Tutorial S4 Outline

- Parallel Computing Resources and Performance Issues
  - Parallel Architecture Overview
  - Recent Computer Center Choices and Comparisons
  - Measuring and Reporting Performance
  - Application Speed-up
- Parallel Programming Models and Languages
  - Parallelization Strategies
  - Major Implementations (MPI, OpenMP)
  - Concepts from MPI-2
- Mixed Model Programming on Hybrid Systems
  - MPI + OpenMP Programming Rules
  - Parallel Programming Models on Clusters of SMP Nodes
  - Mixed Model Communication Benchmarks on Several Platforms
  - Overlapping Communication and Computation
  - Future Developments
- Implementation
  - Debugging Strategies
  - Performance Analysis Tools
  - Single CPU Optimizing Issues
  - Global Optimization
  - I/O and Check Pointing in Parallel
  - Scripting Languages and Code Wrappers
- How to Design Real Applications
  - Cornerstone Codes from Industrial and Scientific Applications
  - Mixed Model Programming in Practical Applications
  - Complex Fully-integrated 3D Simulations
- Applications Development Path to a Petaflop
  - Clusters
  - BlueGene/L
  - Future