What About Parallel Programmer Productivity?

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- Extensive reuse of libraries, but no reuse of frameworks
  - Everyone has to write MPI code
- Codes are multi-language and run on remote machines
  - Many software tools won't work in this environment
- Debugging is very challenging
  - Modules may work in isolation, but fail when connected together
  - Program may work on 32 processors, break on 64 processors
  - Hard to debug failures on hundreds of processors (print statements don't scale up!)
- Portability is a must
  - Can't commit to technologies unless they know they will be there on future platforms

Who is our Audience?

- **It's not (or shouldn't be) Application Builders**
  - Desire to tune to a specific platform is very limited
  - PERC/PERI – Are the tools the people the real value?
- **It should be:**
  - Compilers
  - Runtime system

Infrequently Mentioned Here (But Important)

- **Batch Queue**
  - Biggest performance bottleneck to many groups
- **Need for Things to Work Remotely**
  - Try Totalview with a couple thousand miles between you and the machine
- **I/O**
  - Before and After the “program” runs
  - Might be local or cross country/ocean