

A DOE Energy Innovation Hub for Modeling and Simulation of Light Water Nuclear Reactors



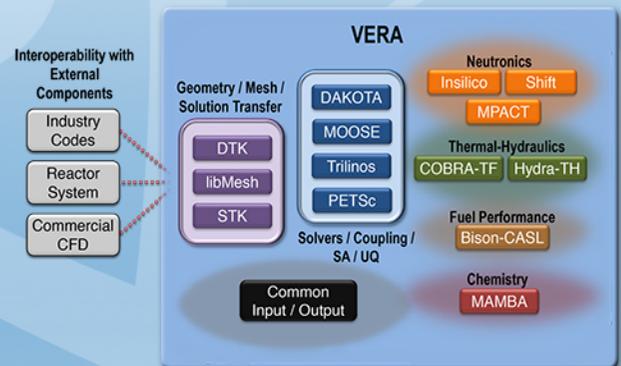
On a mission to provide modeling and simulation capabilities to improve the performance of currently operating light water reactors

and **with a vision** of confident performance predictions through comprehensive science-based modeling and simulation



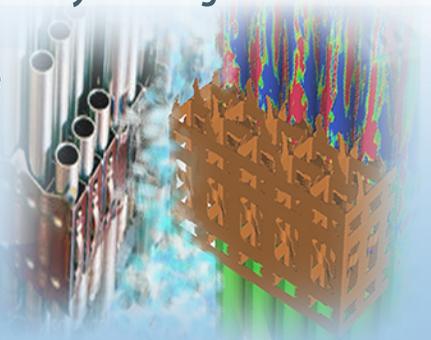
Delivering industry solutions through predictive simulation

- Improved reactor performance and output
- Technology step change with the CASL Virtual Environment for Reactor Applications (VERA)
- Informing the design and licensing of new reactors



Tackling tough industry challenges that matter

- Power uprates
- Fuel performance
- Safety basis
- Next generation reactors
- Advanced fuels



Executing a compelling plan

- Predictive simulation with an advanced virtual reactor
- High-fidelity models for reactor core phenomena
- Validated utilizing data from operating nuclear power plants
- Deployed broadly to the nuclear community



Fostering innovation where it is most needed

- Essential understanding of reactor fuel cladding
- Novel numerical algorithms ready for current and future high performance computing (HPC)
- Quantified uncertainties to inform operational and safety margins
- Multiphysics HPC-based tools embedded in reactor design and analysis workflows

