

## The @neurIST Biomedical Grid Infrastructure

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(On behalf of the @neurIST Consortium)

The European @neurIST project aims to create an IT infrastructure for the management of all processes linked to research, diagnosis and treatment development for complex and multi-factorial diseases. Although the focus of @neurIST is on one such disease, cerebral aneurysm and subarachnoid haemorrhage, the core technologies are generic and transferable to other areas. The @neurIST infrastructure is based on an advanced service-oriented Grid architecture and middleware facilitating access to and integration of distributed data repositories, computational analysis services, and information systems.

At the top level, the @neurIST system comprises a set of integrative application suites, for personalized risk assessment, for linking genetics to diseases, for virtual endovascular treatment planning, and for multimodal data processing and image fusion. These application suites make use of the @neuCompute and @neuInfo Grid middleware layers to gain transparent access to distributed data resources as well as to computational analysis and simulation applications. @neuCompute provides a compute grid to accomplish computationally demanding modeling and simulation tasks, providing on-demand access to high-performance and high-throughput computational platforms. @neuInfo comprises tools for constructing virtual data sources that enable transparent access to distributed heterogeneous biological and clinical data sources. Virtualization of data sources through Grid services leverages semantic technologies, which are key to the integration of multi-scale, multi-modal information at distributed sites.

In this talk we will provide an overview of the @neurIST project with a special focus on the associated Grid middleware, which is being developed in line with Grid and Web Service standards.