BLUE WATERS

BREAKING THROUGH THE LIMITS

The Eclipse Ecosystem on Blue Waters

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GREAT LAKES CONSORTIUM FOR PETASCALE COMPUTING | NCSA | IBM | 

Acknowledgements

- Blue Waters Eclipse Collaboration (including IBM (Beth Tibbitts, Pete Nicholls, I-hsin Chung, and more)), RENCI (Rob Fowler), LSU (Gabrielle Allen, Erik Schnetter), Illinois (Ralph Johnson), NCSA (Al Rossi, Rick Kufrin).
- National Science Foundation

Overall Eclipse Integration Strategy

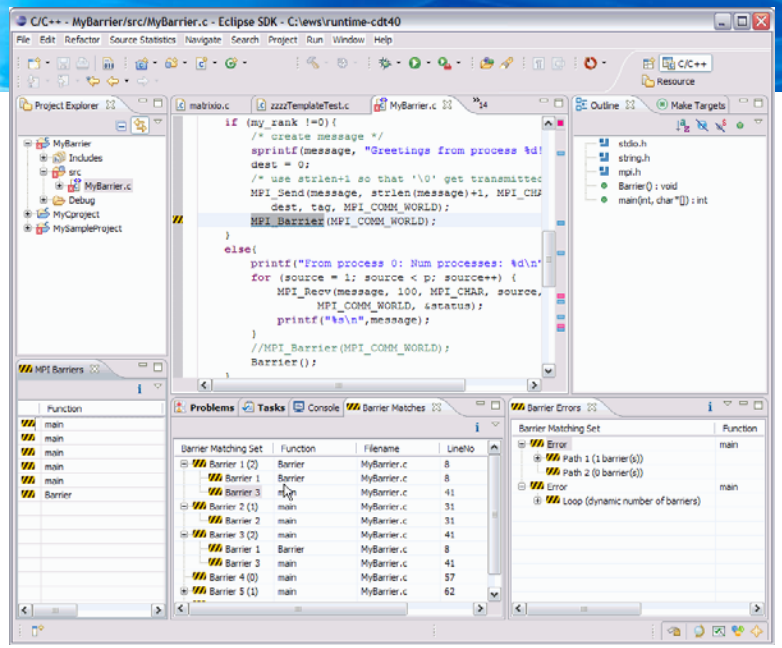
- Combine capabilities from a number of groups to deliver suite of capabilities supporting computational science and engineering
  - Code/Test/Debug
  - Performance Analysis/Assessment
  - Deployment
  - Production Runs

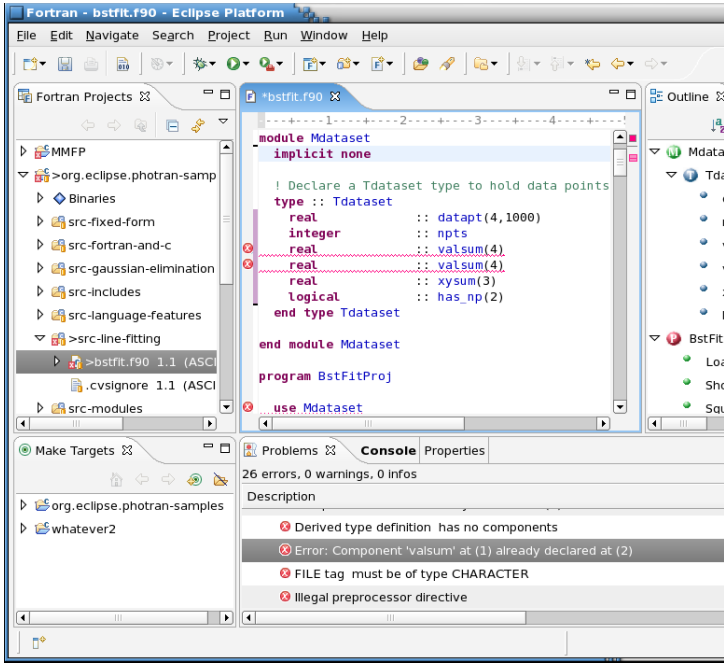
Goals of today's talk

- Trying to understand community needs
- Will present aggregation of current capabilities
- Questions to consider
  - What combination of capabilities becomes truly compelling?
  - What interactions between capabilities are necessary or desirable?
  - What platforms would such capabilities need to be supported on in order to be truly useful?
  - What tools from the community should we consider to integrate for Blue Waters?
  - What use cases should we expect to support "best" with these tools?

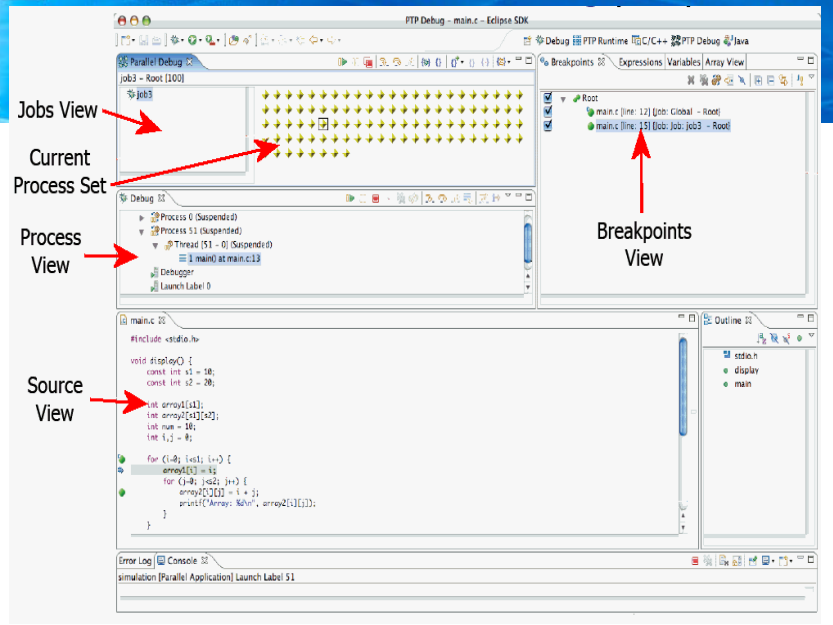
Code/Test/Debug

- Contributions from IBM (Credit: Beth Tibbitts)
  - C Development Kit
    - http://www.eclipse.org/cdt
  - Parallel Tools Project
    - http://www.eclipse.org/ptp
- Contributions from Illinois (Credit: Ralph Johnson)
  - Photran (Fortran Development Kit)
    - http://www.eclipse.org/photran
- Looking for proper support of computational toolkits (Cactus, Gabrielle Allen, LSU)





Debugging, Performance Tools



- For Blue Waters
  - IBM contributions
    - PERCS scalable debugger
    - HPC Toolkit (traditional performance tools)
    - HPCS Toolkit (make sense of performance data)
- For other platforms
  - PTP Debugger
  - Community contributions (e.g., TAU, RENCI efforts, etc)

Deploy/Production runs

- Recognize need to deploy codes for private or group use
  - And record information about required environment to correctly run the application
- Production workflow runs
  - Capability from LEAD NSF-funded ITR project