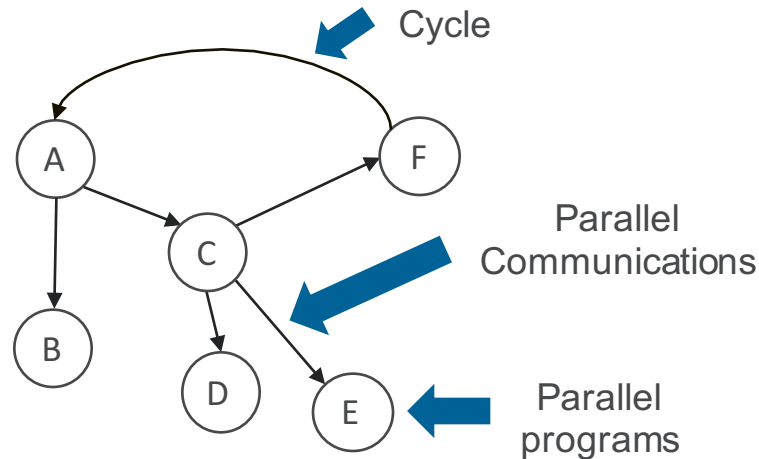


# DECAF

## Decoupled Dataflows for In Situ Workflows

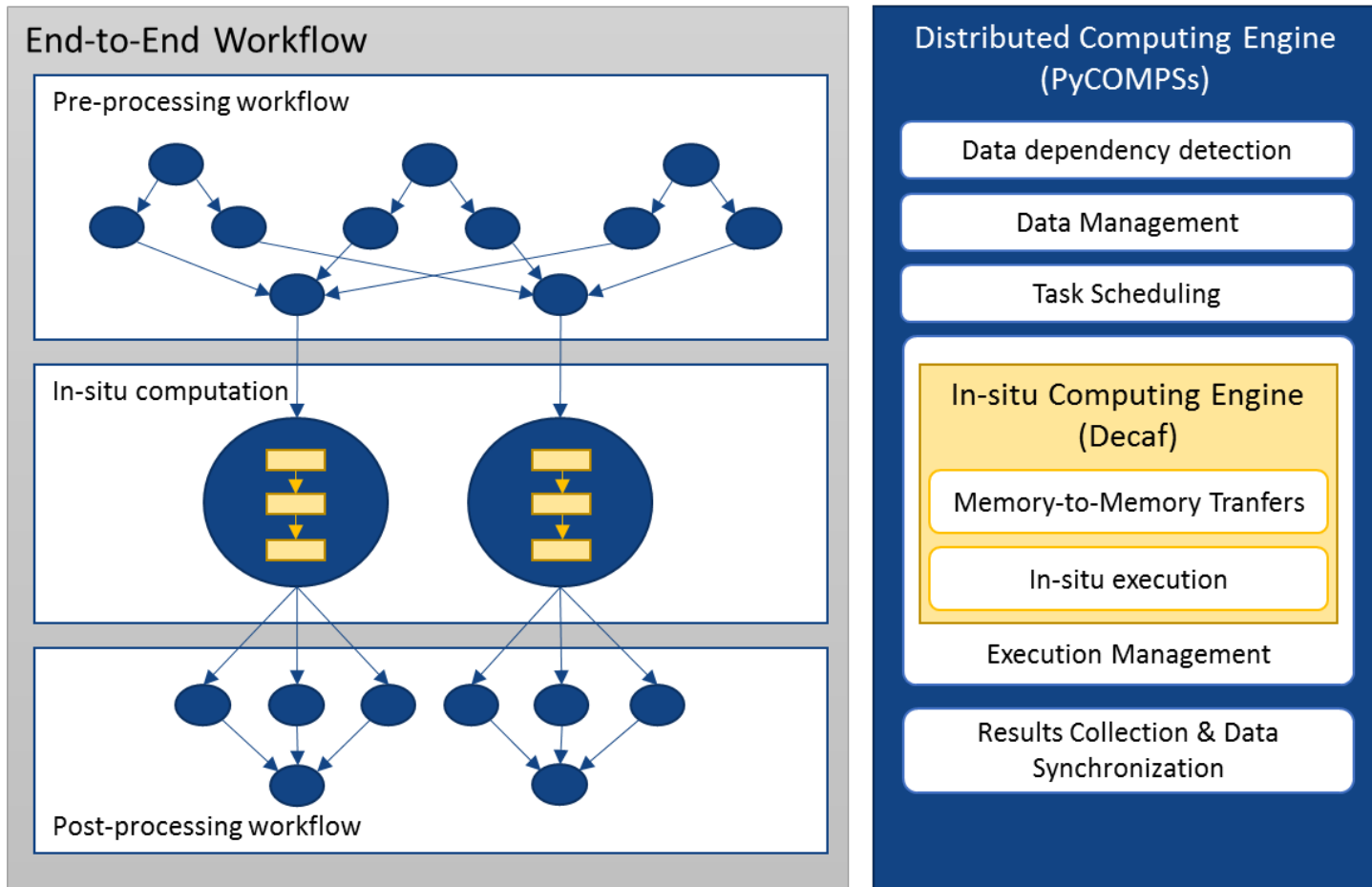
- Dataflow library for in situ workflows
- Efficient parallel communication over MPI
- Well-developed data model for data redistribution
- Python API for workflow definition
- Support for any directed graph topology including cycles



Conceptual workflow graph,  
which may include cycles

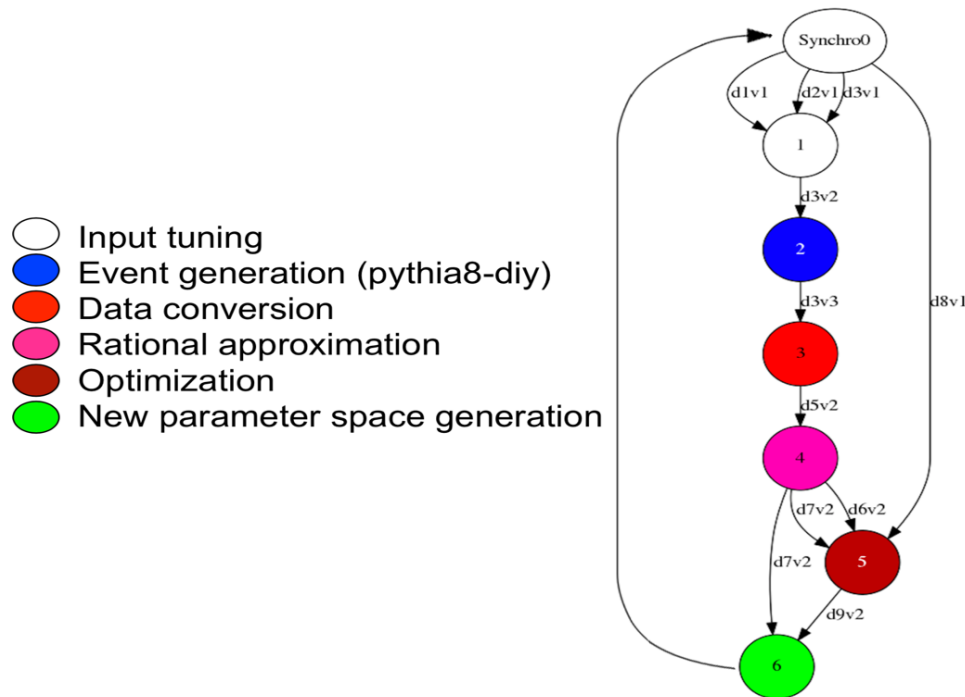
# DECAF-PYCOMPSS

## HETEROGENEOUS HIERARCHICAL WORKFLOW COMPOSITION



# DECAF-PYCOMPSS FOR HEP

## Automating HEP Event Generation and Optimization



Heterogeneous high-energy physics workflow of in situ neutrino event generation and parameter optimization.

# DECAF-HENSON

- Henson (LBNL):
  - Cooperative multitasking library for in situ processing
  - Coroutines and position-independent-executables as main abstractions
- Decaf-henson capabilities:
  - Support for multilevel workflows (e.g., coupling Python and C++ tasks)
  - Flexible intermixing of time and space partitioning
  - Dynamic workflow changes (e.g., add/delete a task, looping, shutdown)