Fault Tolerance Working Group Update

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FTWG Overview

- Items already adopted for the next version of the MPI Standard (including the draft)
  - Improved error handler definitions
  - New predefined error handler
  - Non-catastrophic errors

- Items still being worked on
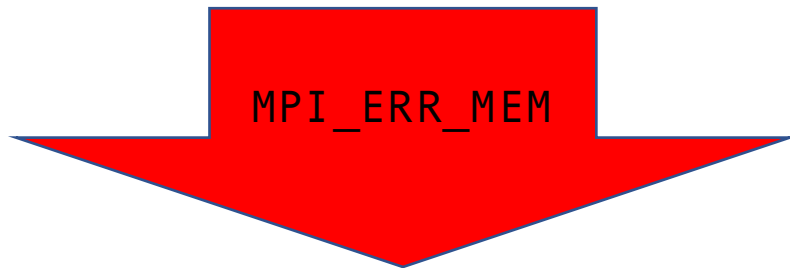 - Splitting ULFM into smaller pieces to have better integration with other FT models

Improved Error Handling

- Clarified that `MPI_ERRORS_ARE_FATAL` should abort all processes in the job (connected processes)
  - This is what you're currently experiencing anyway

- Changes where errors are raised when there's nowhere else to do so
  - `MPI_COMM_WORLD -> MPI_COMM_SELF`
  - Backward incompatible change! (Though probably not significant)
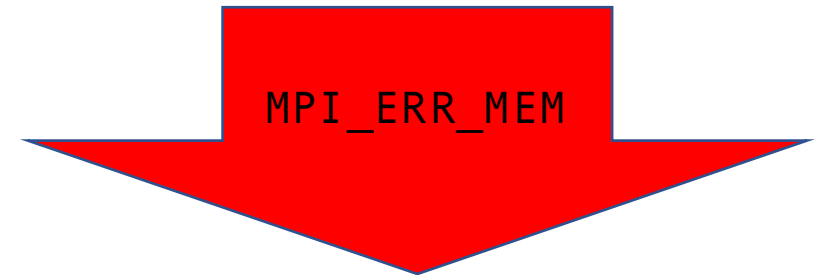
New Error Raising Example

Old

```
MPI_alloc_mem(…);
```

MPI_ERR_MEM

```
Errhandler_fn(
      MPI_COMM_WORLD,
      MPI_ERR_MEM,
      …
);
```

New

```
MPI_alloc_mem(…);
```
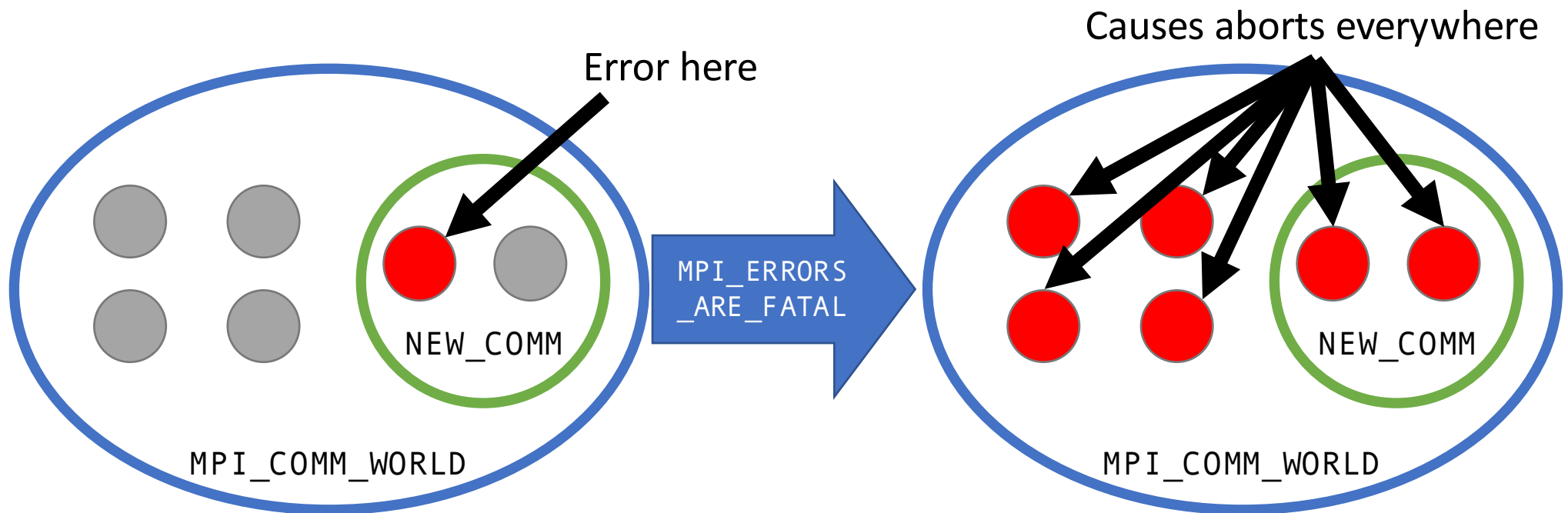
MPI_ERR_MEM

```
Errhandler_fn(
      MPI_COMM_SELF,
      MPI_ERR_MEM,
      …
);
```

Only a problem when changing error handler of `MPI_COMM_WORLD` from default and not `MPI_COMM_SELF`. Important for localizing error recovery.
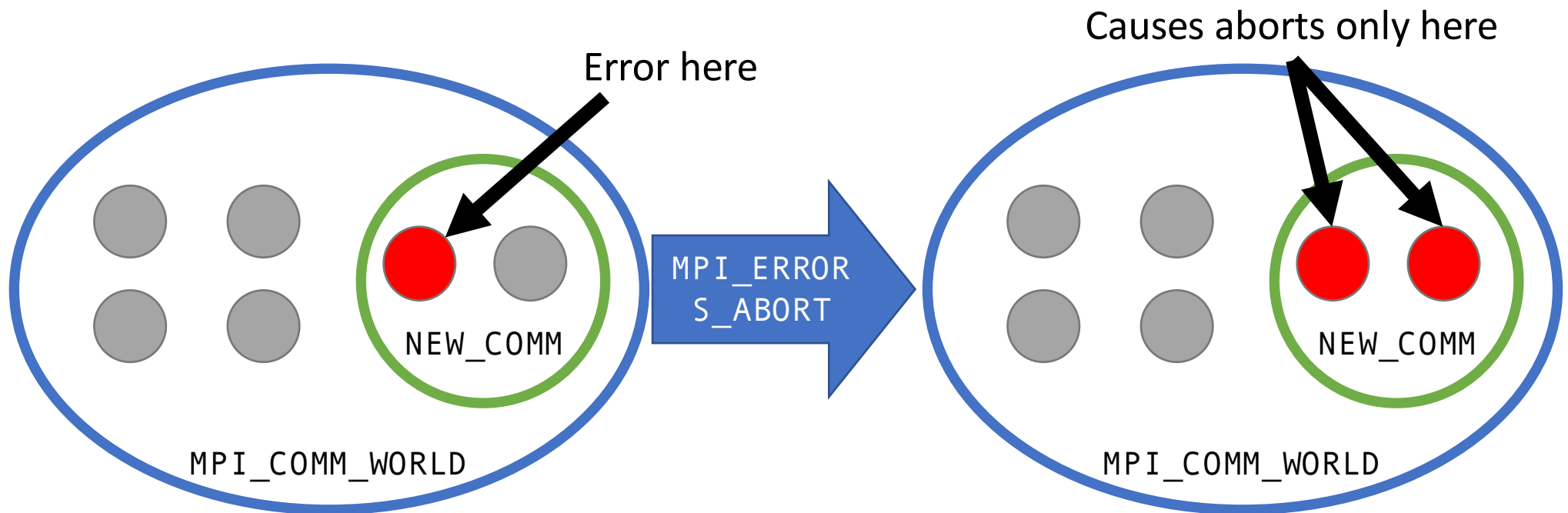
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- Added new predefined error handler which only causes processes in the affected communicator to abort

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Non-Catastrophic Errors

- ~~After an error is detected, the state of MPI is undefined.~~
- MPI should return as much information as possible about errors.
  - Gives users more control over how to handle errors.
  - If you *really* want to, you *could* construct a resilient point-to-point-only application on top of this change.
- This small change (along with the previous one), should actually provide enough error handling improvements to avoid application aborts during simple errors like resource exhaustion.

Still In Progress

- More General Fault Tolerance
  - Working to subdivide the ULFM proposal to allow other FT models (either in the MPI Standard or not) to live alongside it better.
  - Still hope to have a complete fault tolerance solution in MPI in the future.
  - May be more integrated with other long term topics things like "Sessions".

Call For Participation

- Always looking for more help (biggest bottleneck is participants' time)
- Join the (semi) weekly conference calls
  - Wednesdays at noon Eastern US
  - Dial-in info sent to mailing list
- Contact the WG
  - mpiwg-ft@lists.mpi-forum.org
- Contact me directly
  - wesley.bland@intel.com
- See our progress (and all other WGs)
  - https://www.mpi-forum.org/mpi-40/
  - https://www.github.com/mpiwg-ft/ft-issues