

# "HEALTH GRID" CYBERINFRASTRUCTURE: COMPUTATIONAL PERSPECTIVES

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## **Abstract**

In this paper we describe data computational needs arising in modern healthcare. We outline how Grids, ontologies, and other computational tools can be used to meet these needs and enable efficient "health grid" services. A health grid is an infrastructure that, like electric power grids and computing Grids, is designed as a pervasive enabling technology. We summarize several key challenges that must be faced, and how they are being met both by existing solutions and by the health grid concept.

## **Introduction and Motivation**

The goal of "a grid for health" is to meet the growing computing needs of health stakeholders with the help of Grid technology by enabling collaborations and data sharing between biologists, computer scientists, drug designers, health care professionals, public administrators, and policy makers. Given that a hospital may generate from 1-20 TB of data per year, including everything from basic medical records to images and multimodal data streams, this is not an academic issue but a vital cyberinfrastructure issue that potentially impacts each and every citizen internationally.

A Grid is a concept for the delivery of computing resources (Foster & Kesselman, 1998). A Grid infrastructure is intended to be analogous to an electric power grid, and to offer convenient and ubiquitous access to storage, processing, and similar services. Based on the Grid concept, the "health grid" uses distributed computing environments to distribute a single application over