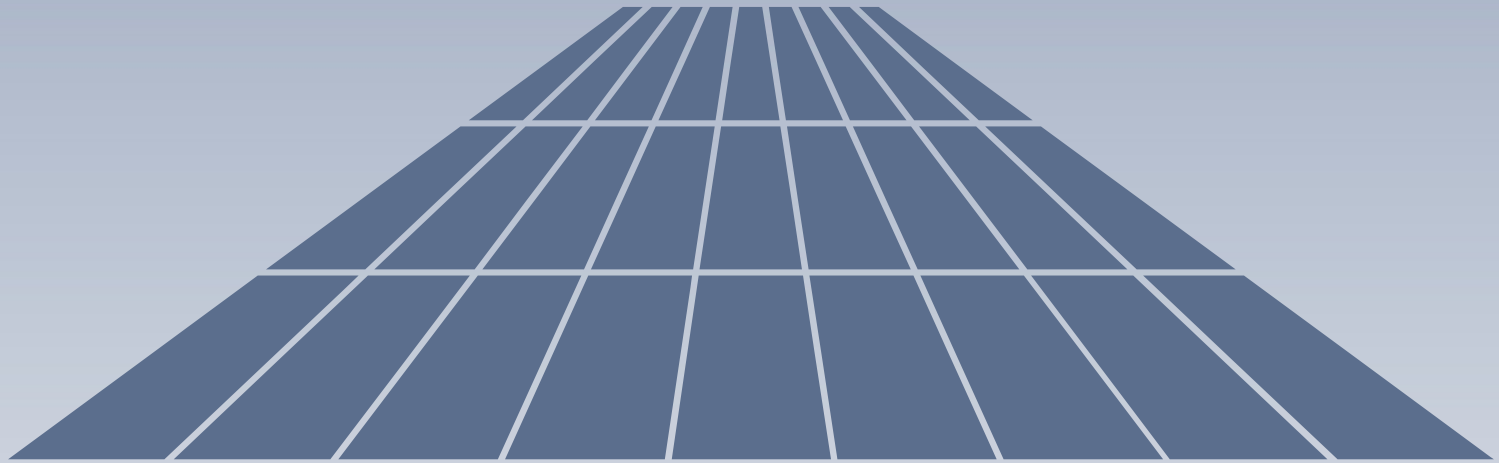
Teaching HPC at VPAC



VPAC

VICTORIAN PARTNERSHIP FOR
ADVANCED COMPUTING

Technology powered by innovation

Teaching HPC at VPAC

VICTORIAN PARTNERSHIP FOR ADVANCED COMPUTING

- **About VPAC**
- A consortium of universities (plus CSIRO)
- Provides advanced computing (clusters and programming), to commercial and academia.
- Two systems in the top 500, plus several others.

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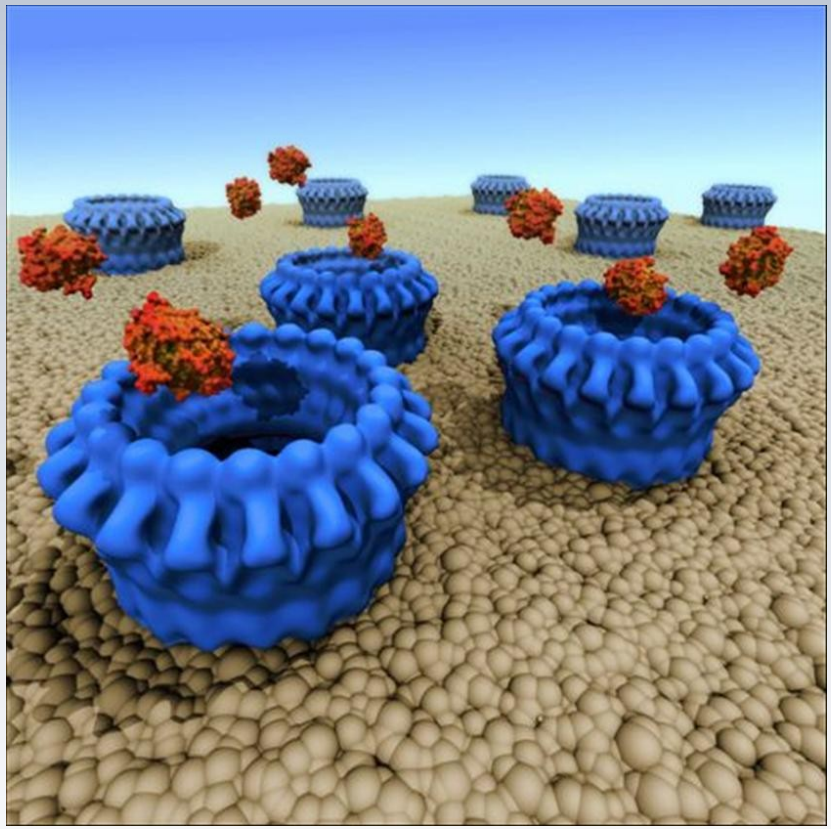
- **Why HPC?**
- Parallel computing solves problems quicker.
- Human Genome Project (2000).
- Most are incremental contributions (e.g., perforin protein).



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- **Researcher Requirements**
- Early course largely assumed command-line knowledge. Provided minimal PBS job submission, a test MPI job (mpi-ping, mpi-pong).
- Limited success; not enough for the beginner, not enough for the advanced user. Class size issues, teaching styles.

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- **A Lack of Implicit Knowledge**
- Changes in user interface and operating system on the user level.
- This change is not replicated on the HPC system level.
- Greater differentiation in courses, smaller class sizes, greater interaction with class and session plans.
- Appeal to a greater range of learning styles.

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- **Course Material**
- Introduction (basic CLI Linux, file transfers, environment variables, job submission and PBS scripts, Grid submissions)
- Intermediate (more advanced CLI, regular expressions, sed/awk, complex job submission, compiling)
- MPI Fundamentals (MPI with C and FORTRAN, messages and communicators).
- MPI Intermediate (collective communicators, derived datatypes, dynamic message sizes, profiling).

Revision of Introduction

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- **Some Successes and Potential**
- Improved feedback from users, greater use of cluster resources and wider range of users.
- Adaption of course material into a graduate-level professional certificate in High Performance Computing.
- An advanced Linux course, a FORTRAN/C course, more specialist courses, more online material (especially video).

That's All Folks!

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Any questions ?

- More info:
  - http://www.vpac.org/
- VPAC Helpdesk
  - help@vpac.org