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The role of grid computing in support of patient specific medical decision making

Patient specific computational medical simulations, in support of the clinical decision making process, promise to be a new and exciting application of grid and HPC technologies. Current projects such as the EU funded ViroLab, developing a framework to computationally evaluate HIV drug efficacy, and GENIUS, giving clinicians insight in to cerebral blood flow using patient-specific image-based models, illustrate the range of medical scenarios that computational simulations can be used to support. They also show the need for co-ordinated resource provisions strategies, so that clinicians can be given access to appropriates scale computational resources as an when needed to support both routine and emergency clinical procedures. Both of these projects give indications of the kind of infrastructure needed by the EU FP7 Virtual Physiological Human project, a methodological and technological framework that seeks to enable the investigation of the human body as a single complex system.

The complex multiscale modelling workflows and data analysis of VPH resources requires access to a vast range of computational resources, stretching from the desktop to the high end machines provided by EGEE and DEISA.

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