Tutorial M11 Outline

The tutorial will have the following general organization:

Introduction
- Motivation
- Terminology

Instrumentation techniques
- Source code/static instrumentation
- Library instrumentation
- MPI Instrumentation (PMPI)
  - Hands-on exercises using PMPI
- OpenMP Instrumentation
  - Hands-on exercises using OPARI
- Binary/Dynamic Instrumentation
  - Hands-on exercises using DPCL

Measurement
- Timing routines
- Clock synchronization
- Performance data capture
  - Program counter sampling
  - Event counting
  - Interval timing
  - Event tracing
- Hardware performance counter interfaces
  - Hands-on exercises using PAPI

Performance data analysis and representation
- Data storage
  - Self defined data format
  - XML based profile data formats
  - Trace file formats
    - Hands-on exercises generating trace data
- Data management techniques

Performance visualization and presentation
- Simple ascii text
- Graphical user interfaces
  - Source code browsers
  - Statistics displays
  - Time line graphical interfaces
  - Tree / hierarchy browsers
- Immersive environments

Open research problems
- Scalability; Large complex systems
- Experiment support
- Performance database
- Performance prediction
- Automatic performance tools