



ENERGY INNOVATION



MANUFACTURING



MATERIALS

Leveraging Cloud Computing in the HPC4EI Program

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HPC4EI Director

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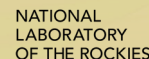
U.S. DEPARTMENT
of ENERGY | Office of Critical Minerals
and Energy Innovation



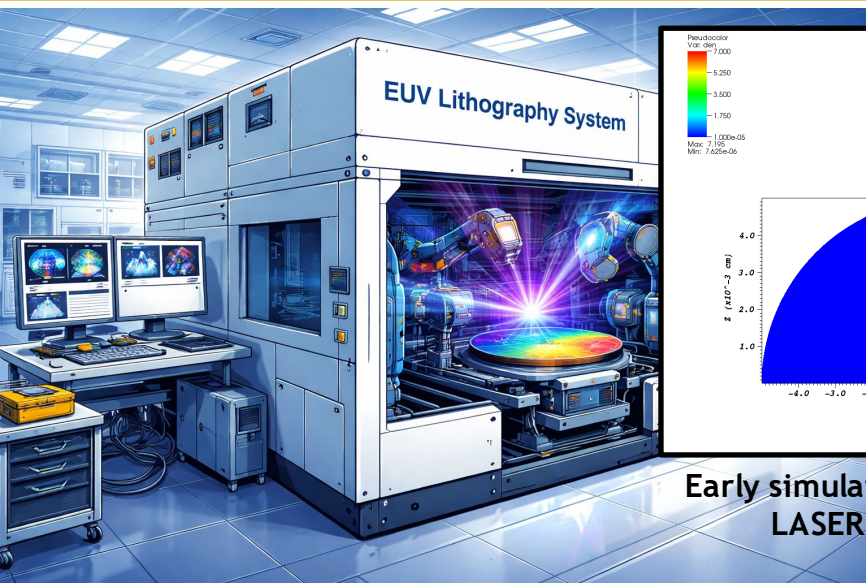
U.S. DEPARTMENT
of ENERGY | Hydrocarbons and
Geothermal Energy Office



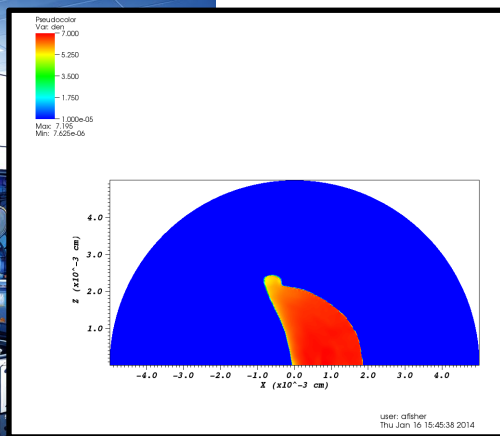
U.S. DEPARTMENT
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Science



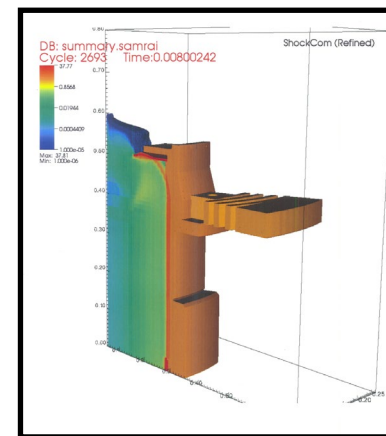
The Power of HPC



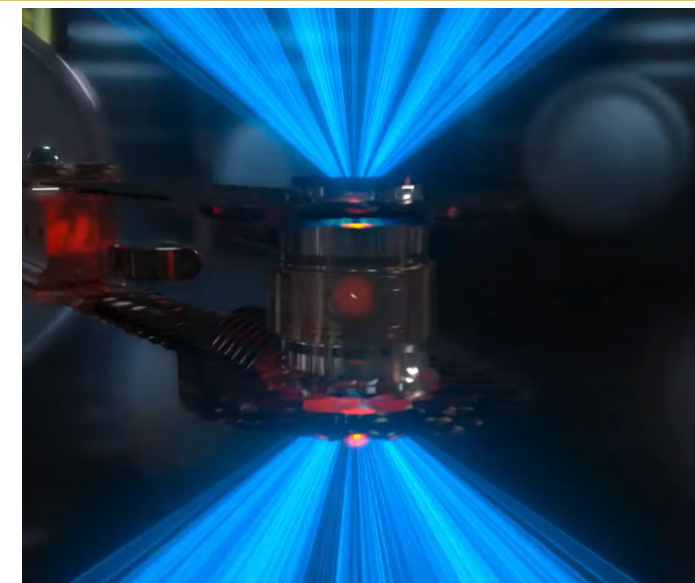
EUV Lithography system, 25 years in the making!



Early simulations of Sn droplet LASER interactions



Early simulations of experimental NIF shots



NIF Hohlraum illuminated by lasers



HPC can move the world!

The HPC4EI Mission

HPC4EI Projects



Modeling one problem at a time



HPC4EI Vision

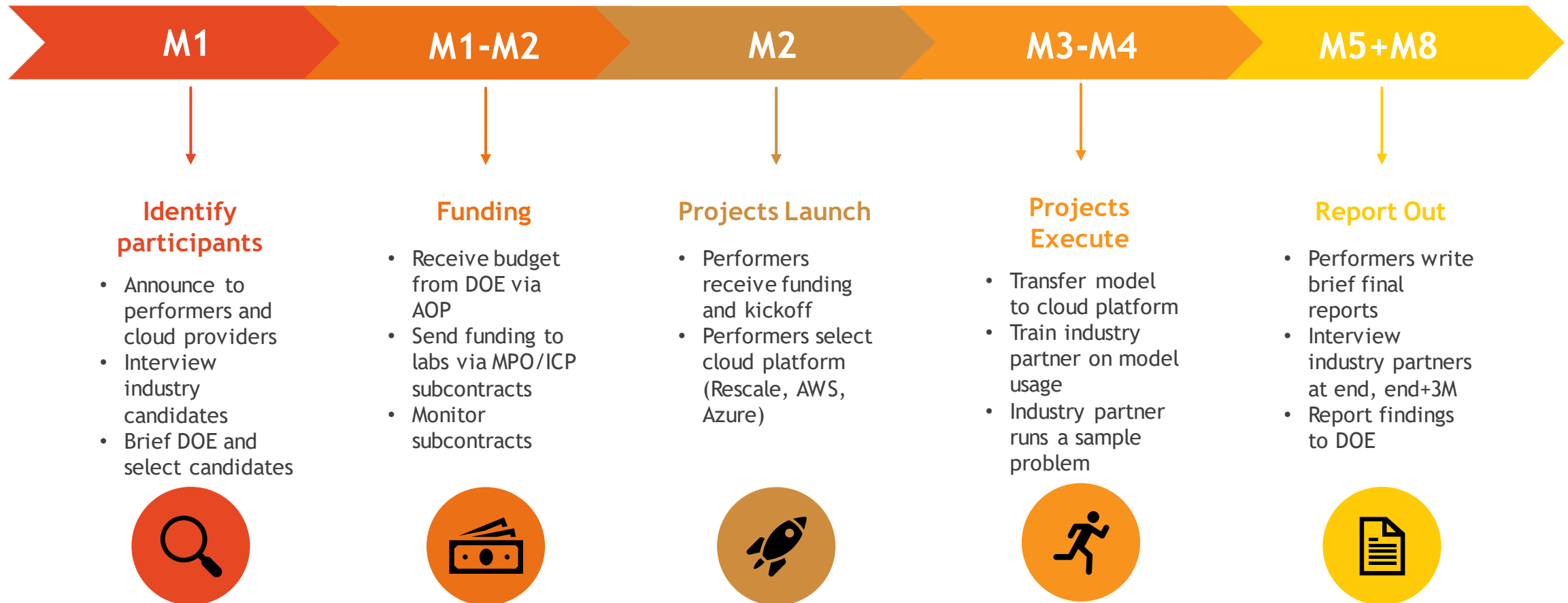


All of US industry getting help and modeling their own problems

Addressing the End of Project Gap with Cloud Computing



Cloud Pilot Timeline



Models, Gaps, and Bridges

HPC4EI Project

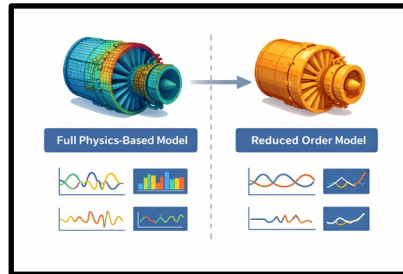


Modeling for one problem



Building a ROM

ROM



Modeling for a small array of problems



Cloud Projects

Parametric model in the cloud



Modeling for a moderate array of problems



Expert Guidance



Industry partner modifying full model on the cloud



Modeling for a very broad array of problems

Does the expert guidance need to come from a person?!?

Build an Agent Based Modeling and Simulation Advisor

- ▶ Cloud execution is the first step to collecting data about how computational engineers build and modify models
- ▶ Combine data with manuals, papers, and notes



The logo consists of the letters 'HPC' in a white, sans-serif font, followed by a large, stylized number '4' that is white on the left and yellow on the right, all contained within a yellow rectangular box with a slight 3D effect.

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