|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Paper | Physiology | Modelling | Computational Techniques | Miscellaneous |
| Bradley (2011)1 |  |  | * To build a standard for describing ‘the physiology and pathology of the human body using quantitative, anatomically and biophysically based models….’ * CellML: ODEs and non-linear algebraic equations * FieldML: encode spatially/temporally varying field information. Allows ‘hierarchies of material coordinate systems that preserve anatomical relationships….’ * CMISS: ‘Continuum Mechanics, Image analysis, System identification and Signal processing’. * Goals: 1) Not a ‘monolith application’ but a ‘flexible library’ which lends itself readily to customised interface.  2) General code, modular, beware of computational cost. 3) General inherently parallel environment. 4) Used and developed by novice and experts alike by using hidden details in an object hierarchal approach. * Build on FORTRAN 95/2003 with C, C++, FORTRAN and Python bindings. * Github usage. * Physiome project issue tracker for planning * BuildBot automated daily testing. * Doxygen for documentation * MPI standard for distributed parallelisation and OpenMP for shared memory parallelisation. * ParMETIS used for parallel graph partitioning. * Treat each set of physical equations as a separate object. Each such object is constructed separately, and then coupled. * Add the physics equations (+coupling equations) to solver. * Method of coupling in the same region and in different regions. |  |

References

1. Bradley C, Bowery A, Britten R, et al. OpenCMISS: A multi-physics & multi-scale computational infrastructure for the VPH/physiome project. *Prog Biophys Mol Biol*. 2011;107(1):32-47.