

# Scalable Tools Workshop 2018: Workflows Working Group Outbrief

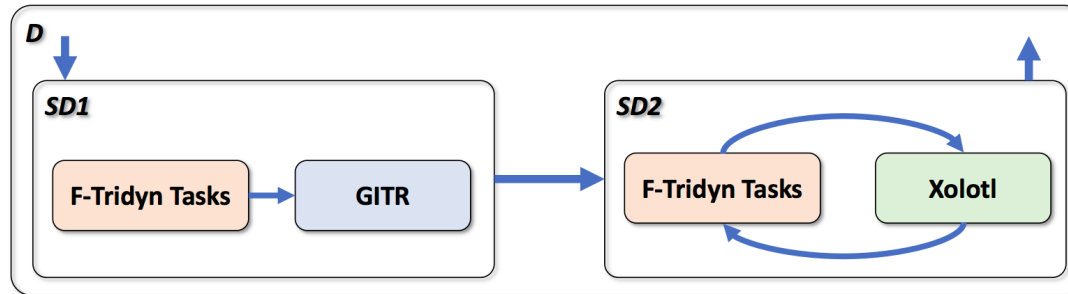
Presented by Philip C. Roth

# Participants

- Karen Karavanic – Portland State
- Matt Legendre - LLNL
- David Montoya - LANL
- David Poliakoff - LLNL
- Philip Roth - ORNL
- Nathan Tallent - PNNL

# Context: Science Workflows

- Phil presented his plasma materials interaction workflow and described challenges
  - Three physics codes, coupled using the Integrated Plasma Simulator (IPS)



- Karen reviewed her DroughtHPC simulation workflow
  - Originally presented in her workshop talk
- Nathan described Belle II particle detector experiment workflow
  - Dirac workflow software

# Discussion

- Matt/David P. described LLNL tools (e.g., Menoda, SPOT) and external tools in use (or planned) at LLNL
  - Menoda – interchange format + supporting software for capturing performance+problem domain data
  - SPOT – monitoring software
  - Dan Laney workflow software
- Dave M. described tri-labs Integrated Metric Analysis effort
- Karen gave more detail about:
  - Monitoring software developed to support DroughtHPC workflow (e.g., PPerfG)
  - 4-layer conceptual model for workflows
- Nathan described monitoring and analysis done in Belle II workflow

# Needs/Wants

- Level 0 (Campaign): Matt, Phil want to do comparative perf analysis of runs and app versions over time
- Level 1 (Job): Phil wants unified performance analysis and visualization of multi-app workflows; Nathan wants info to support better scheduling decisions/failure prediction in Belle II workflow
- Level 2 (Application): Karen wants "Workflow Critical Path"

# Questions and Answers

- Collection of open questions
  - What performance data needed to support optimization of single workflow?
  - What software available to support longitudinal studies as workflow evolves?
  - How to detect “Workflow Critical Path”?
  - What info needed to support better scheduling/failure prediction of tasks?  
How to collect?
- Discussed directions for addressing these questions
  - Survey perf monitoring capabilities of existing workflow software
  - Potential for workshop participants’ existing software to address needs, e.g.:
    - PerfTrack, LLNL software for capturing performance data across workflow runs
    - TAU to ease collection of event traces of workflow tasks