

# Performance Evaluation of P2P and Cloud Computing Applications - A Module for SimGRID

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EMORY  
UNIVERSITY

- Origins
- Performance prediction
  - dPerf
- dPerf and P2P apps.
- Module for SimGrid
- dPerf for Cloud apps.
- Future work

- **Origins**
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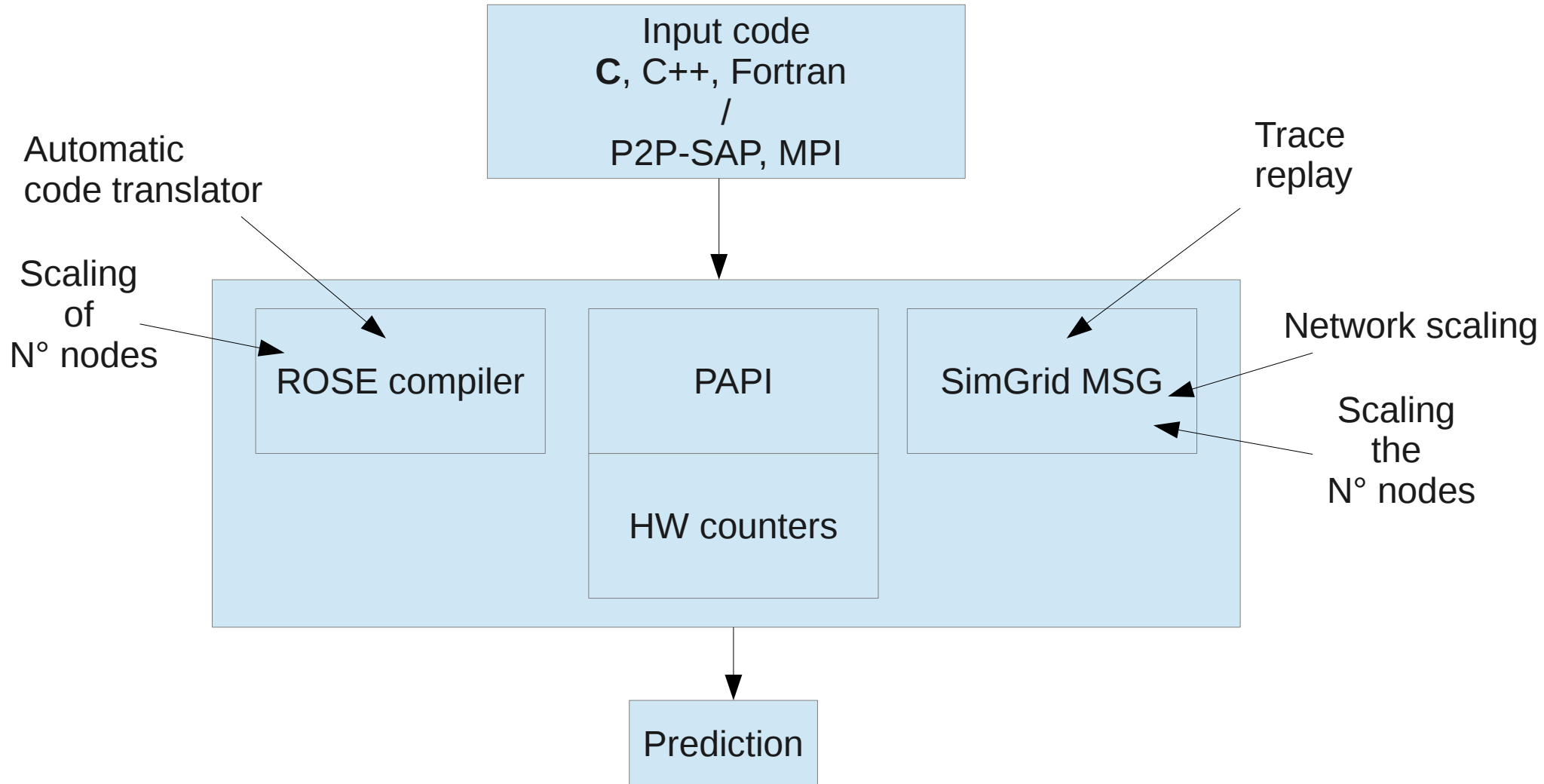
# Origins of an idea

- Alternative to grids and clusters
  - Computing
- Infinite resources of P2P
- Lower cost
- Existence of
  - ChronosMix tool
  - Real computing applications
  - Budget
    - P2P computing frame
    - P2P performance prediction tool

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# *dPerf* for performance prediction



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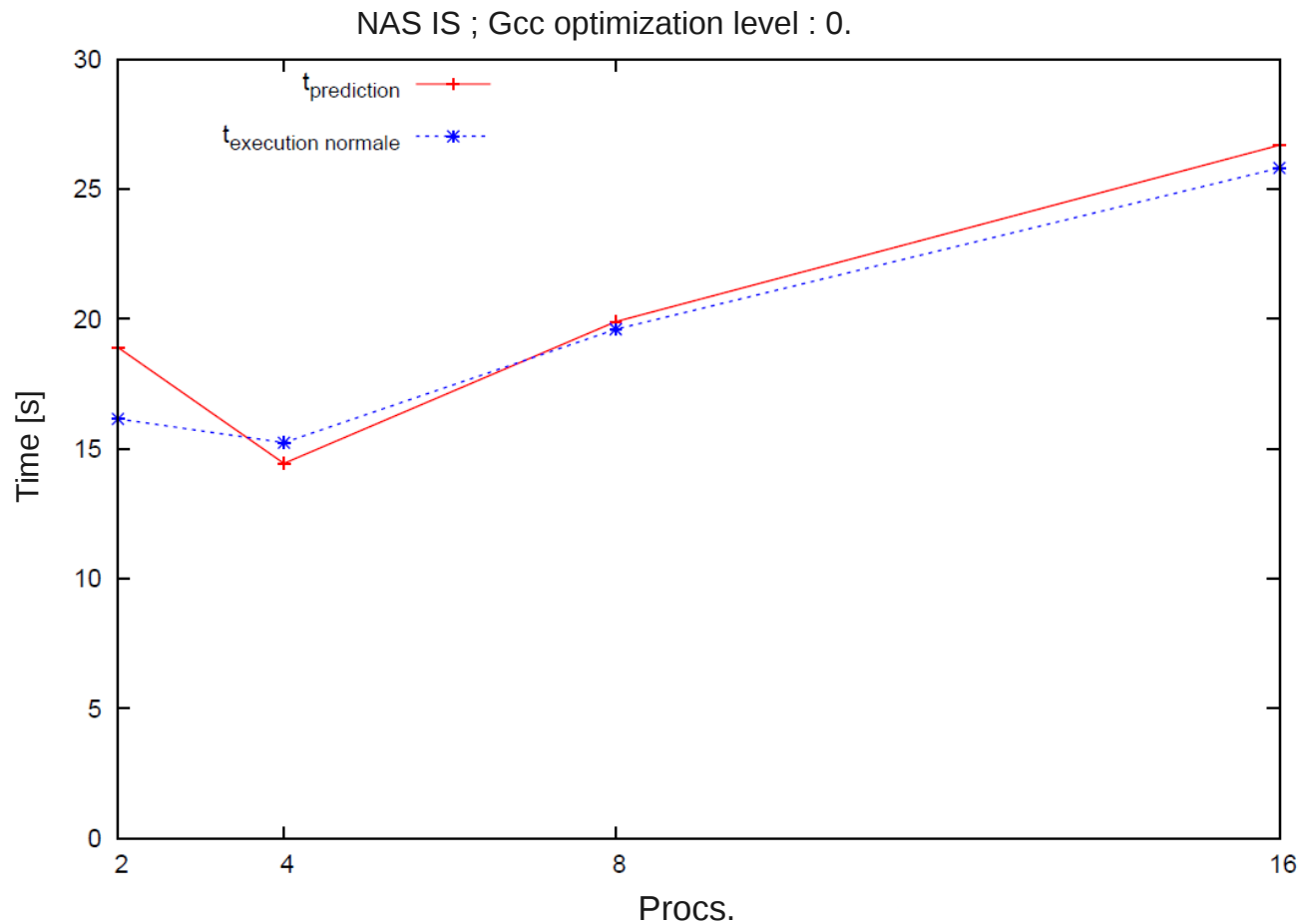
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# *dPerf* and P2P apps.

- Target: P2P computing
  - Heterogeneous
  - P2P communication protocol
    - Adapted to P2P performance computing
    - Developed at LAAS (France)
  - Real code ported to P2P computing
    - By LAAS (France)
  - Scaling

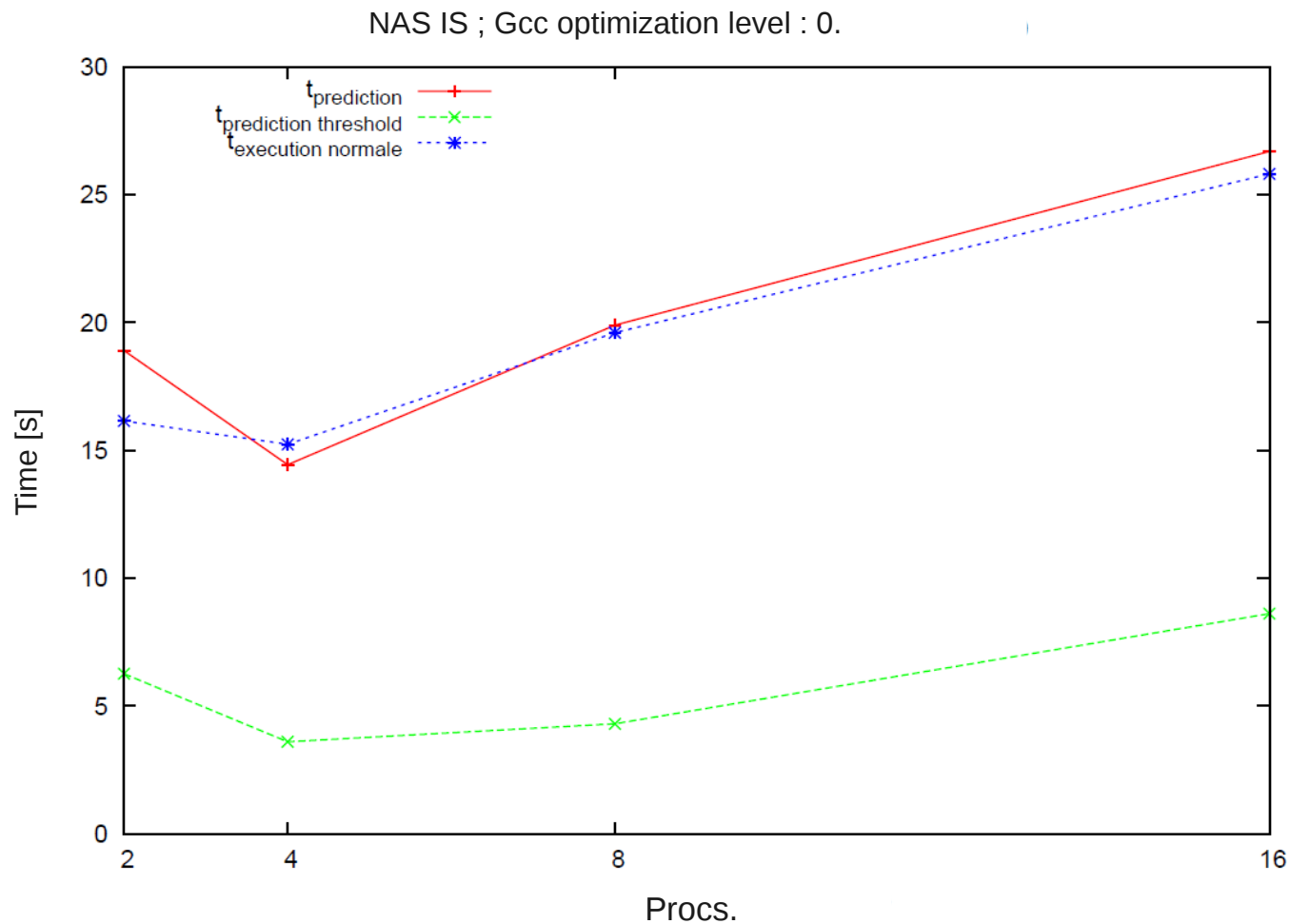
# *dPerf* and P2P apps.

- How ?
  - Automatic instrumentation + execution
    - **Simple** block benchmarking
    - Take in account compiler optimization



# *dPerf* and P2P apps.

- How ?
  - **optimized** block benchmarking\*\*\*



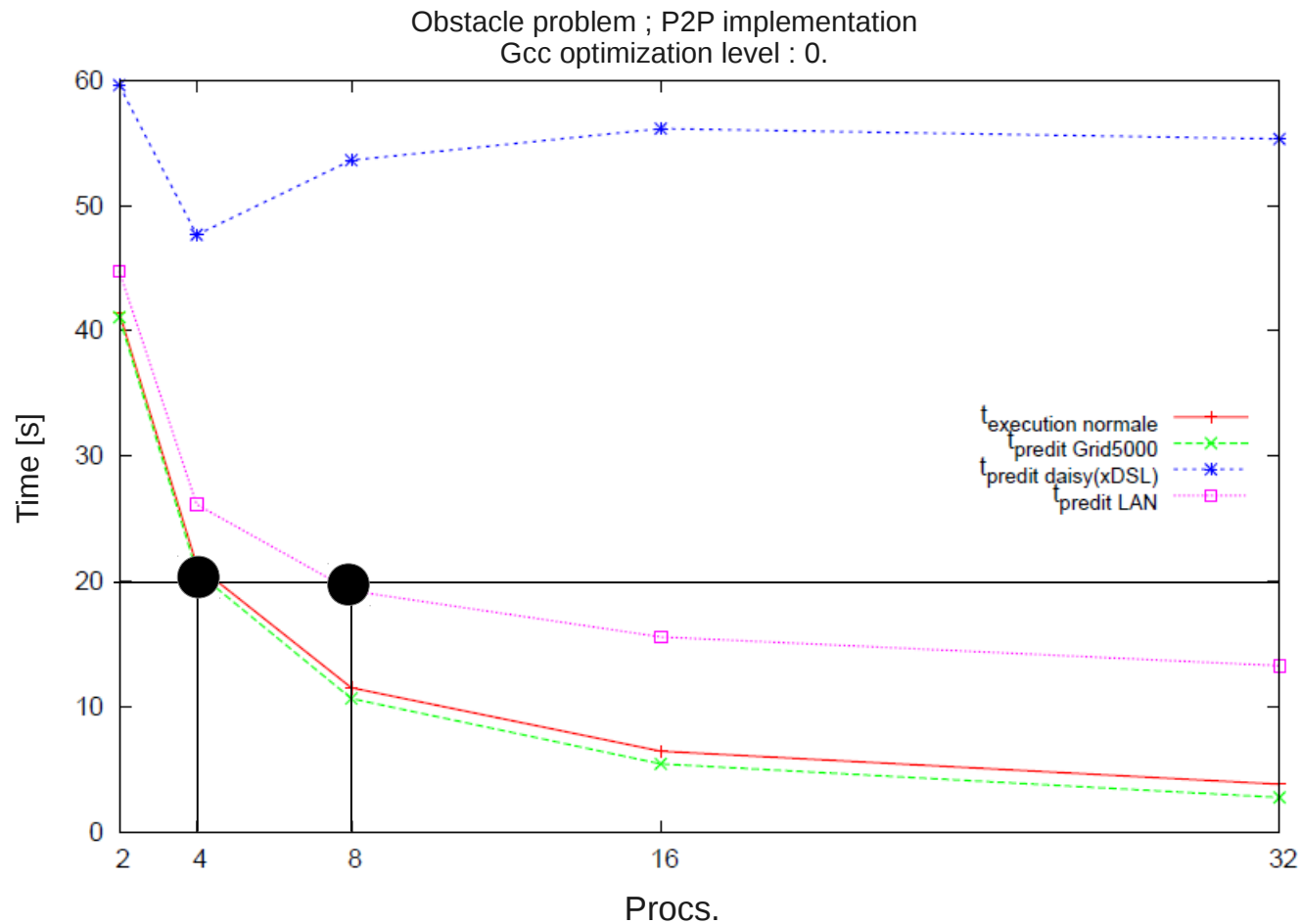
# *dPerf* and P2P apps.

- How ?

- Scaling of results

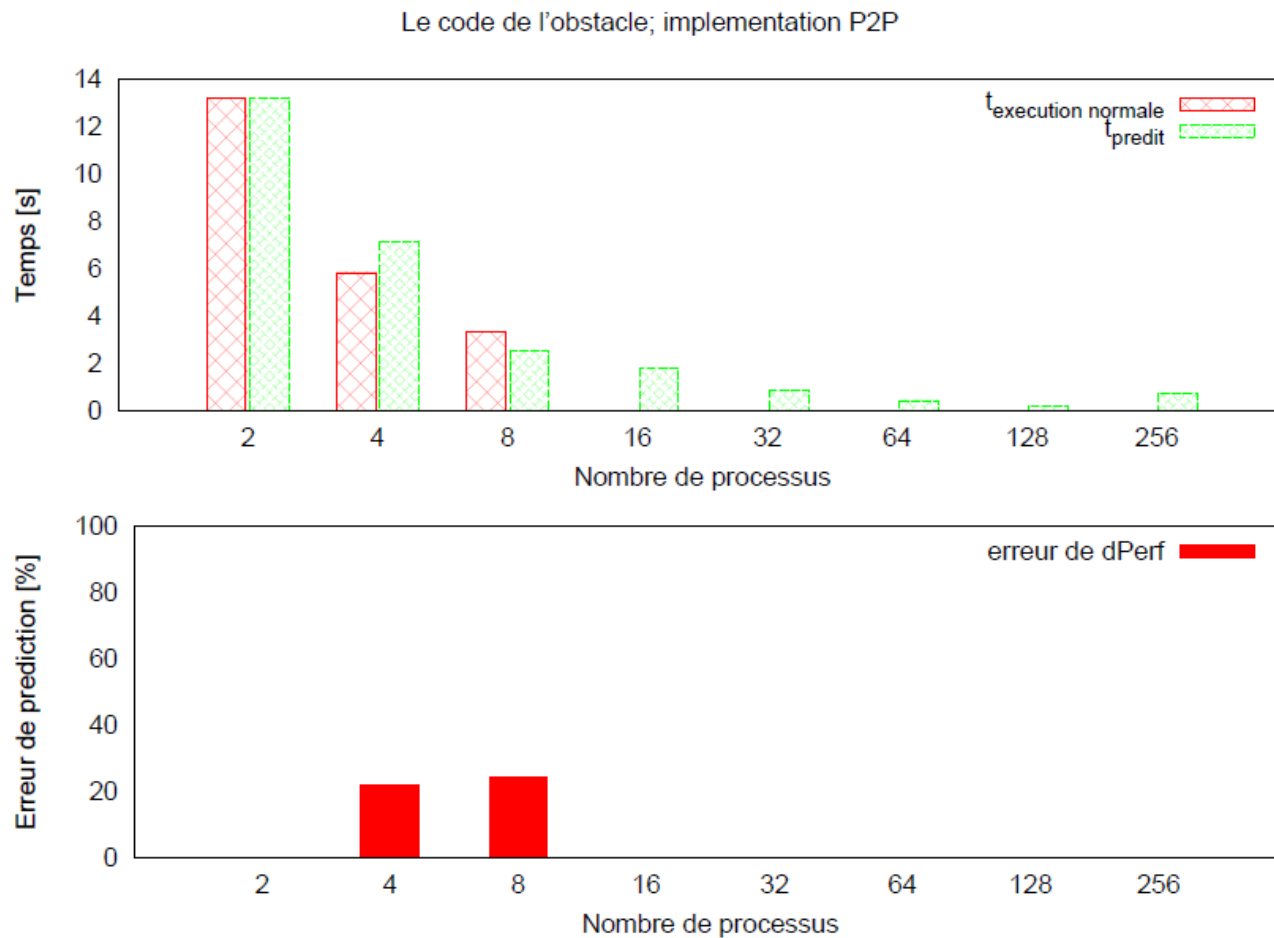
- Trace-based simulation with SimGrid MSG

- Network configurations



# *dPerf* and P2P apps.

- How ?
  - Scaling of results
    - Trace-based simulation with SimGrid MSG
      - Number of nodes



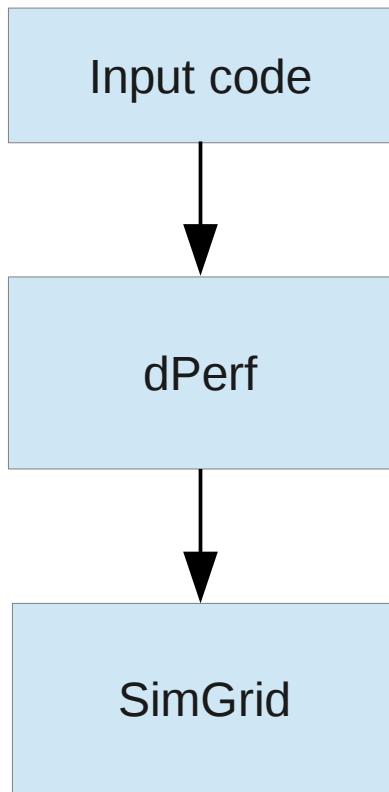
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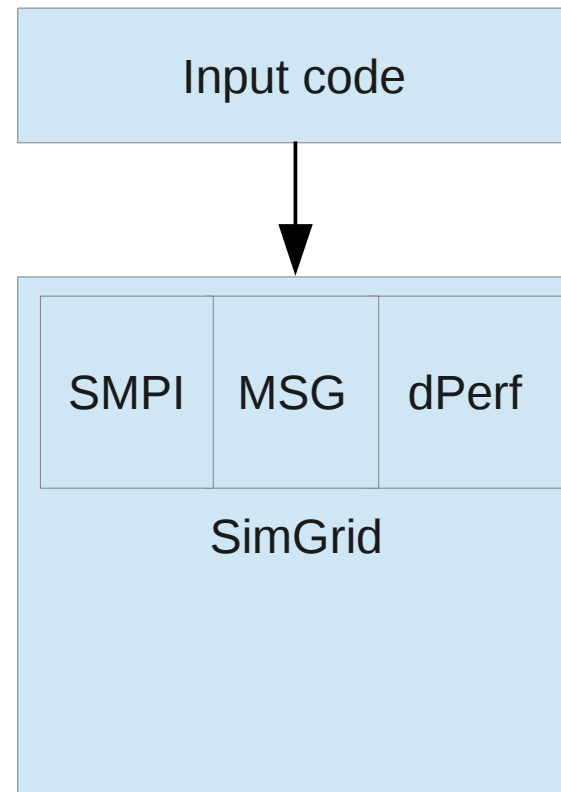


# Module for SimGrid

- Initially



- After integration



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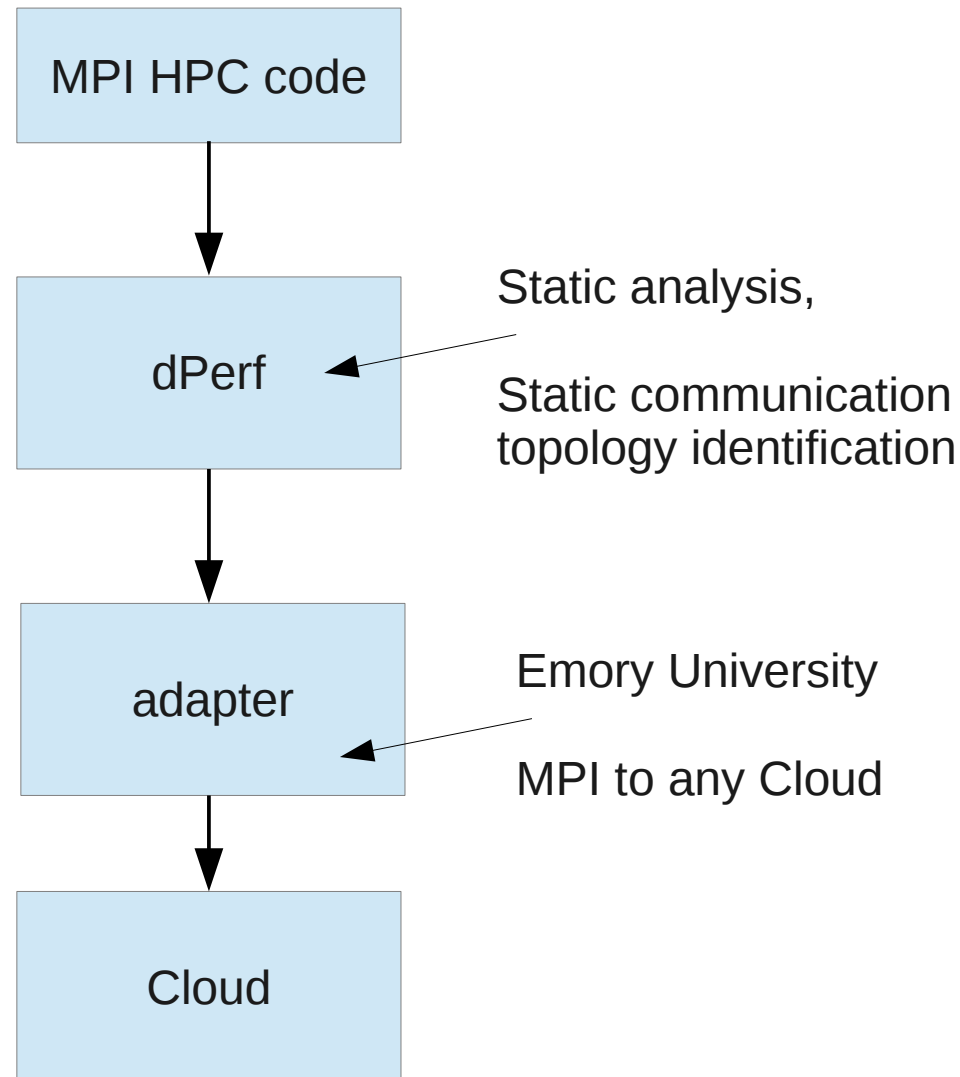
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# *dPerf* for Cloud apps.

- Ongoing
- Many perspectives

# *dPerf* for Cloud apps.

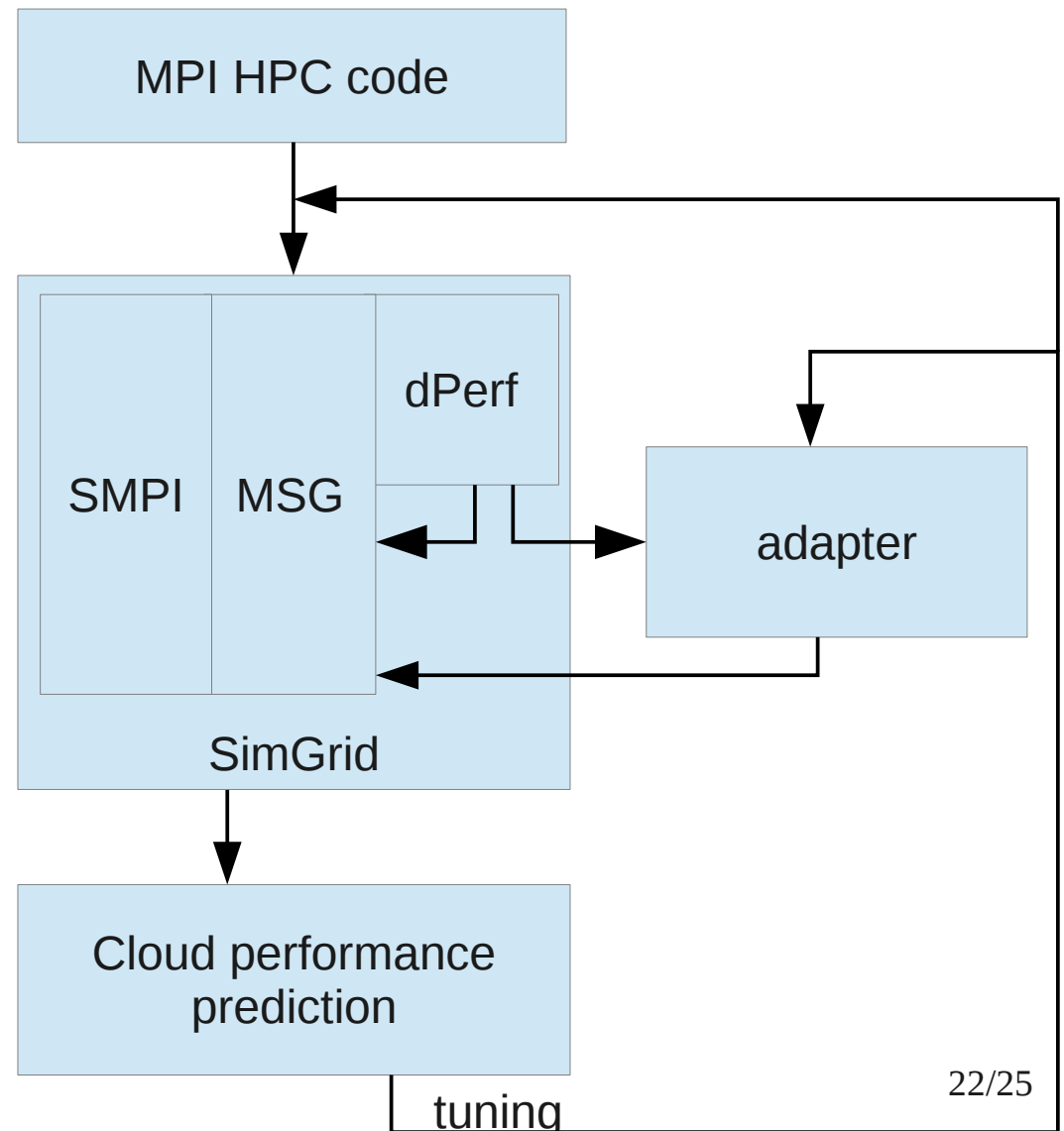
- Phase 1



# *dPerf* for Cloud apps.

- Phase 2

- Performance prediction of applications on Cloud
- Fine tune *dPerf*
- Compare original performance to adapted performance



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# Future work

- Support for C++, Fortran
- Multi-core
- Memory
- SMPI ? dPerf ? MSG
  - Helps the integration process
- Compare to other tools based on MSG