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Cloud computing infrastructure for biological echo-systems

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The Biological applications such as Gene and Protein analysis integrate and analyze biological data for the research in many bioinformatics and other bio related fields. Such applications are used under many large scale scientific applications and help in computing, integrating data, execute the analysis, automate the process by using information retrieved by different tasks and computational procedures to assist the scientists in scientific discovery and data distribution. Grid based and/or web based scientific workflow tools are used for bioinformatics related complex research to make scientists and researchers work easier. On average, scientists spend about 80% of their time assembling data to prepare for analysis. This is due largely in part to the fact that many of these resources required for data processing must be gathered from an external source. The best of these resources, however, are scattered across the globe. They are hosted at universities, institutes, and laboratories throughout the world. To bring all of these resources together by hiding system, network, and application level heterogeneity issues are challenging.
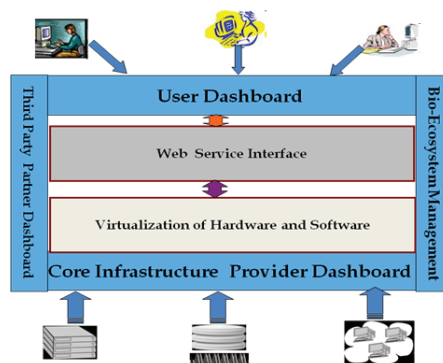
Bio-Ecosystem on the Cloud

Usually, biological applications involve four types of resources: data sources, tools (software packages), application development platforms, and computing resources. In this architecture

- Biological data sources and tools can be implemented as *software as a services in the cloud*
- Application development platforms can be implemented as *platforms as a service in the cloud*
- Data storage, network, and hardware requirements such as processing can be implemented as *Infrastructure as a service in the cloud*.

In this research we have undertaken the task of design and development of the Bio-Ecosystem.

Biography

Janaka Balasooriya is a faculty member in the school of Computing, Informatics and Decision Systems Eng at Arizona State University, Tempe campus. Janaka's research interests are in the domains of Distributed Computing, Mobile Computing, and Bioinformatics. His current research projects include developing middleware for distributed Web service integration, Web based application development environments for web service workflows, and service oriented databases, and biological data and tool integration in Cloud.

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