

# Application Evaluation on Candidate Ultra-Scale Platforms

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# Application Evaluation



- ❖ Microbenchmarks, algorithmic kernels, performance modeling and prediction, are important components of understanding and improving architectural efficiency
- ❖ However full-scale application performance is the final arbiter of system utility and necessary as baseline to support all complementary approaches
- ❖ Critical to conduct evaluation work emphasizes full applications, with real input data, at the appropriate scale
  - In-depth studies reveal limitation of compilers, operating systems, and hardware, since all of these components must work together at scale to achieve high performance.
- ❖ Requires coordination of computer scientists and application experts from highly diverse backgrounds
- ❖ Critical understand algorithmic aspects enable/prevent petascale computation
- ❖ Inevitably leads to performance insights and optimizations approaches

# Performance Characteristics



Examining set of applications with a variety of numerical methods and communication patterns with the potential to run at petascale

