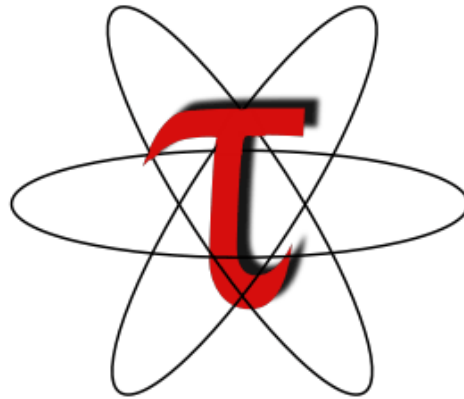




TAU Performance System[®]



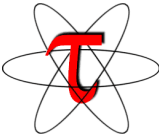
Sameer Shende

OpenSHMEM BoF, 155-C, SC'12, Thu. Nov 15, 2012, 12:15pm

<http://tau.uoregon.edu>

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TAU Performance System[®]

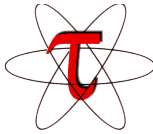


- **Tuning and Analysis Utilities (18+ year project)**
- **Comprehensive performance profiling and tracing**
 - Integrated, scalable, flexible, portable
 - Targets all parallel programming/execution paradigms
- **Integrated performance toolkit**
 - Instrumentation, measurement, analysis, visualization
 - Widely-ported performance profiling / tracing system
 - Performance data management and data mining
 - Open source (BSD-style license)
- **Easy to integrate in application frameworks**

What is TAU?

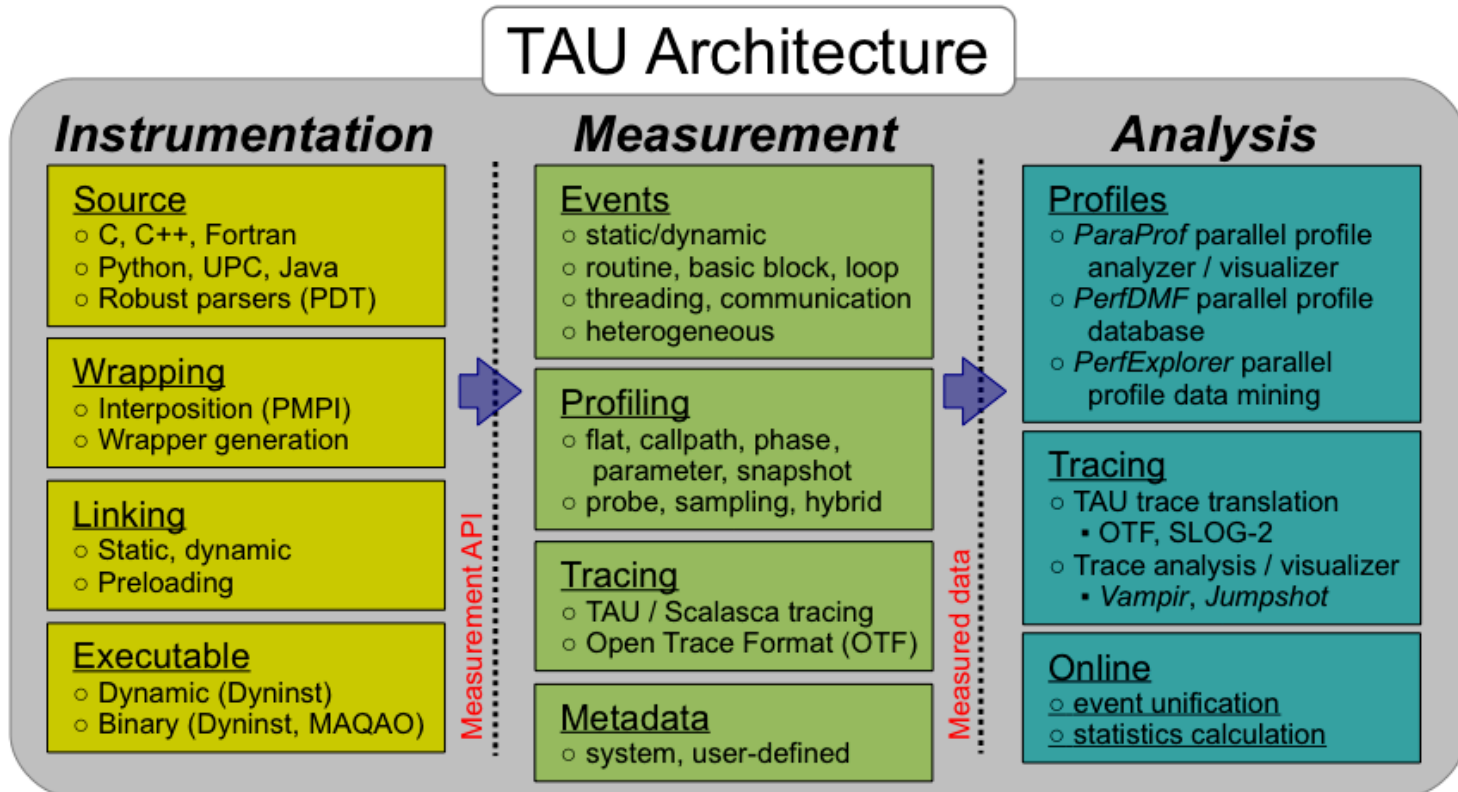
- **TAU is a portable profiling and tracing tool that supports OpenSHMEM**
- **Profiling and tracing can measure time as well as hardware performance counters (cache misses, instructions) from your CPU**
- **TAU can automatically instrument your source code using a package called PDT for routines, loops, I/O, memory, phases, etc.**
- **TAU runs on most HPC platforms and it is free (BSD style license)**
- **TAU has instrumentation, measurement, and analysis tools**
- **TAU interfaces with other tools such as Jumpshot trace visualizer, PAPI hardware counter library, and Vampir**
- **It can scale to large core counts**

TAU Performance System[®]



Parallel performance framework and toolkit

- Goal: to supports all HPC platforms, compilers, and runtime systems
- Provides portable instrumentation. measurement.

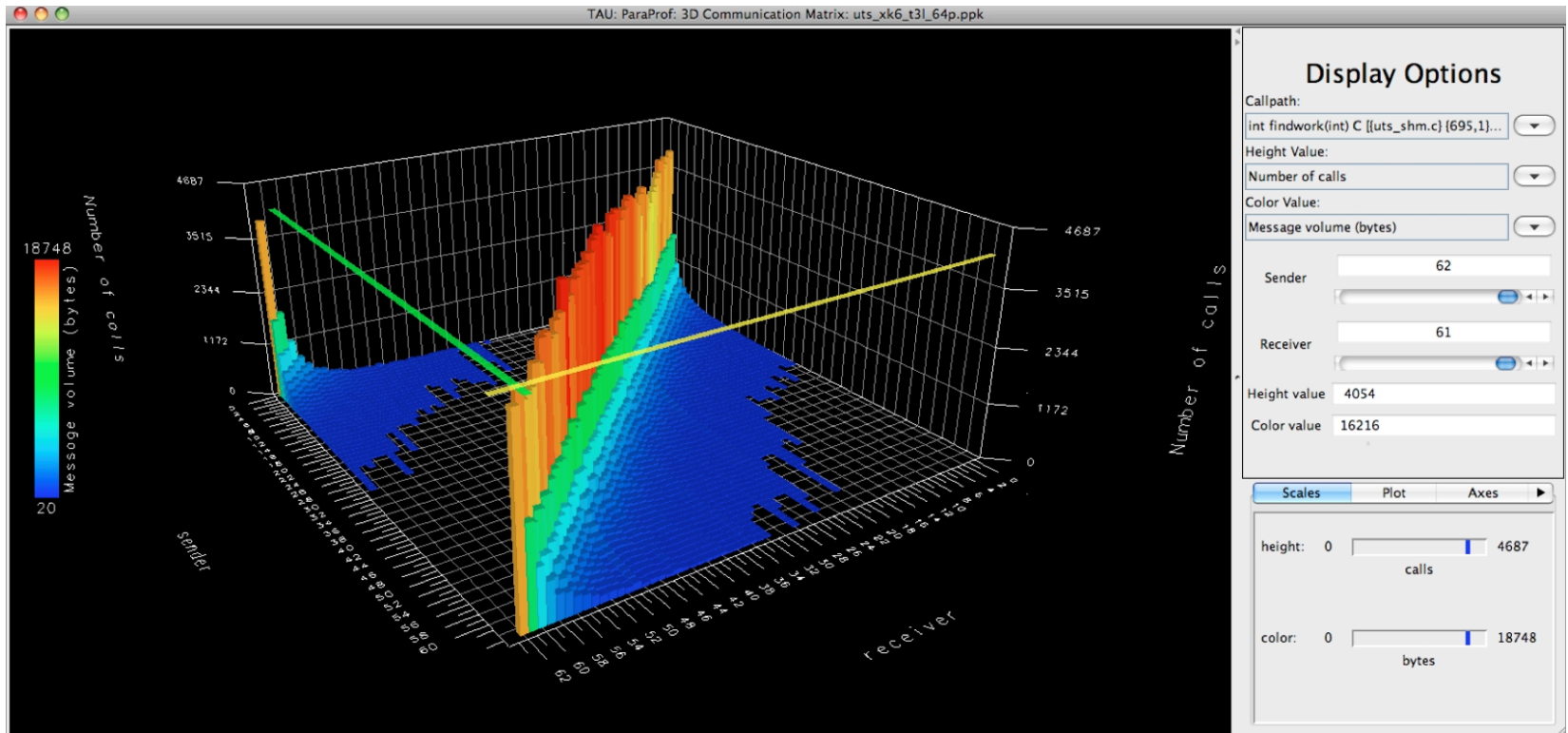


Key features of TAU

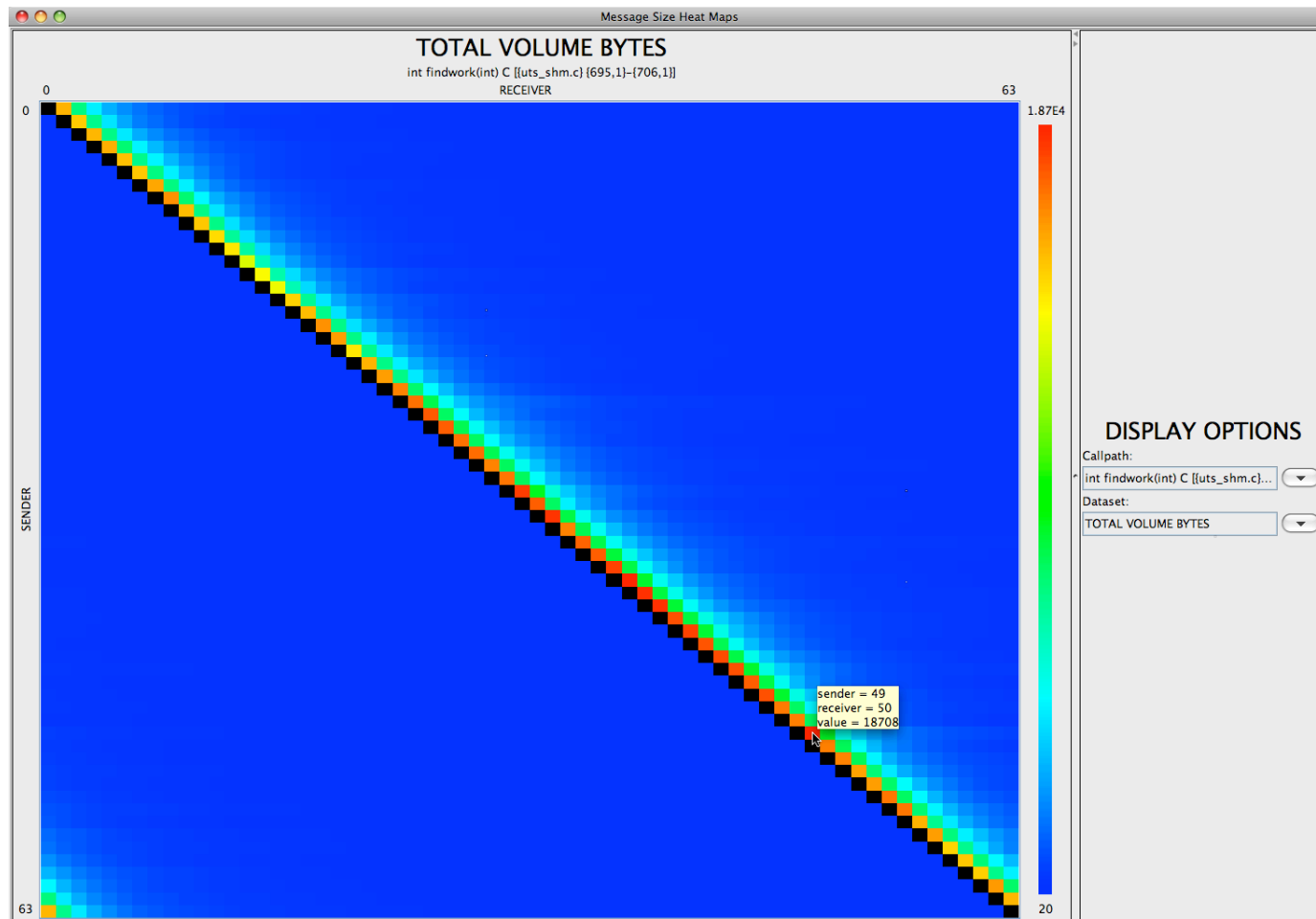
- Support for tracking one-sided communication for OpenSHMEM
- Support for outer-loop level instrumentation using both source (PDT), and binary rewriting
- Support for compiler based instrumentation (Intel, GNU...)
- Support for instrumentation of memory and I/O operations for accurate heap memory usage, memory allocation/de-allocation, and I/O volume and bandwidth computations
- Wrapping technology for instrumenting any external library
- Performance database technology to store performance data, cross experiment and data mining tool (PerfExplorer)
- Support for hybrid sampling and direct measurement
- 3D profile browser, ParaProf
- Support for debugging (Callstack, memory leak detection, and *soon* runtime bounds checking)
- Cross-platform and cross-language portability

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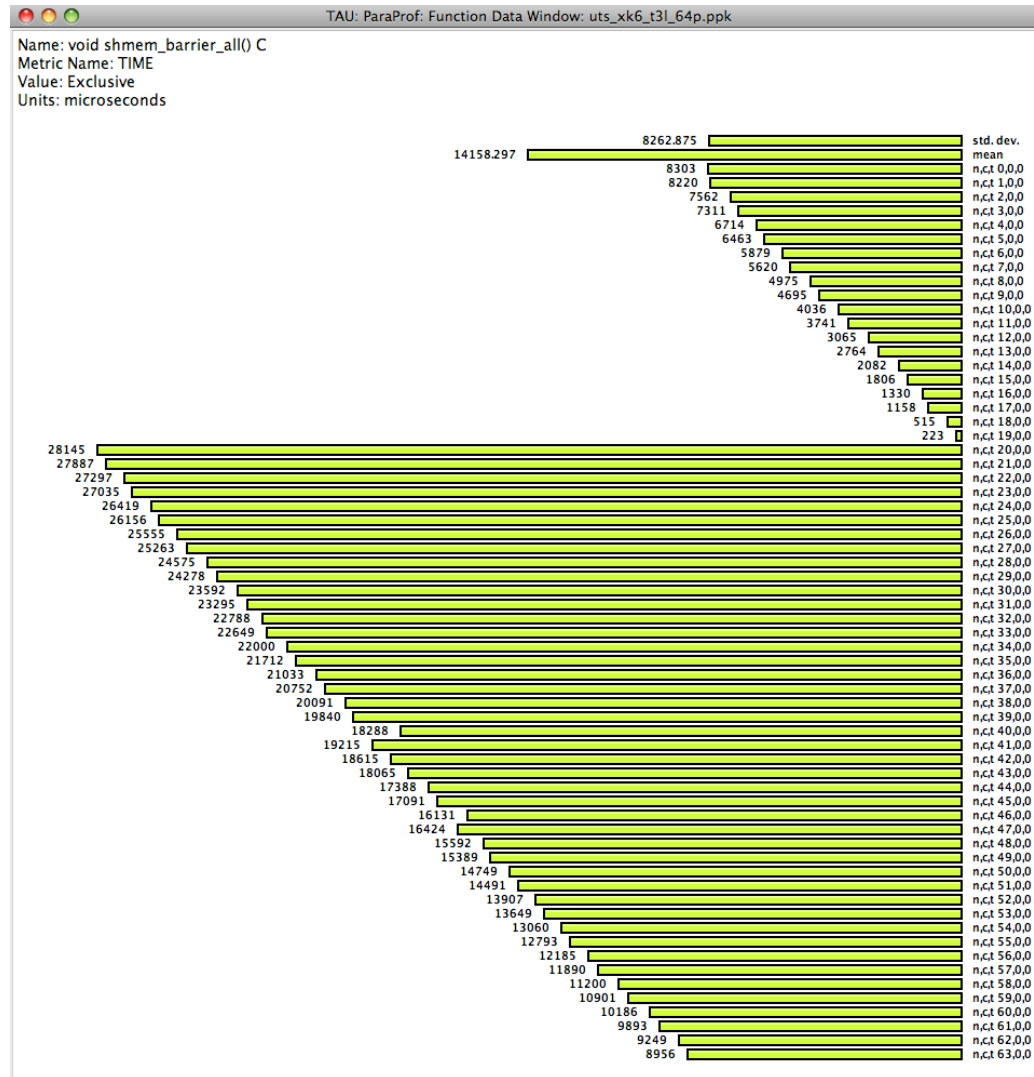
3D Communication Matrix Display



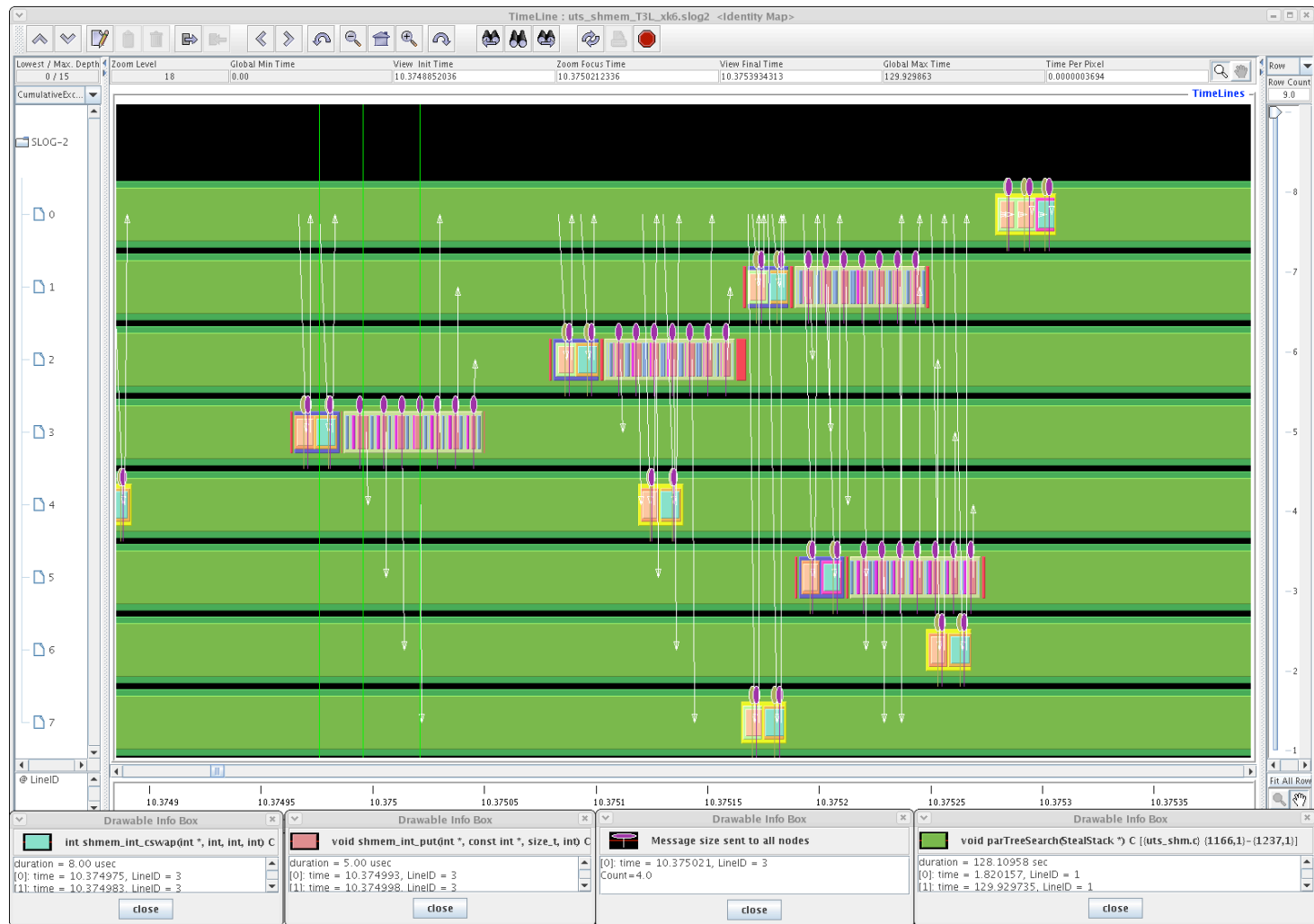
2D Communication Matrix Display



SHMEM Barrier

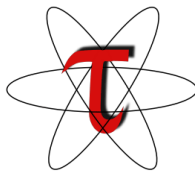


Jumpshot Trace Visualizer



Support for SHMEM

- **SGI SHMEM**
- **Cray SHMEM**
- **OpenSHMEM (1.0d)**
- **Plans for other OpenSHMEM implementations that may not support PSHMEM**
 - IBM
 - HP
 - OpenSHMEM [UH] with compilers other than GNU
 - Mellanox



**Please stop by our PGAS booth (#2137)
for OpenSHMEM DVDs.**

**Download TAU from our website:
<http://tau.uoregon.edu>**

**<http://www.hpclinux.com>
[LiveDVD]**

<http://tau.uoregon.edu>