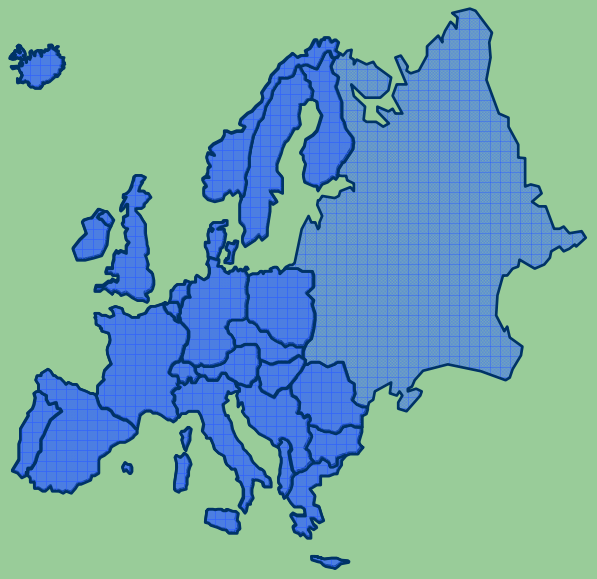
BIOINFOGRID

Bioinformatics Grid Application for Life Science .



COMMUNICATION NETWORK DEVELOPMENT

SPECIFIC SUPPORT ACTION

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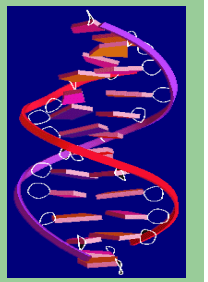


Project goals

- In the BIOINFOGRID Specific Support Action (SSA) we propose combining and evaluate Bioinformatics services and applications for molecular biology users with the Grid Infrastructure created by the EGEE project (6th Framework Program).
- In the BIOINFOGRID initiative we plan to evaluate *genomics*, *transcriptomics*, *proteomics and molecular dynamics* applications studies based on GRID technology.
- Several centres in bioinformatics will be involved with the goal to bring in concrete experience from the biomedical laboratories and send out solutions for complex Bioinformatics applications.

Project goals

- The BIOINFOGRID SSA will establish a common ground for collaboration between the European Grid Infrastructure providers and the Bioinformatics research user community in various fields of Bioinformatics applications (Biology, Computational Chemistry, Medicine and Biotechnology).
- This will be achieved through specific studies for each reference application in the Bioinformatics domain in which experts of various disciplines can collaborate on the solution of highly complex problems.
- One of the key objectives is to “combining bioinformatics services and applications for molecular biology that have thousands of users with the Grid Infrastructure.

Project Timescale

- 24 month full project duration
- Starting date 1st January 2006

Project Budget

- **1.054.00 Euro**

Project Partners

Partic. Role*	Participant name	Short name	Country
CO	Consiglio Nazionale delle Ricerche - Istituto Tecnologie Biomediche	CNR	Italy
CR	Istituto Nazionale di Fisica Nucleare	INFN	Italy
CR	Deutsches Krebsforschungzentrum	DKFZ	Germany
CR	Centre National de la Recherche Scientifique	CNRS	France
CR	The Chancellor, Master and Scholars of the University of Cambridge	UCAM	UK
CR	Consorzio Interuniversitario Lombardo Elaborazione Automatica	CILEA	Italy
CR	Steinbeis GmbH & Co	StC	Germany

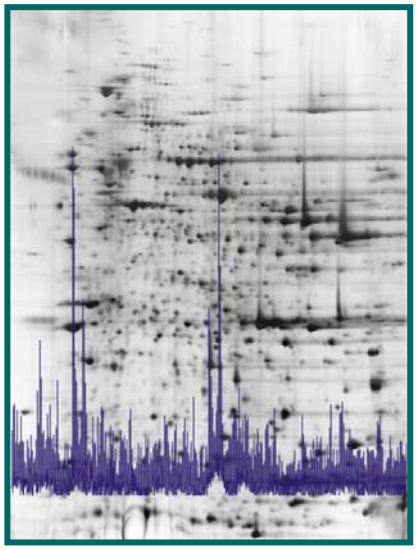
Relationships to EGEE and other projects

- In BIOINFOGRID Specific Support Action (SSA) we propose combining Bioinformatics services and applications for molecular biology.
- The aim is to operate this widely distributed computing environment in collaboration with the Grid Infrastructure created by the EGEE project.
- A close collaboration with the HEALTHGRID, EMBRACE, EGEE has been already established.
- Potential collaboration with BIOSAPIENS, MYGRID, ICEAGE and BELIEF projects is envisaged.

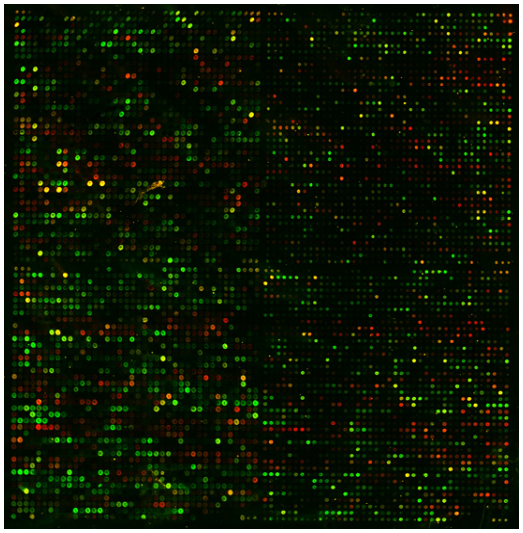
Middleware, Infrastructure

- We intend to pursue this goal by using a number of key bioinformatics applications and getting them run onto the EGEE European Grid Infrastructure. In particular gLite Middleware and of the EGEE infrastructure will be used.
- The interface between the BIOINFOGRID and the European Grid Infrastructure Projects, as well as the most important standardisation bodies such the Global Grid Forum (GGF), it will ensure of following the trends in Grid technology, and whenever possible to adopt the general application layers of middle-ware for Bioinformatics.

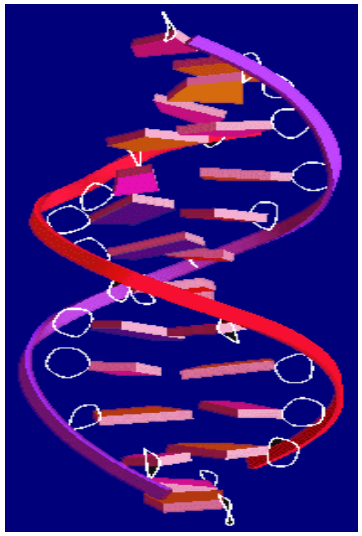
Project applications



Proteins (Proteome)



Microarray (Genome)



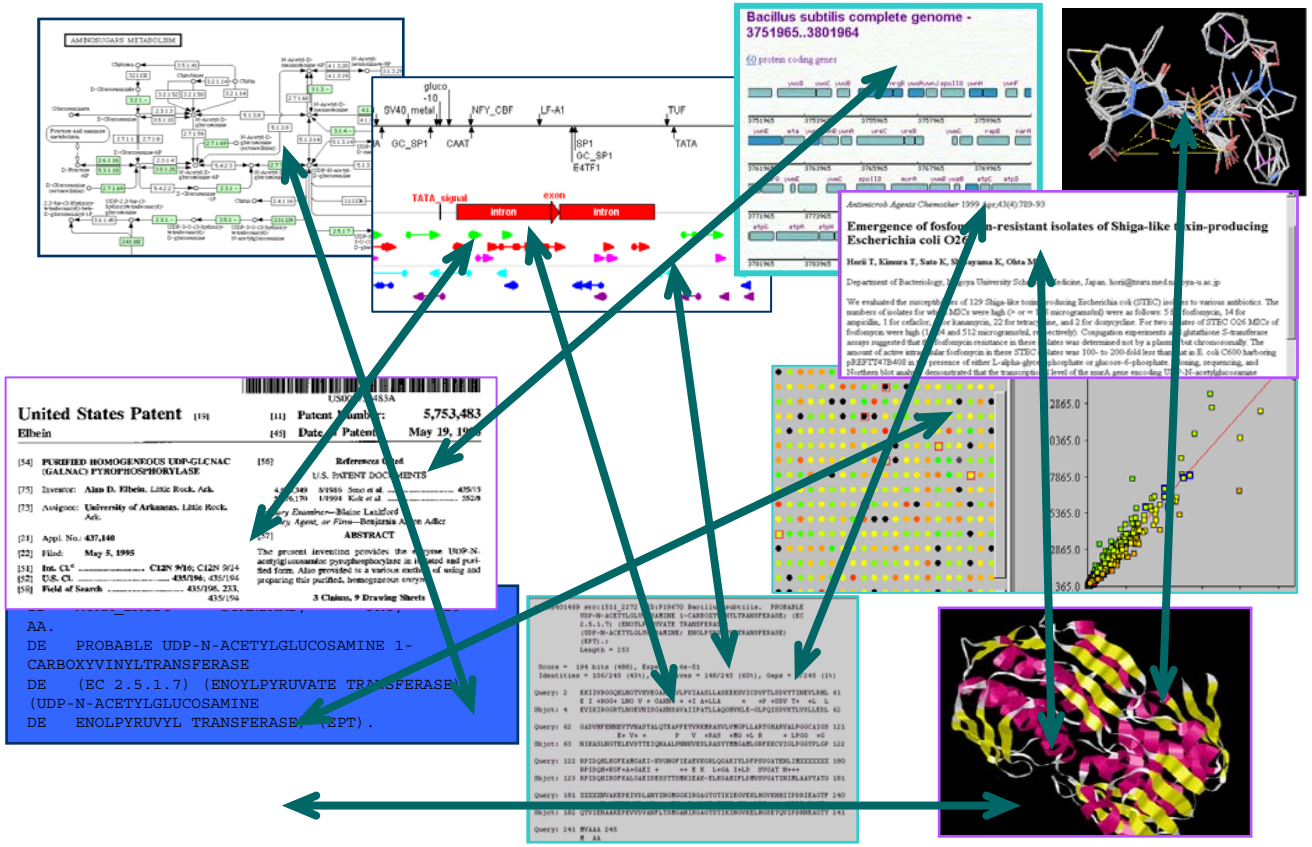
Gene & SNPs (Genome)

Project applications

The project will support studies on applications for:

- distributed laboratory management systems for microarray technology for gene expression studies
- gene data mining
- analysis of cDNA data
- phylogenetics analysis
- distributed bioinformatics database
- protein functional analysis
- molecular dynamics simulations in GRID
- new challenge of the Wide In Silico Docking on Malaria

Project applications



Training, Disseminations

- Training, Dissemination and Outreach activities:
- An international conference for GRID Bioinformatics applications will be organized towards the end of the project, open to the international Bioinformatics user community.
- Training courses will be organized, leveraging on the experience gained in the Training and Dissemination activity inside the EGEE project.
- Participation to the EGEE and Bioinformatics conferences

Cooperation and concertation activities and benefits

- The major benefit of the BIOINFOGRID project is to raise the awareness about the potentialities offered by the Grid technology in solving Bioinformatics research problems.
- Organisation, in conjunction with the EGEE Project, dissemination and tutoring events where Grid experts can meet experts from all the Bioinformatics applications and start discussing the available Grid services and the user requirements in common brainstorming sessions.
- Evaluate and adopt high-level user interfaces and GRID tools common to all the different BIOINFOGRID applications.