parallel tools platform

## sc10 birds of a feather

Outline

- Overview of PTP
- PTP Status
- Other Projects
- Questions/Comments/Feedback

Overview

- The Parallel Tools Platform aims to provide
  - A highly integrated environment specifically designed for parallel application development
  - Based on Eclipse

- Features include:
  - A workbench that supports a wide range of parallel architectures and runtime systems
  - A scalable parallel debugger
  - Parallel programming tools for MPI and OpenMP
  - Remote development tools
  - Multiple languages, including C, C++ and Fortran
  - Support for the integration of other parallel tools
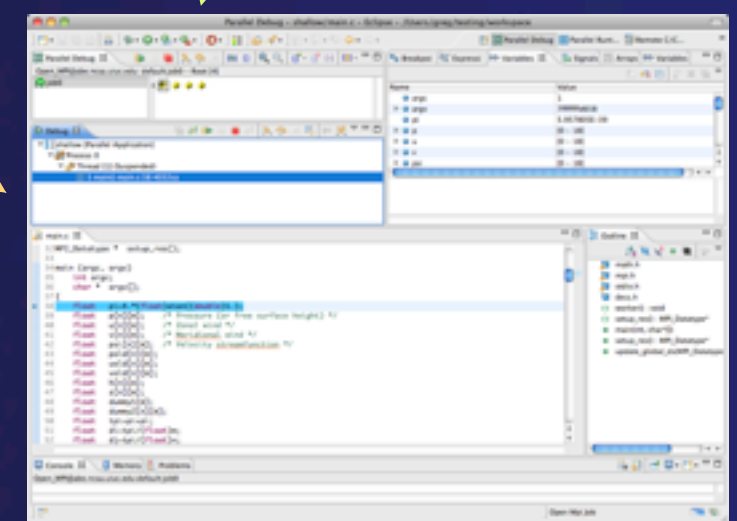
Development Lifecycle

Coding & Static Analysis
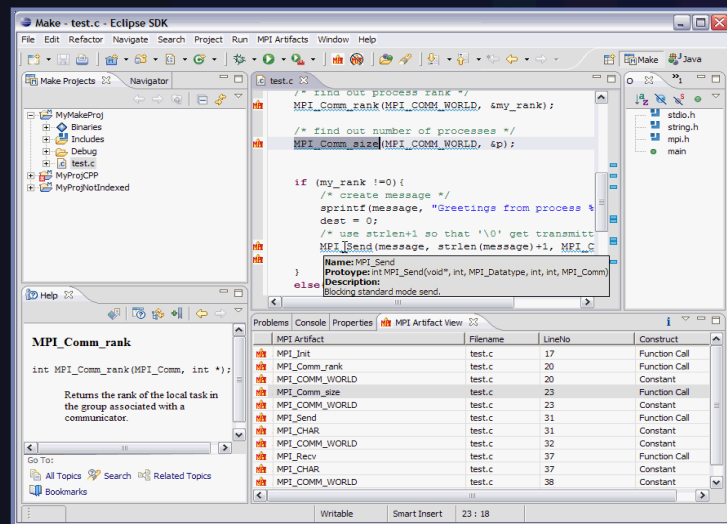
Launching & Monitoring
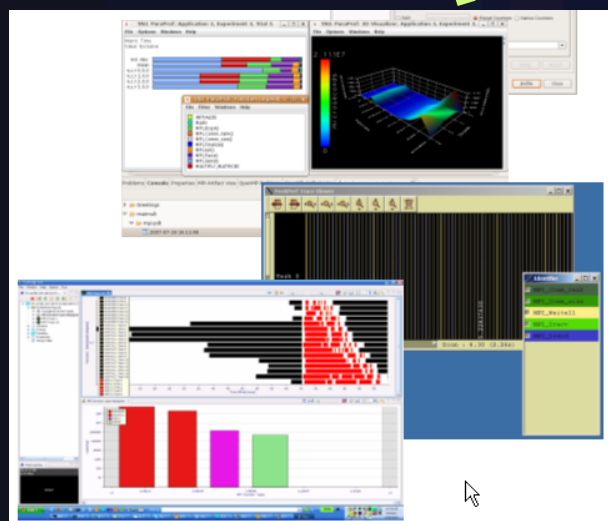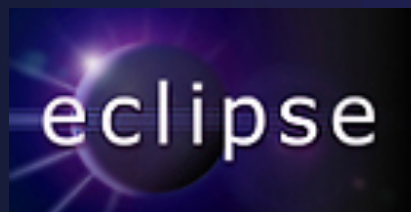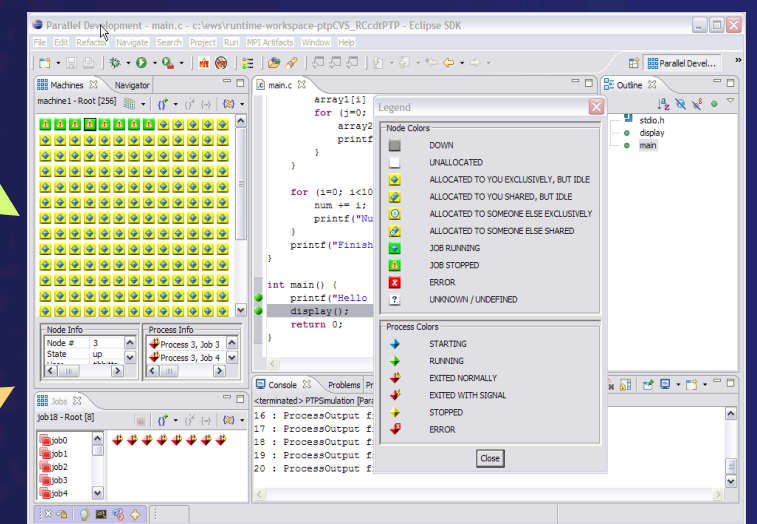
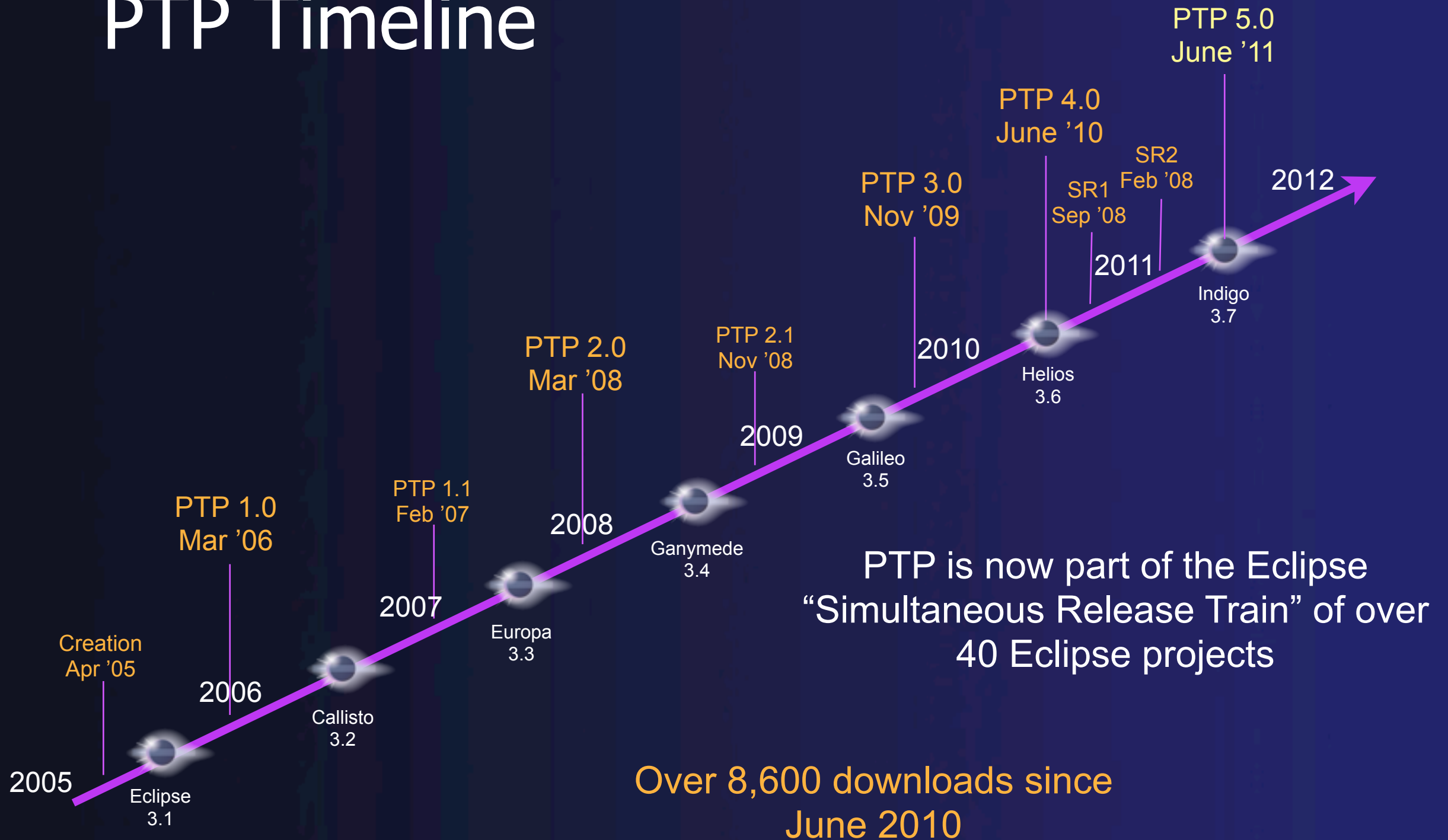**Performance and Dynamic Analysis**

Debugging

Contributors/Collaborators

- IBM (Core, PLDT, Scaling)
- U. Oregon (TAU)
- NCSA (PBS, HPC Workbench)
- U. Utah (GEM)
- U. Florida (PPW)
- JSC (UI Scaling)
- LANL (Core Scaling)
- ORNL/UTK (PBS, Remote)
- Monash U. (Debugging)

PTP Timeline

PTP 5.0
June '11

PTP 4.0
June '10

SR2
Feb '08

SR1
Sep '08

PTP 3.0
Nov '09

2012

2011

Indigo
3.7

PTP 2.1
Nov '08

PTP 2.0
Mar '08

2010

Helios
3.6

Galileo
3.5

2009

Ganymede
3.4

PTP 1.1
Feb '07

PTP 1.0
Mar '06

2008

2007

Europa
3.3

Creation
Apr '05

2006

Callisto
3.2

2005

Eclipse
3.1

PTP is now part of the Eclipse
"Simultaneous Release Train" of over
40 Eclipse projects

Over 8,600 downloads since
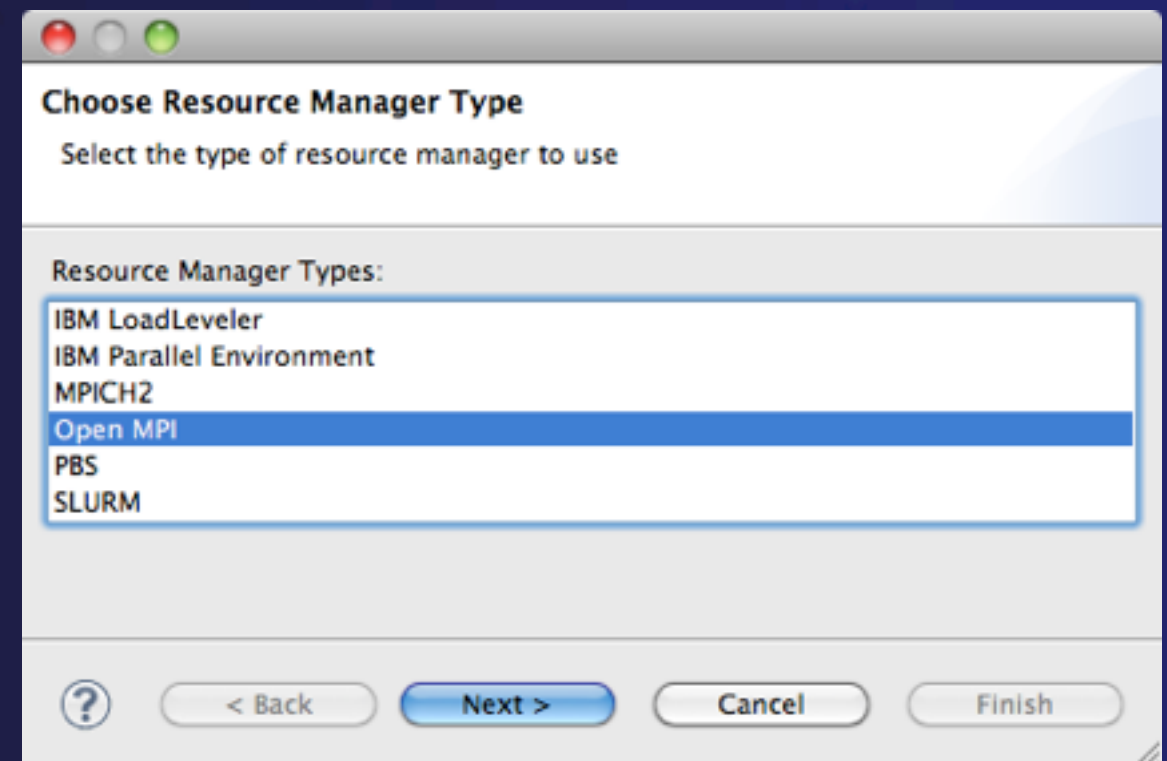June 2010

Future Releases

- PTP now on Eclipse release train
  - Ensures that PTP works with released versions of Eclipse and CDT
- Next major release will be Indigo in June 2011 (PTP 5.0)
  - Helios SR1 (PTP 4.0.3) released in Sept 2010
  - Helios SR2 (PTP 4.0.x) release in Feb 2011

What's coming in PTP 5.0

- Updated Eclipse support (Eclipse 3.7/CDT 8.0)
- Resource manager enhancements
- Core and UI scalability improvements
- Better debugger stability, new views
- Improvements to remote project support
- External Tools Framework (ETFw) improvements

Resource Managers

- **New resource managers**
  - Generic Remote Launch (single process)
  - Open MPI 1.5
  - MVAPICH 2

- **Improvements to existing RM's**
  - PBS
  - SLURM
  - IBM LL/PE

Choose Resource Manager Type

Select the type of resource manager to use

Resource Manager Types:

IBM LoadLeveler
IBM Parallel Environment
MPICH2
Open MPI
PBS
SLURM

< Back   Next >   Cancel   Finish

Core & UI Scalability

- New binary proxy protocol to reduce communication overhead
- Automatic compression of large packets
- Flow control to prevent Eclipse being flooded by large number of events
- Flexible model hierarchy

Parallel Locations View

Parallel Debug view:
- Shows state of processes and job

Debug view:
- Shows process/thread detail

Parallel Debug Locations view:
- Shows the locations of suspended processes
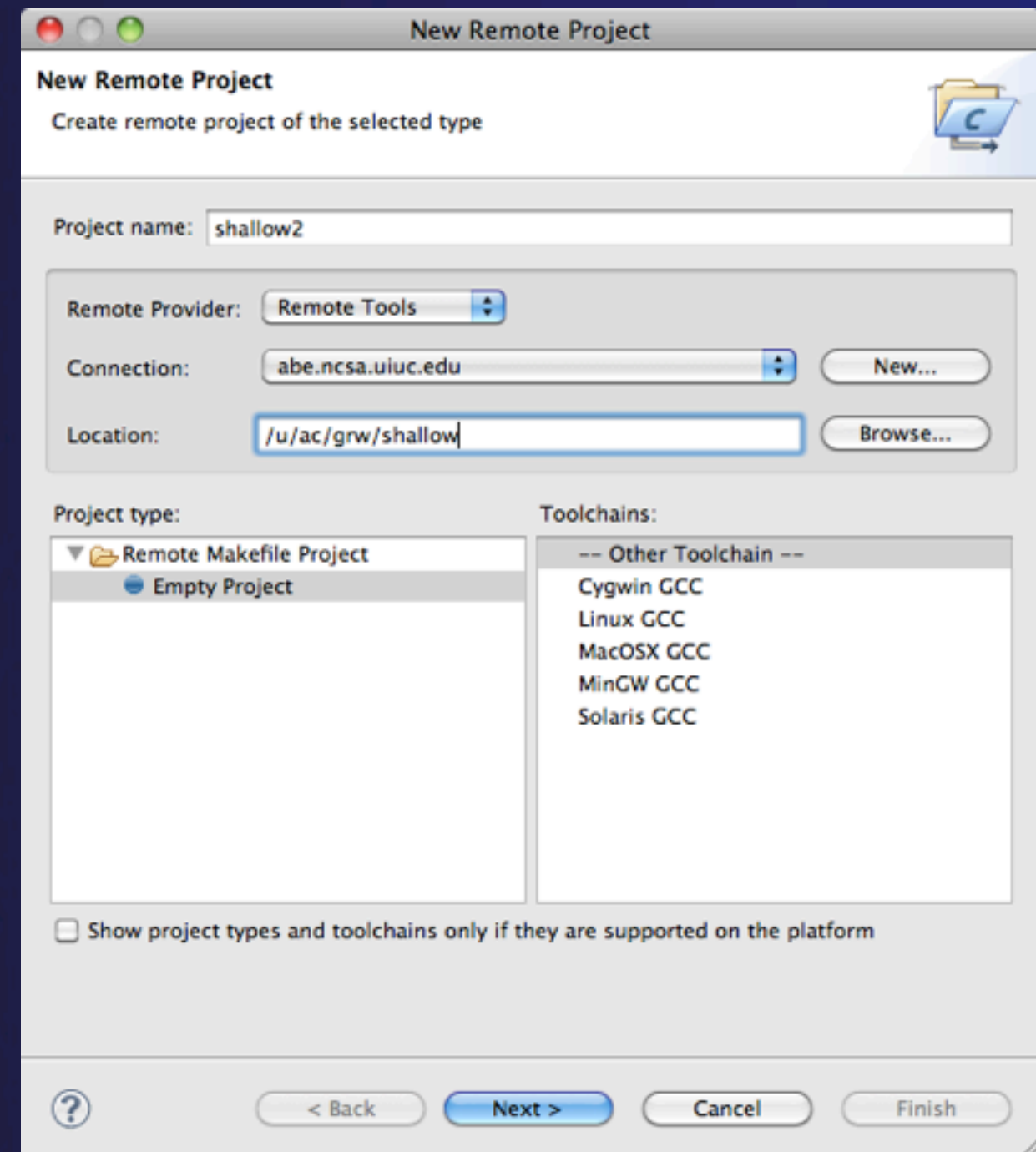- Shows how many processes are suspended at those locations

Remote Development

- Many improvements and bugfixes to RDT
- GNU toolchain for managed projects

Other Projects

- PBS (Al Rossi, NCSA)
- ETFw/UPC (Beth Tibbitts, IBM)
- Photran (Jeff Overbey, UIUC)
- GEM (Alan Humphrey, Utah)
- LLView integration (Wolfgang Frings, JSC)

Q & A?