To:	**CE, PFJL, RT, PJH**
From:	**CE, PFJL, PJH**
Date:	**December 4, 2002 – 7:25 pm**
Re:	**Minutes of Meeting of October 30, 2002**

Agenda

(1) DURIP status
(2) Biological models generalization: approach and software
(3) Work report from MIT, Work report from Harvard
(4) Visualization
(5) Sungrid set-up

Attendees

CE, PFJL, RT, PJH

Summary

(1) Overview of current status of DURIP: Nothing yet, answer expected in February, CE suggested ARR or PL contact their ONR overseer and ask for feedback

(2) New Biological (super)model: RT/PL described the structure of the new adaptive biological model and RT gave a copy of his new in-progress report describing it to CE. He also showed the rest his current code implementing this. A lengthy discussion ensued about how to implement this in the best way for parallel and distributed computing along with tips from PH/CE/PL for making the code faster. Performance programming references were discussed.

(3) The MIT activities in the areas of Grid storage (PFS/Kangaroo), XML descriptions for software, feature extraction and visualization using OpenDX were summarized by CE.

(4) CE talked about the problems he's been having with getting Sun Grid Engine to work with PVM in the Harvard Group.

(5) CE described the emerging form of the Poseidon system architecture and a discussion ensued about the way that adaptive biological models would fit in, either as multiple different models running in parallel with one physical model or as pairs of physical/biological models running in parallel with the biological model changing in time.

(6) The use of C-preprocessing options versus that of if statements was discussed, especially focusing on the generalized biological model development. Further discussions are needed. The goal is establish a common Harvard/MIT policy on the programming style, for best efficiency and portability.

(7) The separation of the biological and physical codes was discussed, but further discussions are needed. These include efficiency and I/O issues in a distributed environment.

(8) The implementation of adaptive modeling software was briefly discussed, focusing on:
   - state variable adaptation (adding/removing state variables based on data, *i.e.* state variable estimation)
   - functional adaptation (modifying internal model functions based on data, i.e. formulation or function estimation)
   - parameter adaptation including parameter estimation (modifying model parameters based on new data).

Action Items

(1) It was agreed to move all new code development within HOPS/ESSE to modern Fortran95. **RT**'s new biological models would be the first application.

(2) **RT** would start converting code to Fortran95 and will pass his code to **PJH** for checking computation efficiency and correcting style of coding to be compatible with current HOPS style. Short memo with concise tables of equations for the generalized biological model should be created.

(3) **CE** would send the group a list of references about performance programming, Fortran95, MPI and OpenMP.

(4) **CE** suggested and **PFJL** agreed that it was a good idea to work on introducing iterative/parallel SVD to the ESSE process.

(5) **CE** and **PFJL** talked about collaborating (with **PJH**) in replacing the time-stepping scheme from leapfrog in the PE solver for HOPS in the 2002-2003 academic year.

(6) **CE** will be coming to Harvard to set up Grid Engine for production.

(7) It was decided to make these meetings regular at 3 week intervals. **PJH** would be making arrangements for that.

(8) It was also suggested that **CE** teach a mini-course on parallel programming to the Harvard group in the spring semester, especially if the DURIP proposal goes through (that includes such courses).