RMA Working Group Status

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New Plan: Merge and then Split the Proposals

- Some ideas were killed
- Other ideas were merged
- Merged ideas will be brought forth as a "small" set of individually motivated proposals
  - *Proposal 1: Basic semantics to improve application usage scenarios*
  - *Proposal 2: Extensions/Improvements to the memory model*
  - *Proposal 3: User defined RMW/Accumulate ops*
  - *Proposal 4: Query for cache coherency support*
  - *Proposal 5: Individual requests for completion*
  - *Proposal 6: Remote copy*

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Typed compare and swap

- Are we willing to add a typed compare-and-swap?
  - Thought is that compare and swap would be for one element only
  - Type would match on source and target
- One version of compare and swap:
  - MPI_Comp_and_swap(void *src, void *comp, MPI_Datatype type, int rank, MPI_Aint displacement, MPI_Win win);
- Alternative would be one function per type
  - MPI_Comp_and_swap_int (int src, int comp, int rank, MPI_Aint displacement, MPI_Win win);
  - MPI_Comp_and_swap_float (float src, float comp, int rank, MPI_Aint displacement, MPI_Win win);

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User defined Operations

- Should we allow them?
  - Requires a collective function call to register it across all processes
  - All restrictions as MPI_Reduce apply
- Pros:
  - Turing complete (users can implement their own handlers)
    - E.g., Reset of target buffer
- Cons:
  - Locking issues (concurrent RMWs or ACCs from multiple origins on the same target)
  - Progression issues

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What are the goals of RMA?

- Three basic options:
  - Support direct usage by users
  - Support 3rd party communication libraries
    - Which ones?
      - GASNet?
      - ARMCI?
  - Support high level PGAS capabilities
    - Which ones?
      - UPC?
      - CAF?
      - Global Array?

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MPI_ALLOC_MEM

- Lock/Unlock semantics in MPI-2.2 require only memory allocated with MPI_ALLOC_MEM to be used for portability
  - Reason: this allows some platforms to implement passive target without an asynchronous agent
- Vote:
  - Does this still need to be a case for "portability" (it'll continue to be required for "performance")?

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