

# What is meant by “real world workload”? (my definition)

- The application is in use *today* (or tomorrow, but not yesterday!) by your target user
- The application represents a common use and/or one which requires the most processing power for your target user
- The environment in which the benchmark is run adequately represents the environment of the target user
- The data input used adequately represents the data set that would be used by the target user

# Some challenges faced with real world workloads

- Many critical real world applications are proprietary
- Workloads may be too large for simulation in a reasonable timeframe, limiting use
- User environment may be difficult to duplicate
- Significant code modifications could be required to run the application in your benchmarking environment
- More diversity required due to the wide range of user applications (one user's real world workload could be another user's synthetic benchmark)
- Real world workloads are always changing...

# Some advantages to using real world workloads

- If the application in question is one your customer cares about...they will now believe you!
- May be the only way to get accurate performance data on special purpose instructions that may be application specific
- It is the best way to increase understanding of how exactly the processor is being used: design decisions can be made with more accuracy and confidence
- At a minimum, increases designer confidence level that the proper tradeoffs were made

# So, will application based benchmarks replace synthetic benchmarks?

- Not likely:
  - Still easier to make basic design tradeoff decisions using mostly synthetic benchmarks
  - Simulation time will always be a factor
  - Standards for comparison based on synthetic benchmarks are already in place and change very slowly...hot applications change quickly

# So how should real world workloads be used?

- To augment a mostly synthetic benchmark suite with carefully chosen applications that match your target user
- For making design tradeoffs in the middle and end phases of the project (synthetic is fine for early tradeoffs)
- To measure performance and make tradeoffs for special purpose instructions specifically added for that class of applications
- As a 'closer' in sales with key customers