**1) Home Page**

* Big Background Image
  + We are still trying on find the right image for the front page, but I've attached a placeholder image for now.
* Company slogan (tag line):
  + “Scalable software for your toughest computations”
* Introductory text which comes below the big image:
  + This text will change, but this is a placeholder for now:
    - Charm++ was developed at the University of Illinois over a period of 15 years. Its original vision of seeking an optimal division of labor between the parallel programmer and the programming system, led to the development of adaptive runtime system which automates resource management. Its constructs and capabilities were honed in the context of highly sophisticated, complex and dynamic applications, that have scaled to some of the largest supercomputers in the world. Now, these capabilities are available commercially from Charmworks, Inc.

**2) Products Page**

* A few images accompanied by text describing different charm++ features. Refer to the file **products.pdf** to get a better idea of the layout of this page.
  + Attached is the Charm++ “logo”, which we hope/plan to redesign some to make it flatter and more like the Charmworks logo.
  + Attached is another image that shows how Charm++ fits overall in the “stack”. This could be shown at the top as we introduce Charm++.
  + Attached are the graphics (feature\_icons.ai) for load balancing, automatic overlap, and checkpointing and FT. I’m still working on the one for power/temp management. Feel free to change these as you like.

**What is Charm++?**

Charm++ is a mature, highly scalable parallel programming system.

**What programming language is used?**

A Charm++ code is written in a C++ skeleton, but is compatible with Fortran, C, and C++. Code written in MPI can call Charm++, and Charm++ code can call into MPI, OpenMP, CUDA, and others.

**How is work parallelized?**

The problem is broken down into *logical units*, which are automatically mapped to processors.

<annotated\_charm\_logo.jpg>

**Features of Charm++**

*Load Balancing*

Load imbalance arises in many HPC applications, and also occurs on mixed-hardware clusters. Rather than make every program solve this on its own, Charm++ provides automatic load balancing for all applications.

*Automatic Communication & Computation Overlap*

Charm++ exploits logical decomposition to enable dynamic overlap of communication and computation as the application executes.

*Checkpointing & Resilience*

Applications written in Charm++ can automatically checkpoint and restart with no extra code or special OS support. They can also run through node failures!

*Power/Temperature Management*

Charm++ can adapt execution to limit power consumption, reduce hotspots to improve reliability, and conserve energy to reduce cluster TCO.

**Tools**

Projections: an extensive suite for understanding the performance of your applications.

LiveViz: get live visualization data from any application.

CharmDebug: debug your Charm++ code interactively

**Libraries**

Collision Detection: a highly scalable collision detection library written in Charm++.

Sorting: a highly efficient Charm++ library that can be used to sort billions of keys.

**3) Services Page**

* 6 images accompanied by text for the services. Again, looking at **services.pdf** would give a much better idea
* For the services we have reduced it down to the following 4 categories. We don’t have images yet for these.

**Licensing**

In partnership with the University of Illinois, Charmworks is the exclusive commercial licensor for the Charm++ parallel programming system and its associated tools. Licenses are offered for a wide range of needs

* Developer licenses covering the full compilation toolchain for Charm++ and mixed Charm++/MPI applications; tools for debugging, performance analysis, and visualization; and runtime licenses for correctness and scaling validation
* Runtime licenses enabling usage of Charm++ codes on production-scale clusters and supercomputers
* Embedded library licenses covering particular components built in Charm++ called from non-Charm++ applications
* Application distribution licenses for ISVs that wish to incorporate Charm++ into their products

**Training**

Our staff is available to teach courses in parallel computing, focusing on scalable algorithm design and efficient implementation using the Charm++ system. These courses can range in length from short introductions of a few hours to a week-long hands-on tutorial. We tailor the coverage and presentation of each course to your group’s knowledge and experience.

**Consulting**

We can provide the following consulting services:

* Problem analysis and solution method development
* Application Development: architecture, design, testing, debugging, verification, and validation
* Performance Engineering: analysis, tuning, restructuring, and optimization
* Integration with existing applications and work-flows
* Cluster hardware purchasing assistance
* Cloud and utility computing deployment

**Support**

* Installation matched to your environment
* Integration with your scheduler & resource manager
* Rapid solutions for any bugs encountered

**4) About Page**

* Pictures of the core team members with a short blurb about them
  + For now, we will have two members on this page without pictures of them.
    - Prof. Laxmikant Kale
    - Eric Bohm
  + We are still writing the blurbs…

**5) Contact Footer**

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