Introduction to Chapel
A Next-Generation HPC Language

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Cray Inc.

Download Chapel v0.9
http://sourceforge.net/projects/chapel/
Compatible with Linux/Unix, Mac OS X, Cygwin

What is Chapel?

- A new parallel language
  - Under development at Cray Inc.
  - Supported through the DARPA HPCS program
- Goals
  - **Improve programmer productivity**
  - Improve the programmability of parallel computers
  - Match or improve performance of MPI/UPC/CAF
  - Provide better portability than MPI/UPC/CAF
  - Improve robustness of parallel codes
  - Support multi-core and multi-node systems

The Chapel Team

- Brad Chamberlain

- Steve Deitz

- Samuel Figueroa

- David Iten

- Lee Prokowich

- Interns
  - Robert Bocchino ('06 – UIUC)
  - James Dinan ('07 – Ohio St.)
  - Mackale Joyner ('05 – Rice)
  - Andy Stone ('08 – Colorado St.)
- Alumni
  - David Callahan
  - Roxana Diaconescu
  - Shannon Hoffswell
  - Mary Beth Hribar
  - Mark James
  - John Plevyak
  - Wayne Wong
  - Hans Zima

Goals For This Morning

- Introduce you to Chapel with a focus on
  - Task parallelism
  - Data parallelism
  - Multi-locale parallelism
- Answer questions about Chapel Version 0.9
- Get your feedback on Chapel
- Point you towards resources to use after today
- Look for collaboration opportunities

Rough Outline

8:00 – Welcome

8:10 – Chapel Background

8:30 – Language Basics

8:55 – Task Parallelism

9:20 – *Break*

9:30 – Data Parallelism

9:50 – Locality and Affinity

10:10 – Implementation Overview and Wrap Up