

## Introduction

- ❖ OpenSHMEM is an effort to create a standardized SHMEM library for C and Fortran
- ❖ OpenSHMEM is a Partitioned Global Address Space (PGAS) library and supports Single Program Multiple Data (SPMD) style of programming
- ❖ SGI's SHMEM API is the baseline for OpenSHMEM Specification 1.0

## OpenSHMEM Features

- ❖ Use of symmetric variables and point to point “put” and “get” operations.
- ❖ Remote direct memory access enables one-sided operations, leading to performance benefits.
- ❖ A standard API for different hardware provides network hardware independence and renders support to different network layer technologies.
- ❖ Along with data transfer operations the library provides synchronization mechanisms (barrier, fence, quiet, wait), collective operations (broadcast, collection, reduction), and atomic memory operations (swap, add, increment).
- ❖ Open to the community for reviews and contributions.

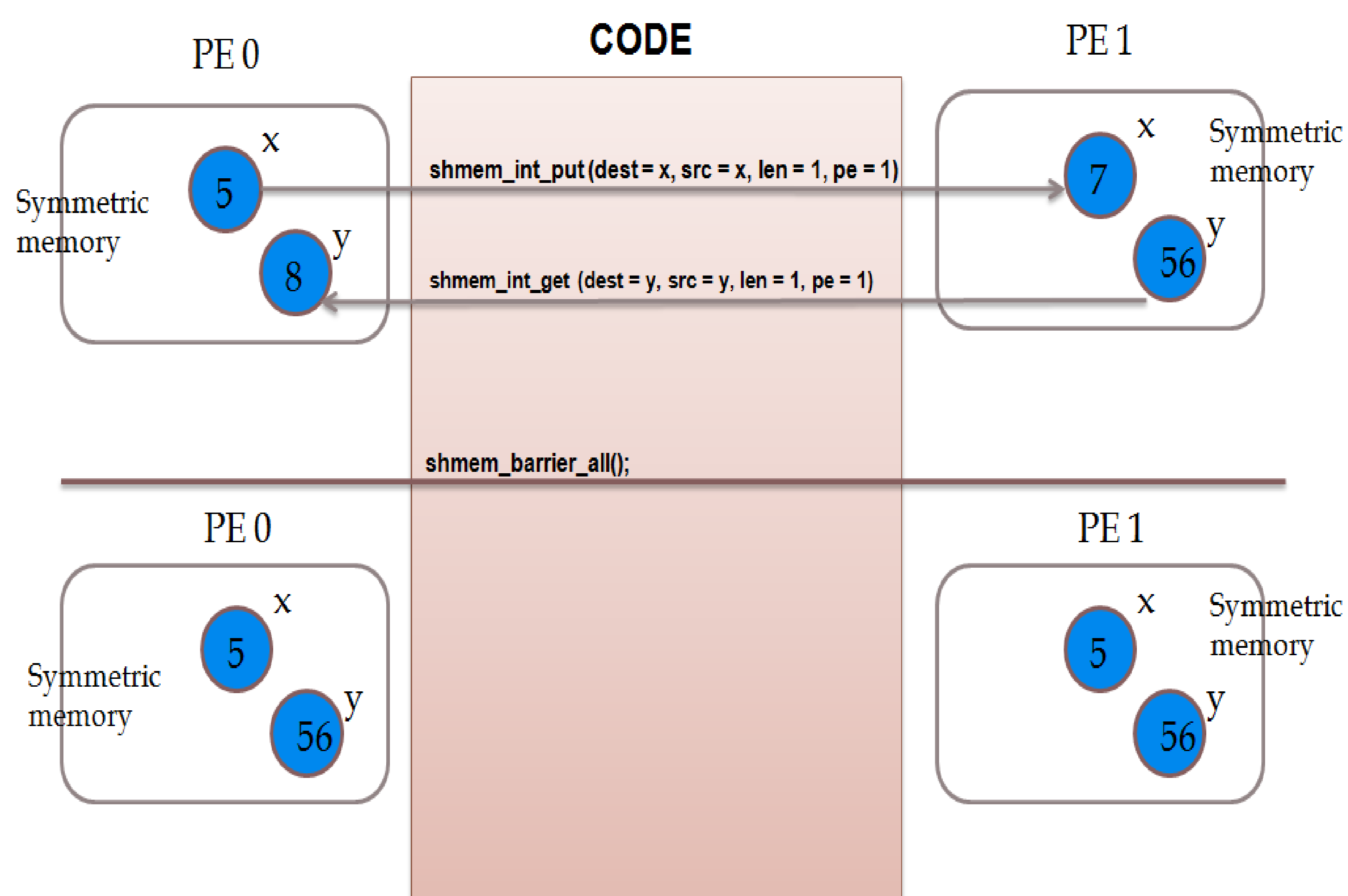


Figure 1. One-sided communication

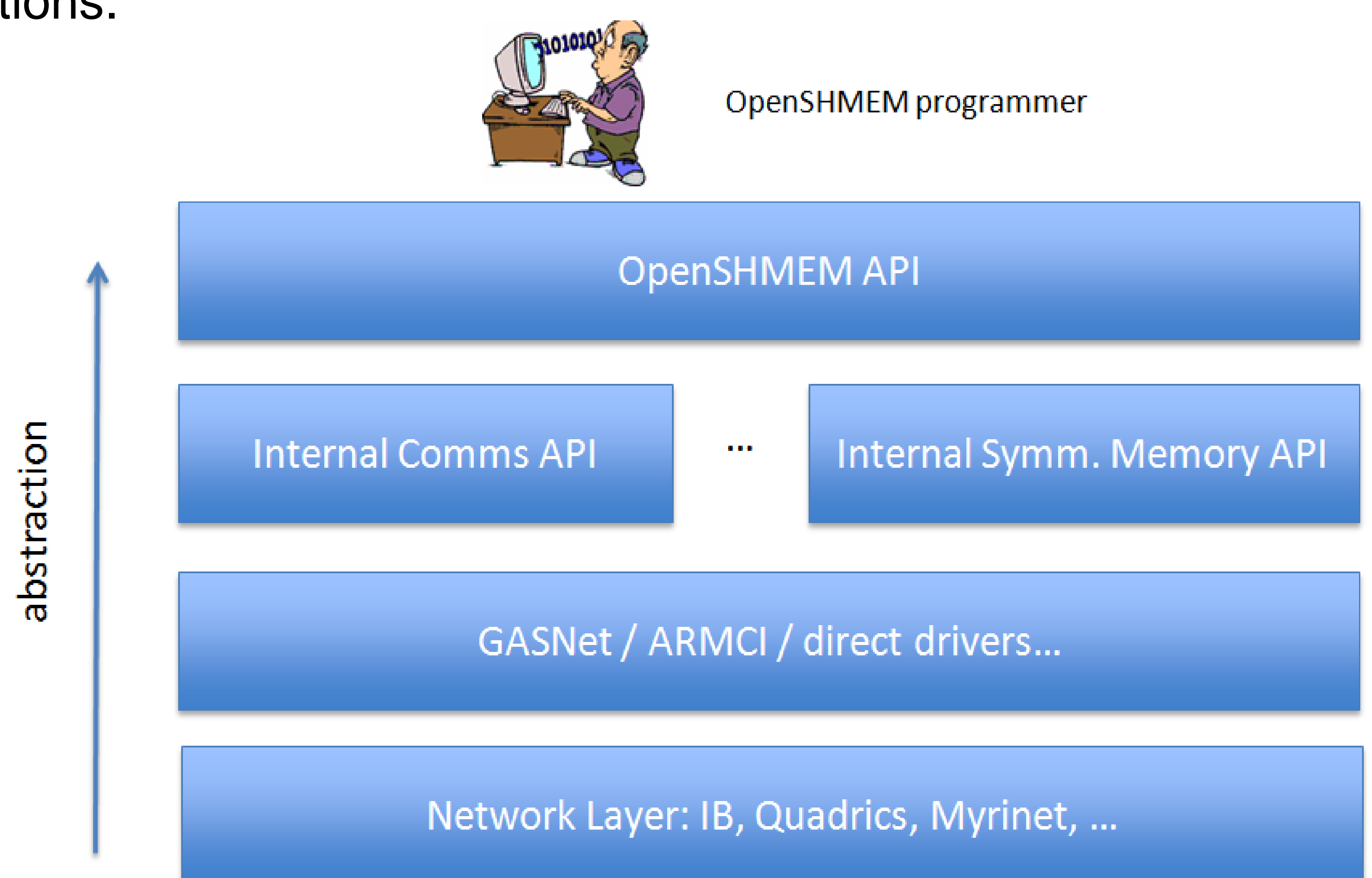


Figure 2. University of Houston Implementation

## Current Status

- ❖ University of Houston is in the process of developing a portable OpenSHMEM library.
- ❖ OpenSHMEM Specification 1.0 man pages are available.
- ❖ OpenSHMEM mailing list for discussions and contributions can be joined at <https://email.ornl.gov/mailman/listinfo/openshmem>.
- ❖ Website for OpenSHMEM and a Wiki for community use are available.

## Future Work and Goals

- ❖ To build a portable OpenSHMEM library.
- ❖ Re-use concepts from existing libraries to enrich and extend OpenSHMEM API and functionality.
- ❖ Develop OpenSHMEM Specification 2.0 with the co-operation and contribution from the SHMEM community.