

# Computing@PNNL

## SEMINAR

### *Capturing Provenance as a Diagnostic Tool for Workflow Performance Evaluation and Optimization*

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In large-scale computing environments, such as DOE's Leadership Computing Facilities, scientific workflows are used routinely to coordinate software processes for the execution of complex, computational applications that perform *in silico* experiments. Monitoring workflow performance in high-performance computing provides insights into this progression, how the computational resources are used, and where execution bottlenecks occur. Yet, monitoring performance without simultaneously tracking provenance is insufficient to understand variations between runs, configurations, versions of a code, changes in an implemented stack, and systems (i.e., the variability of performance metrics data in their historical context). In her talk, Dr. Pouchard will provide a provenance-based approach and demonstrate that provenance is a useful tool for evaluating and optimizing workflow performance in extreme-scale HPC environments. She will present Chimbuko, a framework for analysis and visualization of the provenance of workflow performance that enables easy-to-use exploration of performance metrics data. This work is part of the Exascale Computing Project's CODAR project.



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