HPC4EI: Partnering with US Manufacturers to Bring National Lab Scale Impact to the World

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U.S. industry is undergoing a technological revolution

Computer Simulation — Data Analytics/AI — Material Discovery
We are advancing the energy agenda through advanced simulation

Computer Simulation shortcuts the Edisonian approach
HPC4EI connects the DOE HPC ecosystem to US industry

- World-class supercomputers
- Unique software
- Subject Matter Experts

https://hpc4energyinnovation.llnl.gov/
Utilizing DOE computing capabilities to help us Industry:

- Accelerate innovation
- Optimize design
- Reduce testing cycles
- Shorten the time to market
- Quality processes
- Reduce waste/reduce rejected parts
- Lower energy costs
- Reduced carbon emissions
The HPC4 Program is building an ecosystem to support HPC adoption by industry/government

- Showing what is possible with HPC through initial projects
  - DOE program office funds < $400K to laboratories
  - Industry funds at least 20% of total project funding; either in-kind support or optional cash contribution
  - Project duration one year

- Building the HPC4 community
  - Student intern programs
  - Hosting Virtual and Hybrid events
HPC4EI strengthens the S&T foundation of DOE National Labs and accelerates innovation in US industry

- Democratize HPC
- Accelerate energy innovation
- Transfer capabilities from national labs to industry
- Transfer knowledge from industry to national labs
- Develop practical tools
- Generate useful and comprehensive data sets
- Train students and postdocs
Program Approach
Companies apply to program through a solicitation process

- DOE funds 2 solicitations a year
- $400k / Project funded
- ~$7M /yr Budget
- 11 National laboratories participating
- 150+ projects funded with 90+ companies over 7 years
Over 150 projects have been funded with over 90 manufacturers in US

- Aerospace leading edge companies
- Legacy industries
- Innovative small companies