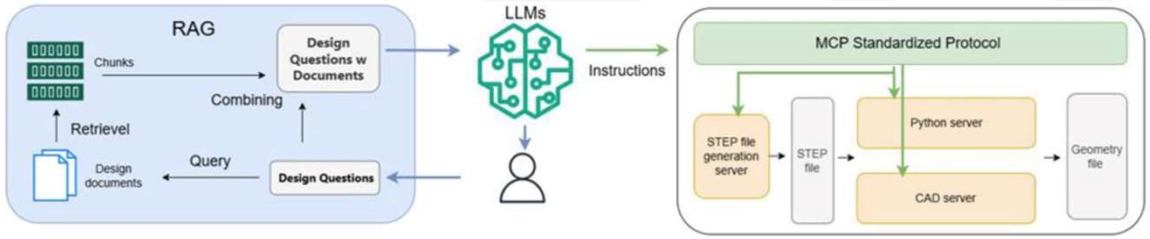
BPSW considers every steps of the whole research workflow from the research questions to report generation.



https://doi.org/10.1038/s41524-022-00765-z

Some teams implement the entire cycle.
Most teams focus on a subset of steps (e.g., AI4HPC: LLM-based code translation workflow)

MOAT March Demo



End-to-End Loop: couples an LLMS to a RAG, MCP servers.

1. User's query is passed to the RAG to retrieve relevant documents (Study).
2. The LLM uses this context to generate a plan, which involves calling simulation tools via the MCP. (Plan Generation)
3. The MCP executes the simulation and returns results (e.g., a STEP file for a CAD model). (Test)
4. The process is iterated with human oversight. (Assess)

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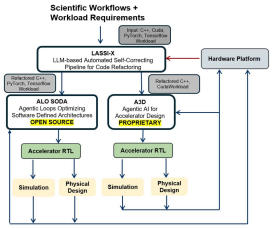
BPSW specific goals

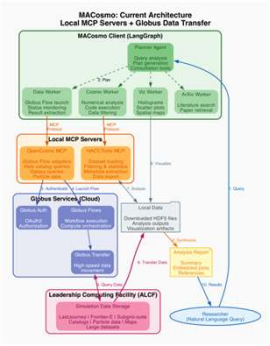
1. Catalog the practices of AI integration in scientific workflows at DOE
2. From the catalog, Identify, catalog and develop training about best practices, the integration methods that provide the most acceleration
3. Identify the 20 most important tasks to accelerate with AI in scientific workflow
4. Identify where AI models break and define research directions to mitigate this (e.g., LLMs, Hypothesis Generation Multi-Agents)
5. Define AI integration templates that DOE workflows not using AI can use for acceleration

Examples of Workflows for March demos

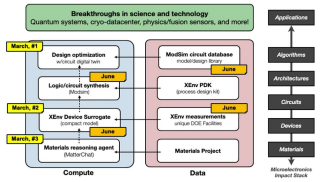
Microelectronics



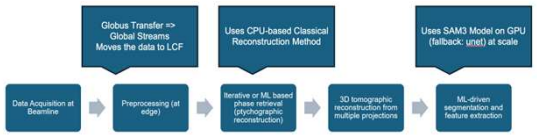
Q2C

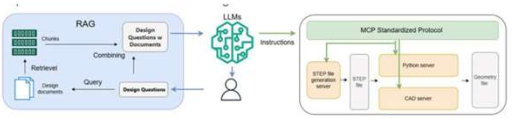


AXESS

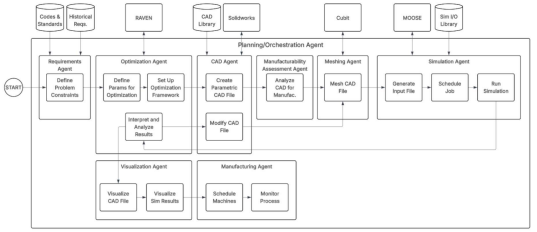


Synapse-I



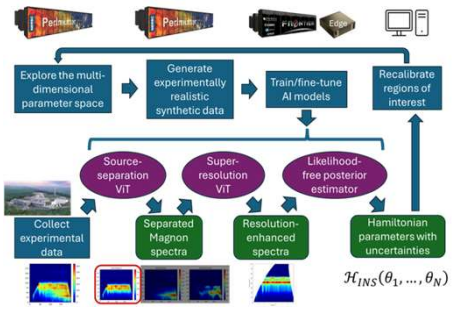


Prometheus



COMB-Flow

MAIQMAG



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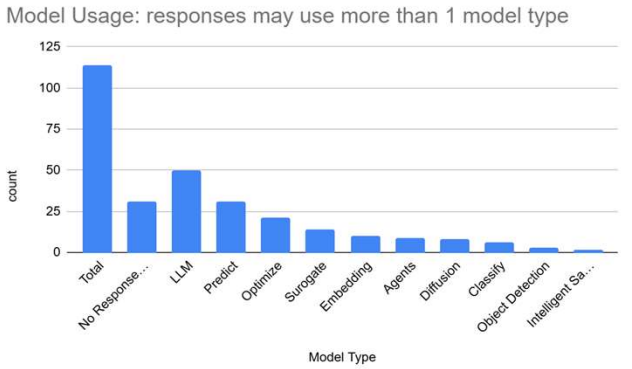
A survey across the laboratories inform current practices within scientific workflows and platform requirements

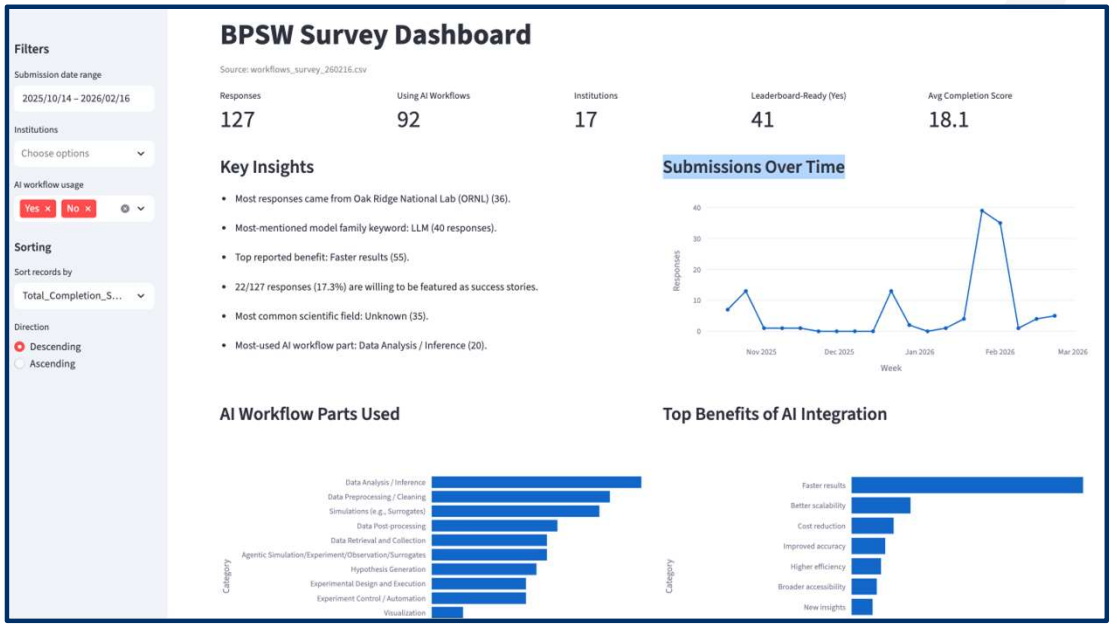


Responses only for the model type question

144 workflow responses so far including AI

Developed a dashboard from the workflow survey responses, and working to deploy onto AmSc next week

Chart shows AI model type usage across the surveyed scientific workflows



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Genesis Mission

The resulting best practices will serve as design patterns for the Genesis Mission Platform

Proven, evidence-based techniques or procedures that consistently deliver superior results and efficiency. Act as standards or benchmarks designed to minimize risk and optimize performance.

For AI-Based Workflows: **"Patterns"** of reusable AI integration techniques that have four elements:

- **Problem** (steps in the workflow) where AI-integration is it useful
- **Techniques** how to solve the problem (what AI, what training, what integration)
- **Consequences** of using the pattern (what benefits. e.g., speed, what risks)
- Include policies (e.g., safety, security)

Goal in our case: **Provide guidance** on tasks such as AI design, model training, evaluation, integration, and deployment

Artifacts: user-guide, templates, trainings, and other resources

Adapted from Gamma et al, "Design Patterns for Object Oriented Software"

Some **Patterns** identified in MT March demo workflows:

- LLM establishing a plan
- LLM calling multiple specialized agents
- Globus transfer to acquire, transfer data
- RAG requests to retrieve data
- Generation/Correction loops
- Calling surrogates for optimization
- AI for data cleaning
- LLM as a judge for validation outputs

Genesis Mission

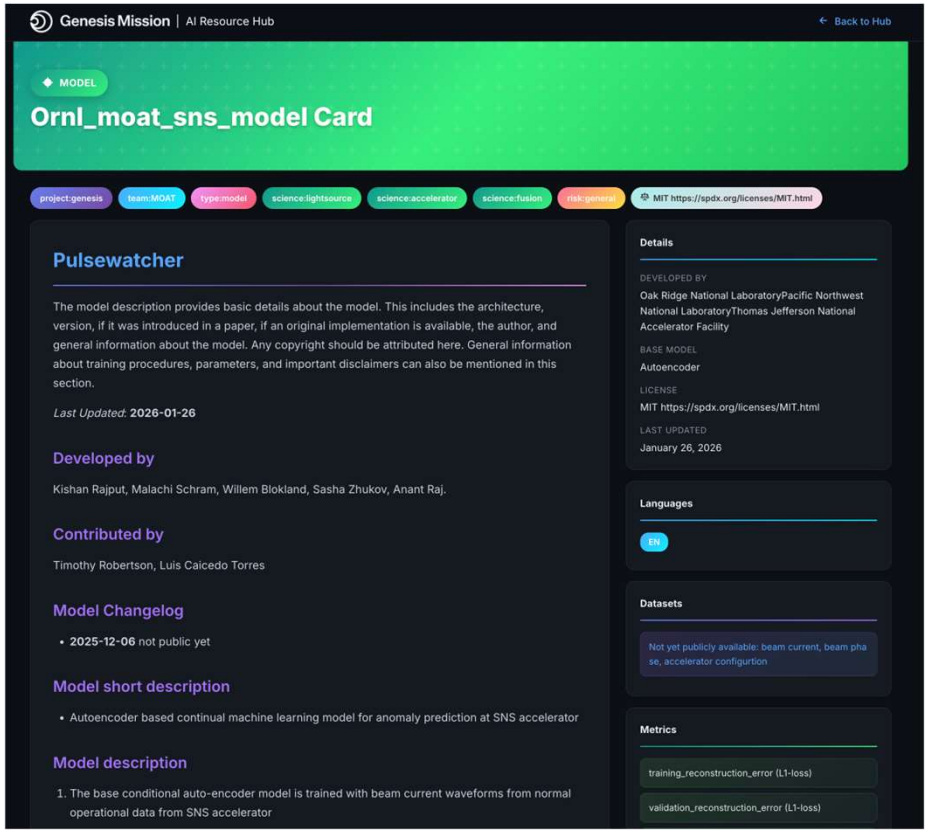
Model and agent cards are essential for the Genesis Mission Platform to deploy transformational capability to users and agents

Model/Agent Cards capture the capabilities, constraints, and intended use of DOE and community AI models and agents

Co-designed with stakeholders (AmSC, BASE-CAF, DBS, and leadership) to ensure consistency and adoption

- Scale is real: **350+ cards** already assembled and curated
- Broad coverage: spanning **30+** mission-relevant topics/domains

Living inventory: continuously expanding as new models and agents emerge



Genesis Mission

The leaderboard is one of the first ModCon tools deployed onto AmSC demonstrating early wins for model team evaluation

The leaderboard exposes the performance of different AI models on a selection of scientific workflow tasks identified by the MTs and other DOE teams as critical for their scientific workflow accelerations.

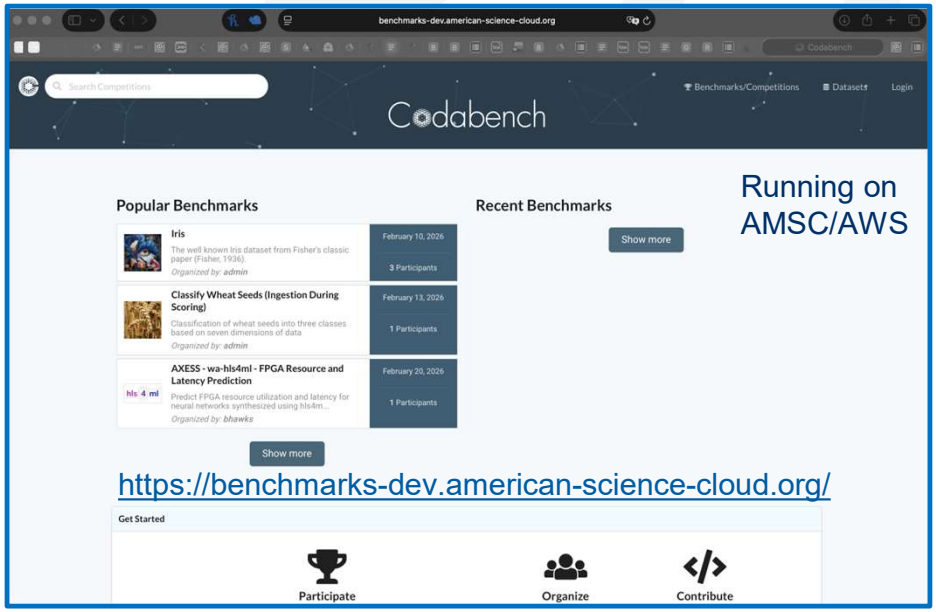
The leaderboard will follow the general format of the benchmarks defined by ML common: https://mlcommons-science.github.io/benchmark

Rigorous specifications of benchmark quality:

- Software environment
- Problem specification and constraints
- Dataset (FAIR, AI-ready)
- Performance metrics
- Reference solution
- Documentation

Examples of benchmarks

- [LLMs] SciCode, CritPT
- [Agentic Evaluation] MOAT team
- [Surrogate Models] AXESS team
- [Segmentation] SYNAPS-I team



Hosted on the American Science Cloud (AWS)

Genesis Mission

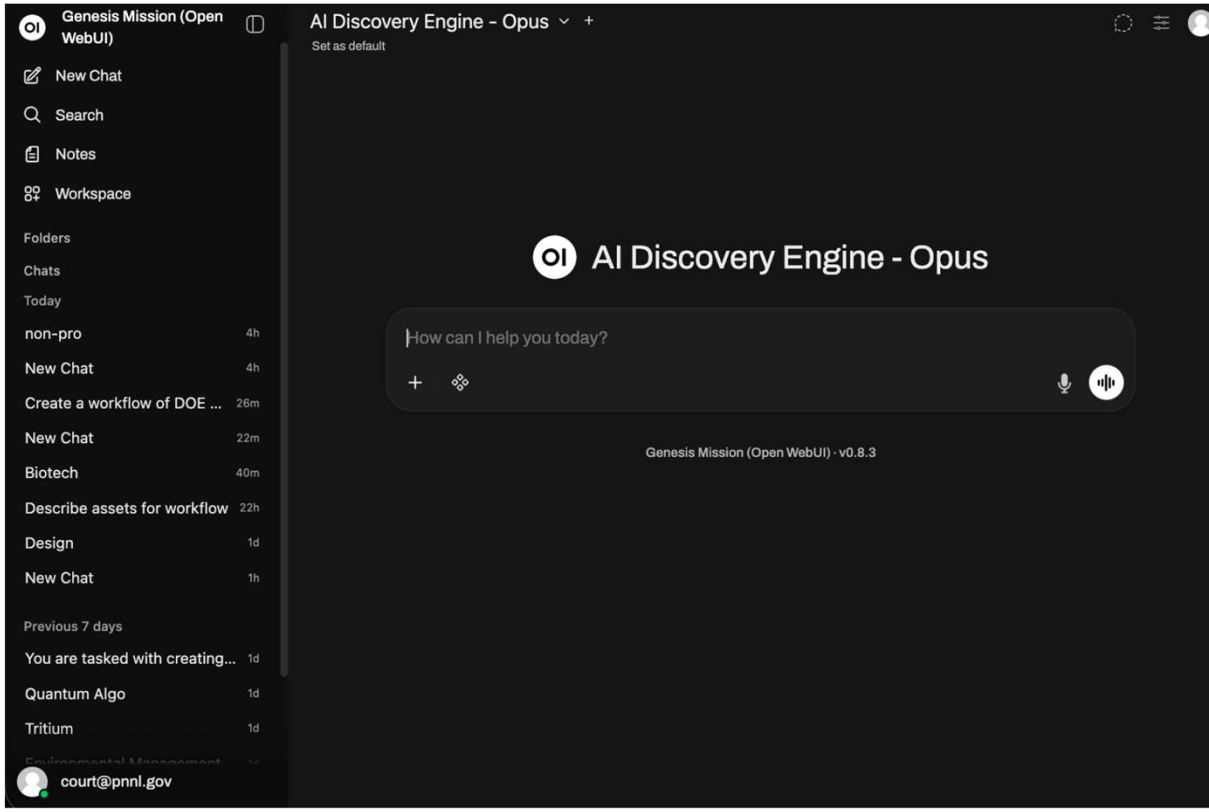
AI Discovery Engine composes workflows from DOE assets

Natural language interface to compose and interrogate workflows of DOE and NNSA AI assets to solve national S&T challenges

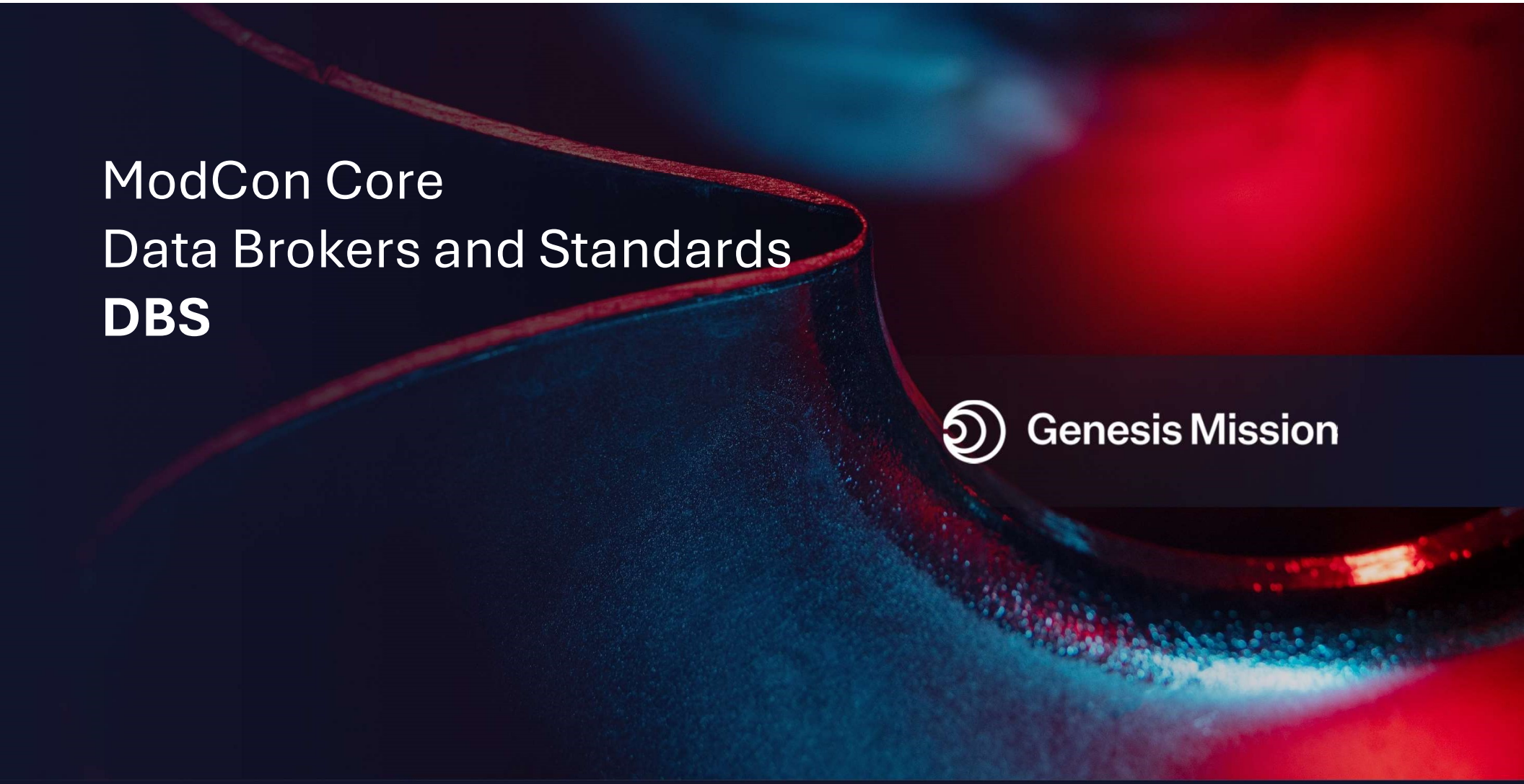
~350 DOE and NNSA model and agent cards inform that possible workflows

Data and compute resources cards will be incorporated soon

To be hosted and operated within the AmSC environment



ModCon Core
Data Brokers and Standards
DBS



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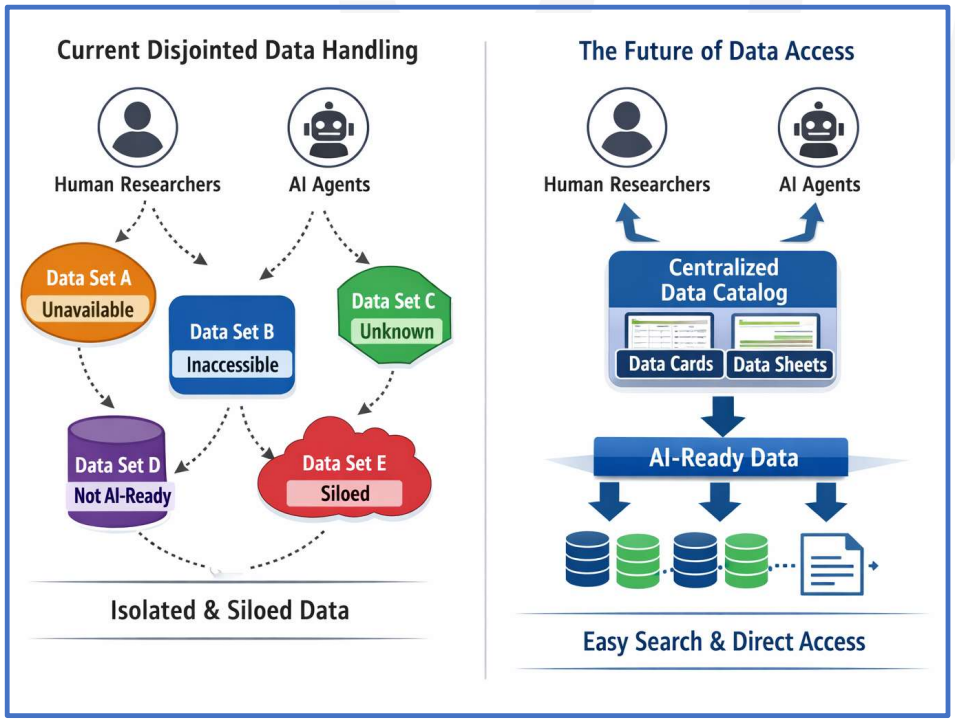
Genesis Mission

Data Brokers and Standards enhances the productivity of science

DBS addresses current rate-limiters to scientific productivity and security by...

- improving the findability of data and related artifacts for people and agents
- developing secure, trustworthy frameworks for data sharing and publication
- automating data curation for AI-readiness.

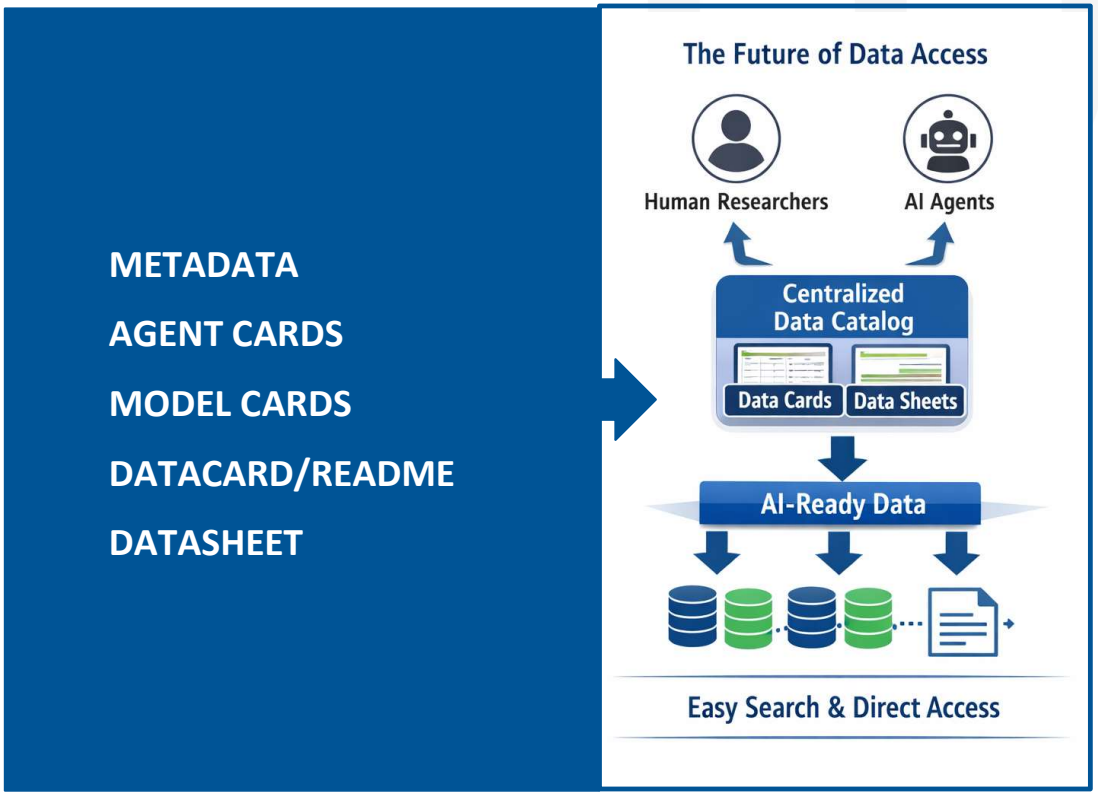


Putting it all together: document-based search, access, reuse

Transforms DOE datasets into AI-ready resources by **centralizing access to metadata, datacards, and datasheets** and establishing clear standards and policies for data usage.

Bridges data generators and data users and enables:

- Novel search capabilities
- Automated access and reuse
- Integration into agentic workflows



Putting it all together: Document-based search, access, reuse

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Bridges data generators and data users and enables:

- Novel search capabilities
- Automated access and reuse
- Integration into agentic workflows

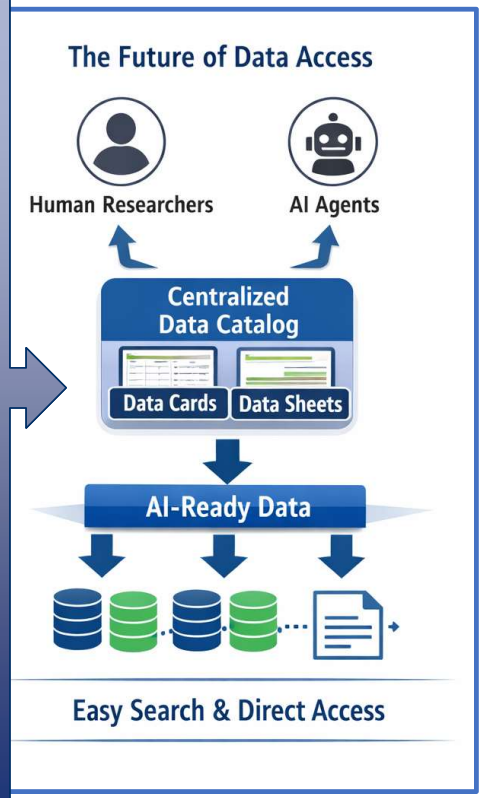
metadata
- Highly structured (JSON, XML, RDF)
- Often standardized fields
- Possible to automated
- Enables data to be found, indexed, managed, and understood by software systems/AI

agent cards

model cards

datacard / README
- Introduces and explains dataset background, context, organization & file structure, data details, methodological info, access & reuse
- Possible to automated
- Human & AI-readable
- Adjacent to files in the data repo
- Published & unpublished datasets

datasheet
- Comprehensive documentation of creation, scope, intended use, limitations, & ethical/technical considerations
- Intentionally human-written (possibilities to automate an initial draft)
- Capture tacit information & community knowledge
- Enables frontier models to leverage rich, unstructured dataset information
- For published, **elite** datasets



Genesis Mission

DBS members

DBS Leads

- Laura Biven - JLab
- Jeren Browing - INL
- Ray Grout - NLR

Genesis Data Pillar Leads

- Ana Kupresanin - LBNL
- Dana Grisham - SNL

Le	Chen	ANL
Nicholas	Schwarz	ANL
Rajeev	Thakur	ANL
Yi	Huang	BNL
Yihui (Ray)	Ren	BNL
Adam	Lyon	FNAL
Oliver	Gutsche	FNAL
Victor	Walker	INL
Brad	Sawatzky	JLAB
Diana	McSpadden	JLAB
Jai	Sachdev	PPPL
Jean Luca	Bez	LBNL

Kjiersten	Fagnan	LBNL
Sam	Blau	LBNL
Kelly	Rose	NETL
Nick	Wunder	NLR
Ray	Grout	NLR
Steven	Spurgeon	NLR
Struan	Clark	NLR
Ana	Gainarua	ORNL
Christian	Engelmann	ORNL
Mayanka	Chandra Shekar	ORNL
Olga	Kuchar	ORNL
Chitra	Sivaraman	PNNL
Terao	Kazuhiro	SLAC
Lindsay	Roy	SRNL

ModCon Core
Intellectual Property & Partnership Formation
IPPF

Genesis Mission

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Genesis Mission

Intellectual property and partnership formation

Intellectual Property

Streamline agreements that connect external partners with Genesis teams and ensure intellectual property and data protection

Entry Point

Primary channel and entry point for partners and Model Teams for initial scope discussion

Public and Economic Benefits

Ensure the product of collaborations advances U.S. research and U.S. economic security

Partnership Management

Matchmake external partners with laboratories' resources

Genesis Mission

ModCon: delivers transformational AI and data capabilities

Mission

- AI and data research and development to accelerate technical development and scientific discovery for Genesis
- Develop and deliver cross-cutting services as an engine for transformational AI model development
- Leverage partners from industry, academia, and internationally to accelerate AI development and adoption

Four Core Teams

deliver support to Model Teams

IPPF
Partnerships and IP Management

DBS
Data Brokers & Standards

BPSW
Best Practices for Scientific Workflows

BASE
Cross-Cutting AI Capabilities

What We Deliver

AI-Ready Data Pipelines
Transform raw scientific data into training-ready datasets

Scientific Workflows
Leaderboards, workflows, and upskilling for continuous discovery

Transformational Capabilities

- Core agentic framework
- Self-improving models harness
- Multimodal reasoning frontends
- Safety, security, assurance
- Evaluation

Deployed on Genesis Mission Infrastructure
The American Science Cloud

Partners
17 DOE Labs + industry + academia

Genesis Mission Mapping
Data, models, and partnerships teams

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