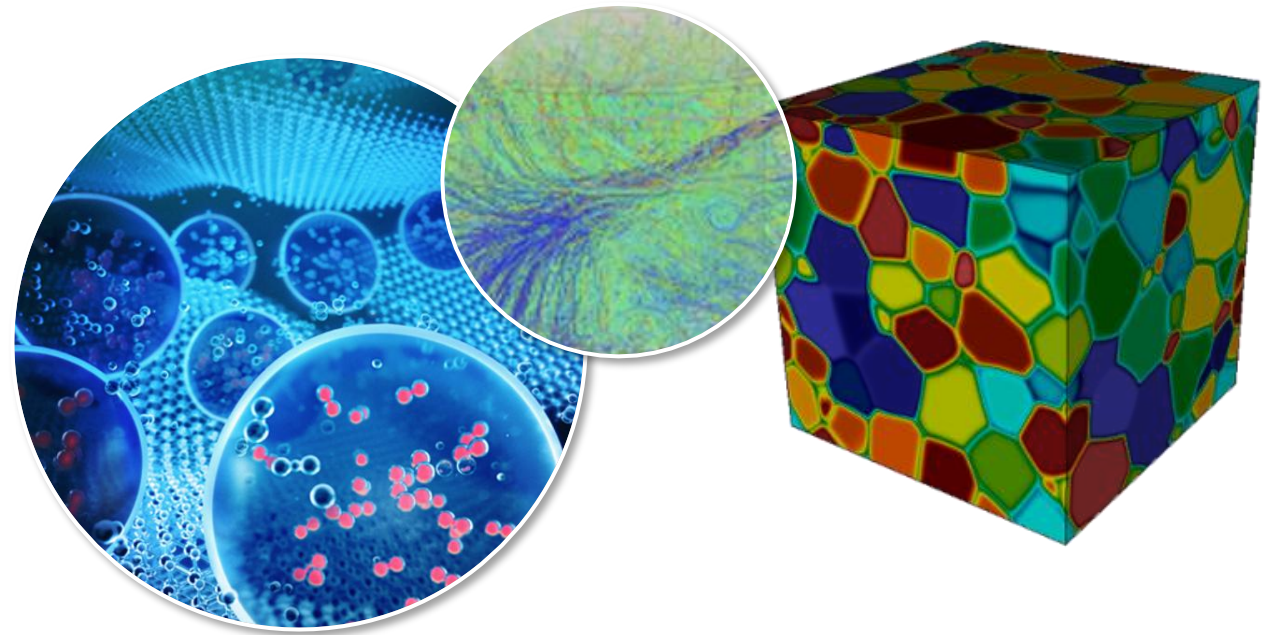


Center for Industrial Modeling & Simulation

HPC4EI Workshop

UCLCC, Livermore, February 24-26, 2026



Dr. Riccardo Scarcelli, ANL
Dr. Brandon Wood, LLNL

Center for Industrial Modeling and Simulation (CIMS)

FY25 ITO Lab Call – Topic Area 12: Computing for Industrial Efficiency

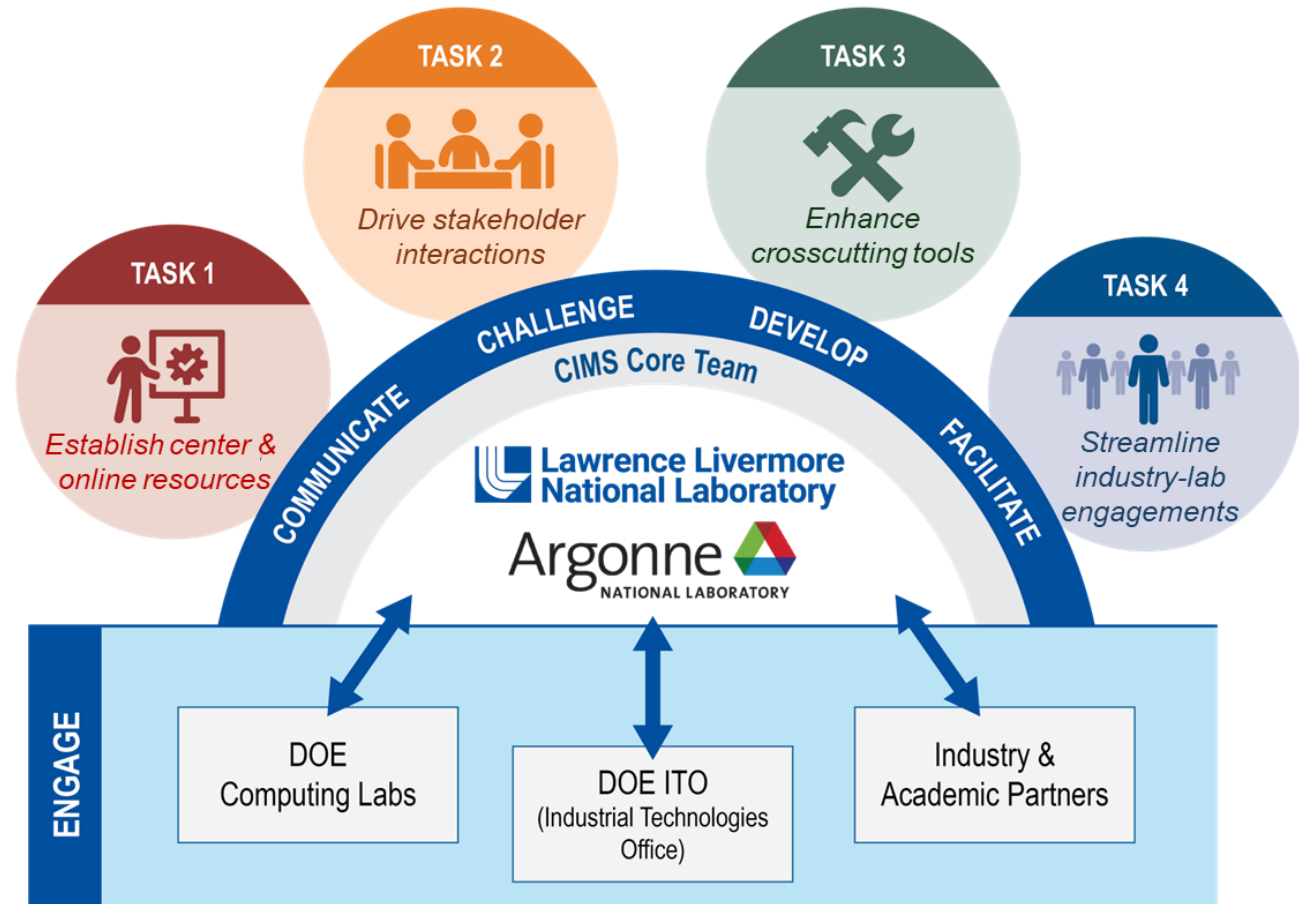
Lead Lab, PI: Lawrence Livermore National Laboratory, Dr. Brandon Wood

Partner Institution, co-PI: Argonne National Laboratory, Dr. Riccardo Scarcelli

*CIMS aims to **accelerate adoption** of computing tools and resources to **improve industrial efficiency and competitiveness**.*

*We will **assemble experts in physics-based modeling, AI/ML, & process modeling** across each ITO technology domain to:*

- Perform outreach & education
- Identify emerging challenges/solutions
- Enhance and integrate codes/methods
- Serve as a resource to match DOE labs with industry & academic stakeholders



CIMS complements other DOE and ITO computing efforts but offers a distinct mission focus

HPC4EnergyInnovation

- Only HPC-based simulations
- Provides benefit to only one preferred partner for one narrow problem

GENESIS & AI

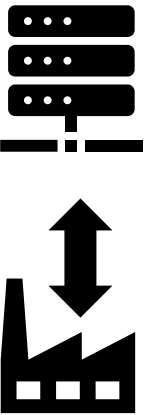
- Development of AI tools, LLMs & foundational models only
- No focus on "traditional" computing approaches

ASCR & SC

- Fundamental algorithms for HPC and AI/ML
- Not coupled to industry problems

CIMS

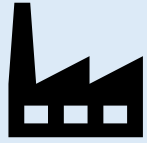
- Includes direct outreach and engagement with key industrial sectors and relevant problems
- Covers physics-based, process/engineering, and AI/ML approaches
- Includes both traditional and HPC computing
- Crosscutting benefits beyond a specific company
- AI/ML activities center on integrating with and augmenting existing tools



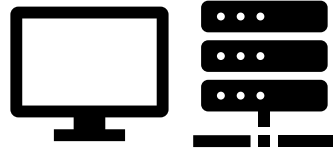
CIMS plans close engagement with these entities within a broader computing ecosystem

Gaps in communication, understanding, availability have limited the use of computing in industry

INDUSTRY BARRIERS



- X Inadequate education on capabilities, limitations, and operation of tools
- X Limited access to computing facilities (including HPC) and codes

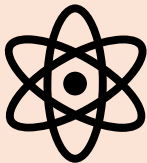


- Physics-based models
- Process/engineering models
- AI/ML models

COMPUTING OPPORTUNITIES



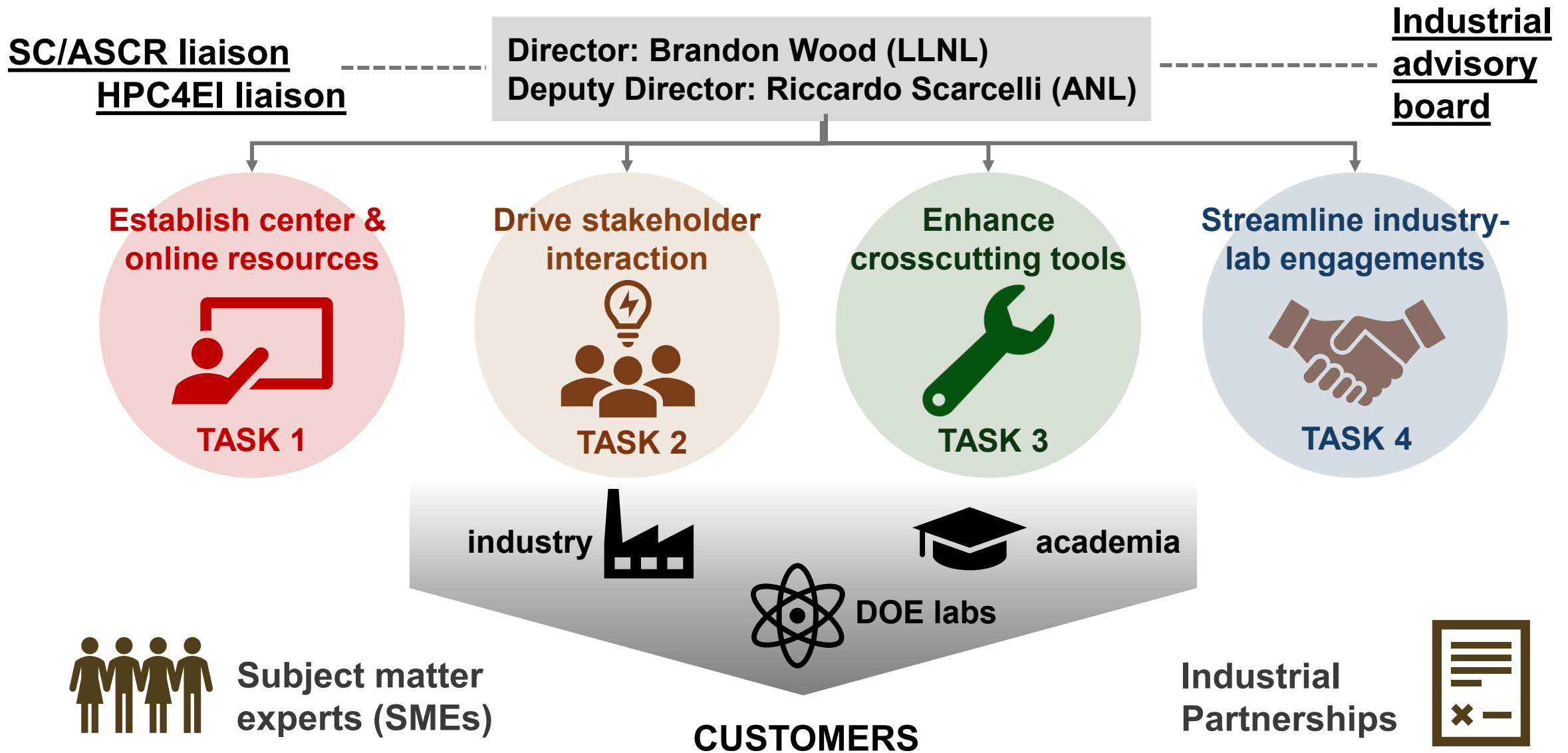
NATIONAL LAB BARRIERS



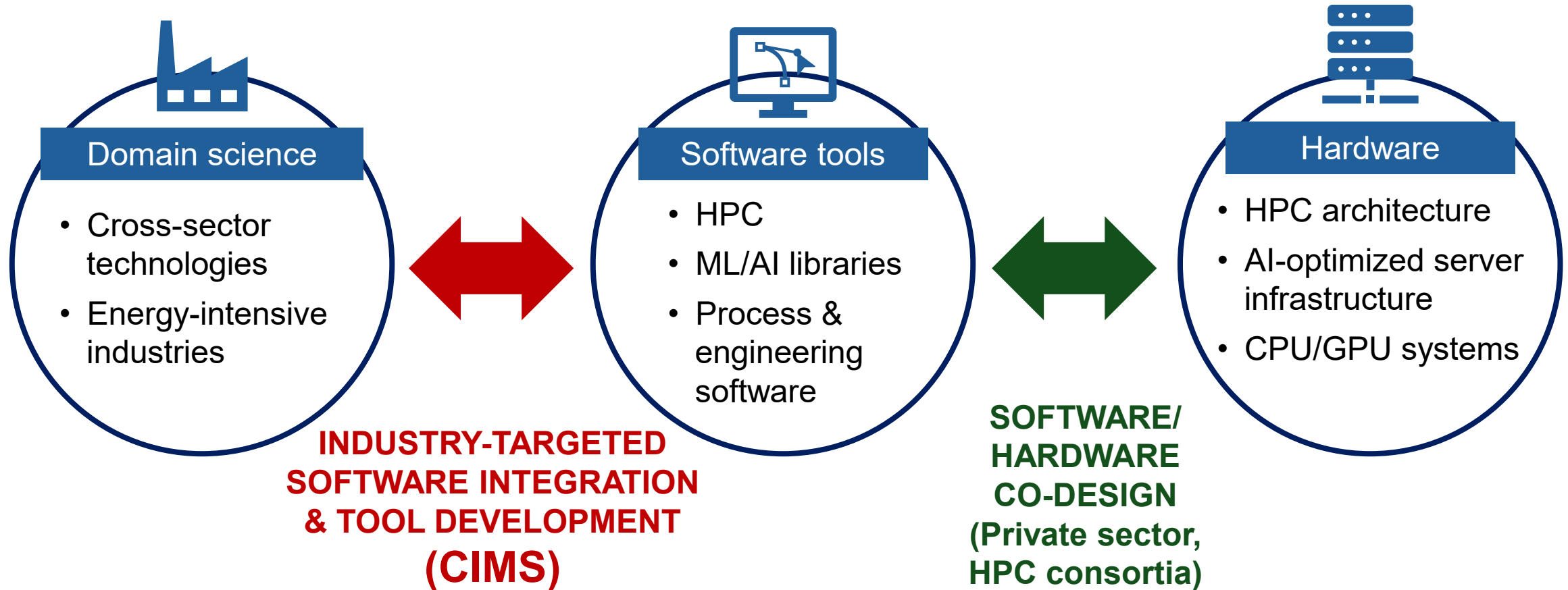
- X Industry problems are not visible to computational scientists
- X Computing expertise at DOE Labs is decentralized

CIMS assembles national lab simulation experts with industry stakeholders to share expertise and tools, identify needs and opportunities, and facilitate close interaction and rapid response to computing needs

CIMS Leadership & Structure



CIMS is distinct but synergistic with private sector efforts in HPC and modeling



CIMS will link industry-specific tool development opportunities with future hardware selection

CIMS priority areas

Computing maturity decreases →

Technology adoption decreases ↓

<i>CST</i>	<i>EII</i>	IRON & STEEL	CHEMICALS	OTHERS
COMBUSTION		✓	✓	?
ELECTRICAL - ELECTROCHEMICAL		✓	✓	?
OTHERS		?	?	?

CIMS Next Steps and Major Milestones

Event/Activities/Milestones

CIMS program official launch (expected March 2026)

YEAR 1 activities

Hold CIMS launch event webinar

Engage with industry at relevant annual conferences (e.g., AISTECH and AIChE)

Launch website of DOE lab capabilities and online portal for industry-lab engagement

YEAR 2 activities

Launch initial round of seedling projects

Workshop with deep-dive technical discussion involving industry stakeholders

Publish paper covering state of the art, challenges, and opportunities for industrial computing

CIMS ecosystem and partner involvement

- **Industry Stakeholders**

- Provide your input on computing challenges related to your field of interest
 - Reach out to CIMS leadership
 - Connect with your DOE Lab POC

- **DOE Lab PIs**

- Provide your input on tools/capabilities as applied to the specific CIMS' priority areas
 - CIMS will survey DOE Lab capabilities, starting from your own Lab's HPC4EI POC
 - Connect with your Lab's HPC4EI POC

- **Academic Institutes/Consortia**

- Provide your input on performing computation for industry and future tool development
 - Reach out to CIMS leadership

Thank you!

- Brandon Wood, CIMS Director, wood37@llnl.gov
- Riccardo Scarcelli, CIMS Deputy Director, rscarcelli@anl.gov