



# OpenSHMEM Project Update

OpenSHMEM BOF

SuperComputing '11

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# OpenSHMEM Project Update

- Acknowledgement
  - This work used the facilities of the Oak Ridge National Laboratory Extreme Scale Systems Center funded by the Department of Defense

# OpenSHMEM Project Update

- Introduction
  - Project Goals
  - The OpenSHMEM library/API
- Validation and Verification
- Outreach
- OpenSHMEM extensions

# OpenSHMEM Project Update

- Introduction
  - Project Goals
    - Reference Implementation of library
      - On top of GASNet
      - Portable
      - Observable (can trace internal behavior)
      - Platform for future API enhancements
    - Vendors implement specification for their hardware/solutions

# OpenSHMEM Project Update

- Introduction
  - Project Goals
    - Specification
      - Current 1.0 replicates SGI SHMEM (baseline)
      - Future 1.x, 2.x, ...
        - » Take new ideas from community
        - » OpenSHMEM org. approves changes
        - » Reference implementation is test-bed

# OpenSHMEM Project Update

- Introduction
  - Project Goals
    - Outreach
      - Conferences
      - Tutorials

<http://www.openshmem.org/>

# OpenSHMEM Project Update

- Validation and Verification

- Feature tests

- Check consistency of API and semantics

- Data transfer (static and dynamic symmetric var.)
      - Barrier
      - Broadcast
      - Collects
      - Accessibility
      - Locks
      - Reductions
      - Synchronization



# OpenSHMEM Project Update

- Validation and Verification
  - Performance test
    - Checks scalability of operations
      - Put, get
      - Barrier
      - Broadcast
      - Collects



# OpenSHMEM Project Update

- Validation and Verification
  - In the next release of V&V
    - Test corner cases
    - Test undefined behavior
    - Tests with different active sets combinations for collectives
    - Add OpenSHMEM benchmarks

# OpenSHMEM Project Update

- Official Website
  - <http://www.openshmem.org/>
  - Hosted at UH.
  - Updated with new content.
  - Forums
    - Bulletin board style interaction with the community.
  - Wiki
    - OpenSHMEM knowledge base.

# OpenSHMEM Project Update

- Community Mailing List
  - `mailto:openshmem-join@email.ornl.gov`
  - Mailing list for all things OpenSHMEM.
  - Provides the majority of feedback we receive.
  - It will be moved to the OpenSHMEM domain in the future.

# OpenSHMEM Project Update

- Conferences
  - PGAS 2011 (UH/Rice hosted)
    - We presented an OpenSHMEM tutorial.
      - OpenSHMEM cheat sheets were given out during the tutorial.
    - We interacted with other OpenSHMEM groups and individuals working with the PGAS model.
    - Obtained access to other systems on which to run SHMEM code.

<http://pgas11.rice.edu/>

# OpenSHMEM Project Update

- Conferences
  - SC11
    - PGAS Booth (#124)
      - Presenting the OpenSHMEM poster and booth duty.
    - Flyers
      - A flyer to be given out at SC11.

# OpenSHMEM Project Update

- SHMEM extensions and a book
  - Proposed extensions include
    - Non-blocking memory allocation (synch. later)
    - Regular namespace (shmem\_\*)
    - Non-blocking put/get (per-comms. handles)
    - More collectives
    - User-defined reductions
    - Interaction with other models
    - Better “sub-team” definition
      - Regular, strided active sets -> communicator-like teams
    - Thread safety?