Application Name	Bio-electric Simulator for Whole body tissues
Application Area	Bio-electrics
Keywords	Tissue models, Bio-electrics, Electric response, Electrical stimulation
Project/Dept. Affiliation	Electrical and Computer Engineering, Office of Computing and Communications Services
Value of grids to this application	This application is both computation and data intensive, and has been demonstrated to scale with number of processors. Therefore, the value of grid computation for this application comes from the accessibility to additional resources.
Originating institution	Old Dominion University
Contact (s) Name, Email	Ashutosh Mishra, amishra@odu.edu, 757-683-3741 Dr. Ravindra Joshi, rjoshi@odu.edu, 757-683-4827 Mike Sachon, msachon@odu.edu, 757-683-4856 Mahantesh Halappanavar, mhalappa@odu.edu, 757-683-3073
Participating sites	ODU
General description	System to simulate the response of “whole body tissue” model to potential/current stimulus through direct electrode contact. More information can be obtained at: http://www.lions.odu.edu/%7Erjoshi/bioelectric.htm Reference: A. Mishra, R. P. Joshi, K. H. Schoenbach, and C. D. Clarke III, "A Fast, Parallelized Computational Approach Based on Sparse LU Factorization for Predictions of Spatial and Time-Dependent Currents and Voltages in Full-Body Bio-Models," submitted for publication, IEEE Trans. Plasma Science, Aug. 2006.
Anticipated system requirements for SURAgrid nodes running this application	(Hardware): 2GB+ memory per node/host, Estimated Diskspace required -: ~ 50GB
Anticipated non-system requirements for SURAgrid nodes running this application	(Software) SuperLU_dist Version 2.0, METIS, MPI (MPICH-1/2 or LAM), BLAS libraries (INTEL MKL, GotoBlas, ATLAS, etc.), F90 compilers
Grid focus (data sharing, computation, access to unique resources, collaboration)	The application is computationally intensive and performs sparse matrix operations. We intend to grid-enable this system to utilize concepts like work-flow and virtual data methods.
Network dependencies (bandwidth, latency, multicast, other)	Large number of small messages during computation(latency dependent)
Expected frequency of application run (one-time, occasional, monthly, weekly, daily…)	Daily~Weekly.
Estimated start date for application run	At the earliest.
Describe expected application invocation mechanism (by user submitting job, programmatically by some event or timing…)	At present the application will be submitted by the user with job submission scripts (DRMs like SGE or PBS).
Is this application open to others to use with their own data or revisions?	Not right now.
Additional comments	