

High Performance Computing at the University of Utah: A User Services Overview

Julia Caldwell

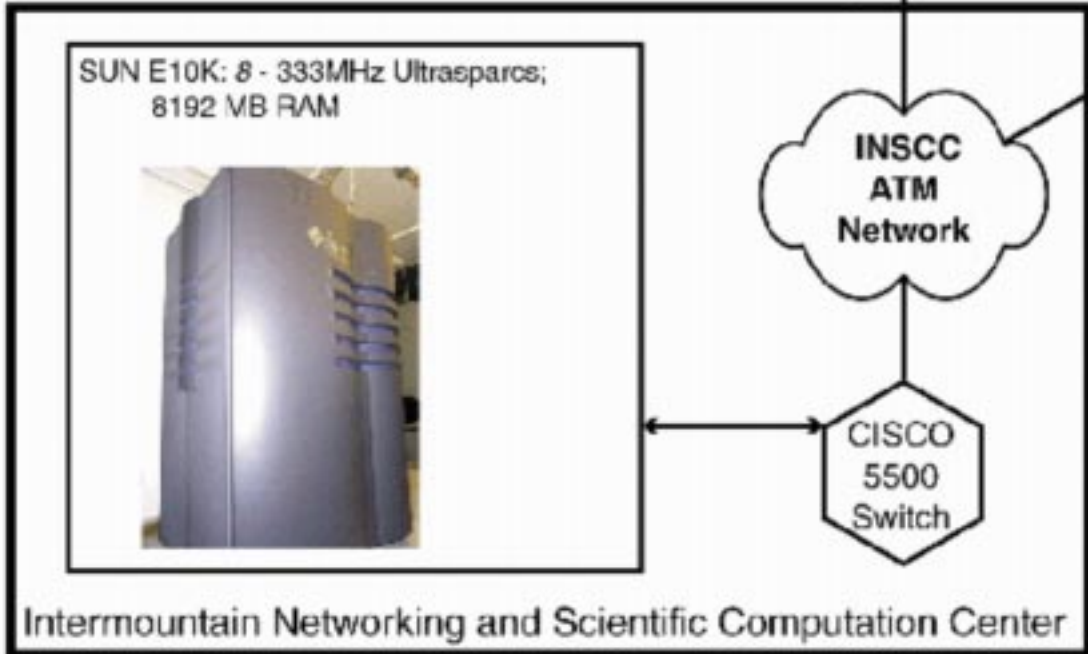
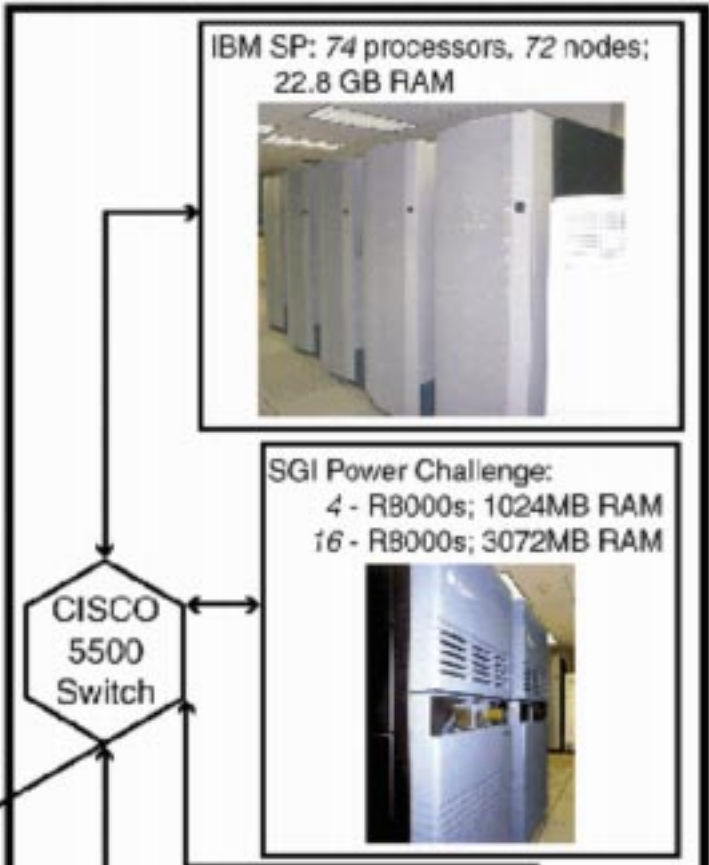
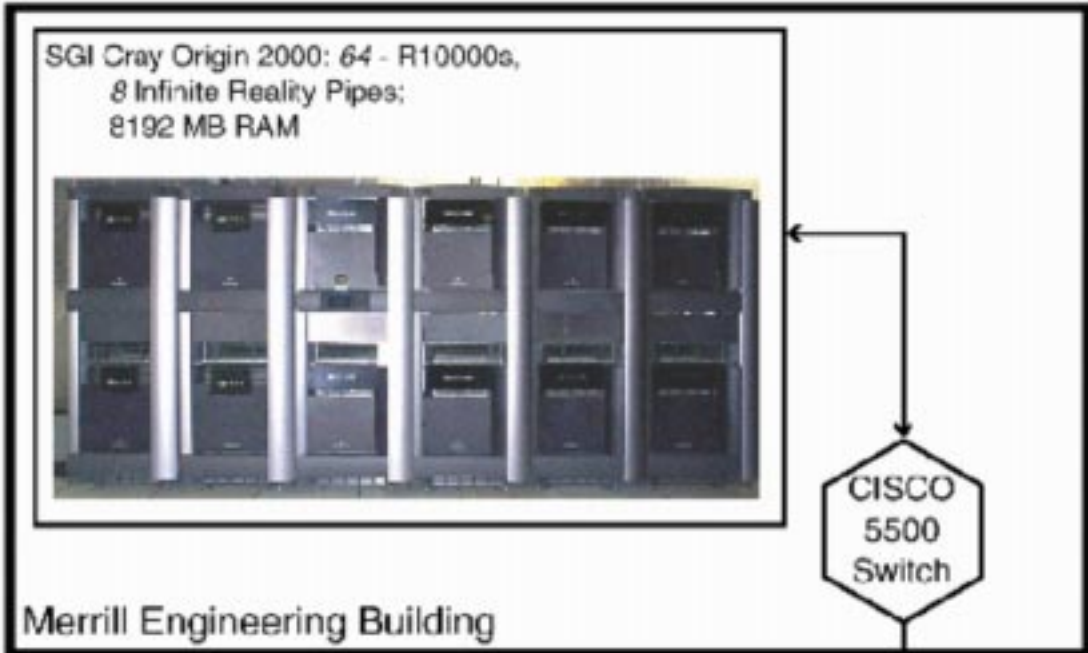
CHPC, University of Utah

Overview

- | **Resources**
- | **Research**
- | **Staff**
- | **User Services**
- | **Problem Tracking**
- | **User Documentation**
- | **Summary and Future Plans**
- | **Bonus: The G-Protein Story**

Resources

- | 96 processor SGI Origin 2000 with 8 graphics pipes
- | 74 node IBM SP
- | 20 processor SGI PowerChallenge
- | 32 node Intel Cluster
- | INSCC Building



2000' → ↓ 300'

Research

- | **Avalanche, Scalable Parallel Processor Project**
- | **Center for the Simulation of Accidental Fires & Explosions**
- | **Combustion and Reacting Flow Modeling**
- | **Cosmic Ray Research**
- | **Geophysics**
- | **Medical Imaging Research Lab**
- | **Meteorology**

Research (cont.)

- | Quantum Chromodynamics (physics)
- | SCI Utah - Scientific computing and Imaging (computer science)
- | Computational Chemistry, Thanh N. Truong
- | The Voth Group (chemistry)

FOR MORE INFO...

<http://www.chpc.utah.edu/research>

CHPC Staff

- | **Administrative Staff: Director, 3 Assistant Directors and 2 secretaries**
- | **Staff Scientists - 5 fte**
- | **Systems - 8 fte**
- | **Networking - 3 fte**
- | **User Services - 7 fte (4 full time, from 5-7 part-time)**

FOR MORE INFO...

<http://www.chpc.utah.edu/general/directory.html>

User Services

- | **Help Desk - problem tracking**
 - HPC
 - INSCC building
- | **Consulting**
- | **Training - Shortcourses**
- | **Quarterly Newsletter**
- | **User notification**
- | **Library - central location for vendor documentation**

Problem Tracking

- | **Early stages of GNATS implementation**
- | **Older combination of 3 systems**
- | **Need to do additional staff training in June 1999**
- | **Hope to be in full production by end of August 1999**

User Documentation

- | All Web based
- | User's guide on all major platforms
- | FAQ
- | Online forms for account management
- | In development - web interface to GNATS

Summary and Future Plans


- | CHPC committed to keeping up with the cutting edge of high performance computing.
- | Expand the problem tracking system
- | Expand Training Area
- | Better library management

A computer animation representing the molecular events of G protein-coupled receptor activation

**Douglas J. Steel, Zoya Maslak, &
Jimmy Miklavcic, Robert J. McDermott,
University of Utah,
Salt Lake City, UT 84112**

Introduction

- | Simulation: Data Driven
- | Animation: Story Driven
- | Expository Animation for Scientific Visualization: An animation that attempts to portray a story to the best of what is the scientific knowledge at the time. Sometimes there is not full agreement on what is the scientific knowledge at the time.

The background of the slide is a dark space filled with numerous colorful, semi-transparent molecular models. These models are rendered in various colors including green, purple, pink, and cyan. Some models are larger and more complex, while others are smaller and simpler. The overall effect is a dense field of molecular structures, suggesting a large-scale simulation or a collection of diverse molecular forms.

*Molecular Modelling
in THE LARGE:*

bridging scales in space, time, and complexity

17th International Meeting

6-10 December 1998

San Diego, California

Molecular Graphics and Modelling Society

<http://www.mgmsoa.org>

Douglas J. Steel

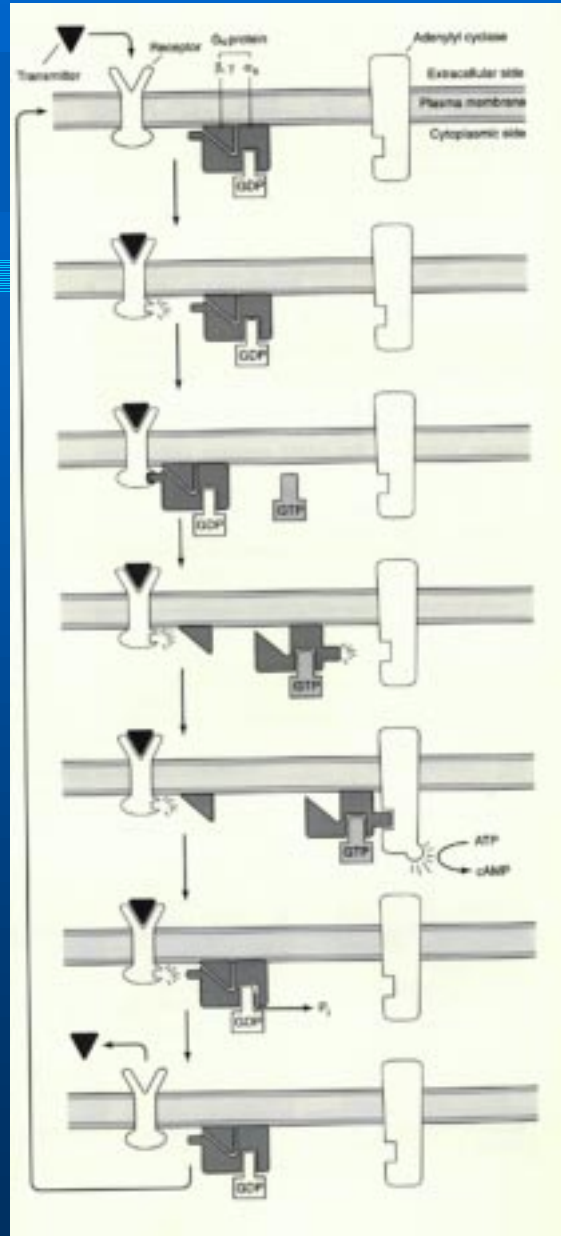
**Post-Doctoral Fellow
Department of Biology**

Introduction (cont'd)

- This animation is accurate in neither:
 - time
 - color
 - scale
 - shape
 - dimension
 - correspondence to data

Introduction (cont'd)

- I However, given these conditions we have created this animation to portray an explanation of these phenomena which are consistent with published data.



Zoya Maslak

**Master of Fine Arts Student
Art Department**

Introduction

- Scientists have images of complex biological processes in his or her imagination, but those images are very different from one another.
- Abstract scientific concepts can be depicted by well designed images with careful use of colors, models, textures and motion.

Jimmy Miklavcic

**Multimedia Specialist
Center for High Performance
Computing**

Introduction

- | The video media offers an extension to the analysis and visualization of scientific data.
- | The video production creates a “package” to contain the information and it “frames” the results in a way that it is easily understood.
- | An archival form, as well as a final product that can be repeatedly viewed and easily distributed.

Robert J. McDermott

**Staff Scientist for Visualization
Center for High Performance
Computing**

Introduction

- | An expository animation project is a long term commitment by dedicated people who have extensive computational resources available.
- | This project was completed over a year by three principals with Softimage 3D Modeling & Animation Software, SGI Graphics Workstation, SGI Power Challenge, Softimage Digital Studio.
- | There were significant contributions to this projects in the form of video & audio editing, as well as the composing of original music.



Conclusion

- | Our resulting animation production was well worth the personal effort and the expenditure of computational resources.
- | Animation well received by researcher community.