Scalable Software Interconnect for Distributed Radar Signal Processing

- Jeff Rudin, Mercury Computer Systems, Inc., jrudin@mc.com
- Luke Cico, Mercury Computer Systems, Inc., lcico@mc.com
- Ken Cain, Mercury Computer Systems, Inc., kcain@mc.com
- Myra Jean Prelle, Ph.D., Mercury Computer Systems, Inc., mprelle@mc.com
- Ethan Luce, Raytheon, Ethan_C_Luce@raytheon.com
- Terri Potts, Raytheon, terri_potts@raytheon.com
Problem: Multicomputer Radar System

- Throughput and latency achieved through pipelined SPMD architecture
  - Memory access efficiency achieved by data reorganization at global and local levels
  - Concurrent processing and inter-stage data-reorganization achieved through DMA
  - Processing efficiency achieved through platform optimized function library
Solution: Distributed Dataflow Management

- **Use a standardized framework and terminology**
  - Manage complex data reorganization and redistribution on a distributed memory system
  - Achieve concurrent reorganization, redistribution, communication, and processing
  - Access memory efficiently for high throughput
  - Achieve application and performance scalability