

E4S: No One Should Debug a Software Stack Alone

Scientific Achievement

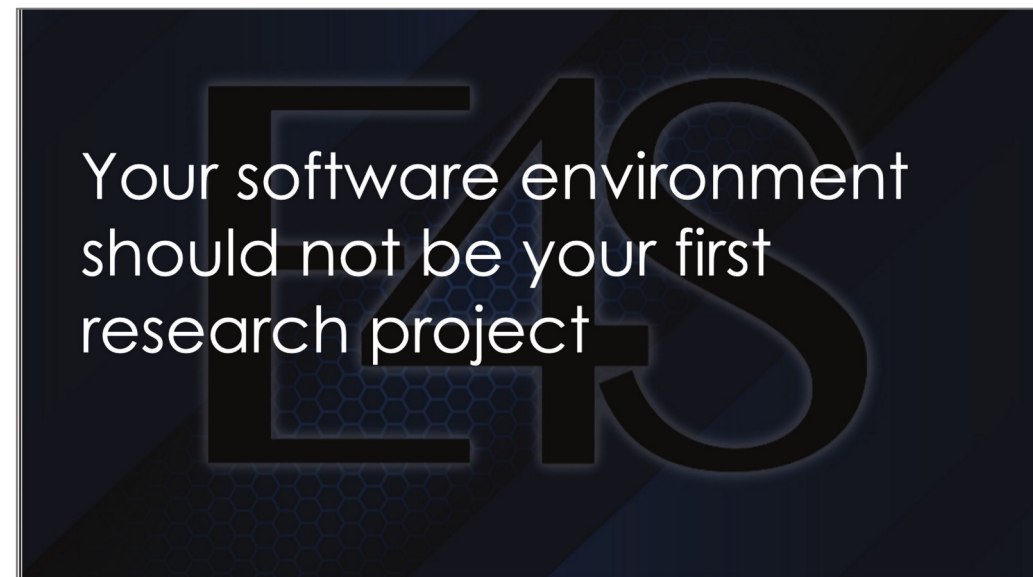
- **E4S**, the Ecosystem for Science, gives new researchers a curated, tested environment instead of one built from scratch
- Spack-based deployment, prebuilt containers, and facility-ready installs replace days-to-weeks of setup
- 100+ libraries and tools, tested across NVIDIA, AMD, and Intel CPUs/GPUs
- E4S also provides a growing set of vendor-specific libraries and tools for advanced AI-for-science workflows
- **Result: a new group member productive on day one, not week three**

Significance and Impact

- Removes the setup burden that otherwise falls on a mentor walking a newcomer through the stack by hand
- Frees mentor time for the science, not software troubleshooting
- **Turns onboarding from a solo struggle into a known quantity**

Technical Approach

- Spack captures versions, variants, compilers, dependencies for reproducible configuration
- Prebuilt containers and facility installs give newcomers a tested baseline, not a blank system
- CI on DOE leadership-class platforms on Frank@UO catches portability issues early



A research software environment should be a starting point provided by E4S, not the first project a newcomer has to solve alone. In addition to easy access to the E4S collection of libraries, tools, and apps, users can access the E4S website (<https://e4s.io>) for quickstart recipes, a searchable and sortable product catalog, and an AI guidebot to answer user questions.



<https://pesoproject.org>

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Stewarding and advancing the current and future ecosystem of HPC-AI computing software

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E4S website: <https://e4s.io>

PESO website: <https://pesoproject.org>