Grid infrastructure development: current state

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EGI-Inspire Project

A 4-year project, started in May 2010

◆ Supports the transition from a project-based system to a sustainable pan-European e-Infrastructure

◆ Supports „grids‟ of high-performance computing (HPC) and high-throughput computing (HTC) resources

◆ Supports integration into a seamless production infrastructure of new Distributed Computing Infrastructures (clouds, supercomputing networks and desktop grids)

◆ Continued support for current heavy users of the infrastructure in earth science, astronomy and astrophysics, fusion, computational chemistry and materials science technology, life sciences and high energy physics as they move to sustainable support models for their own communities

Providing access to the Regional High Performance computing infrastructure

Many countries have launched National Grid Initiatives (**NGI**) to establish National grid infrastructures.

MD-Grid — **National Grid Initiative** of Moldova was officially inaugurated on the plenary session of RENAM "Users Conference – 2007" on **May, 14 2007**

Now the **European Grid Initiative** (**EGI**) is an organisation being developed to coordinate the European Grid Infrastructure, based on the federation of individual **National Grid Initiatives** (**NGI**), to support a multi-disciplinary user community.

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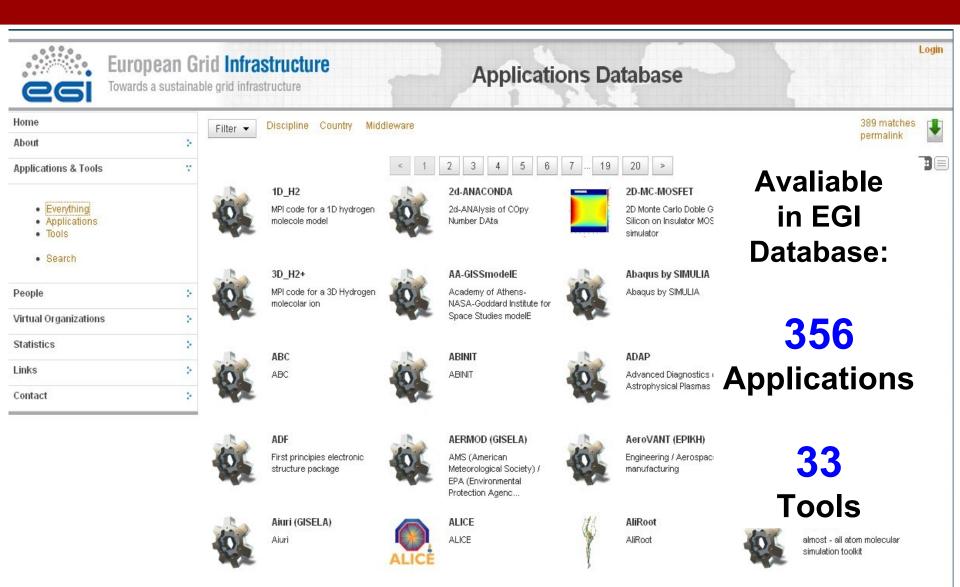
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NGI-MD Resources

NGI-MD site	Available CPUs	Storage	Network
Certified sites			
MD-01-TUM	5 Intel P-IV 3,0 GHz CPUs	320 GB	100 Mbit Ethernet
MD-03-SUMP	5 x CPU AMD Athlon 64 X2 6000+	650 GB	100 Mbit Ethernet
MD-04-RENAM	6 Quad Core Xeon 5130 CPUs	2 TB	100 Mbit Ethernet
MD-02-IMI	12 Quad Core Xeon 5130 CPUs	3,5 TB	100 Mbit Ethernet
Planned to be integrated into MD-GRID NGI			
MD-05-SUM	14 Dual Core AMD 280 CPUs	1,5 TB	100 Mbit Ethernet

Providing access to the Regional High Performance computing infrastructure

Avaliable in EGI Database:

356 Applications

33 Tools

HP-SEE

High-Performance Computing Infrastructure for South East Europe's Research Communities

Started in September 2010. Project duration - 2 years 9 months.

The project involves 14 countries. RENAM and IMI ASM participate in the project from the Republic of Moldova.

Main objectives of the project:

❖ Link of existing and upcoming HPC facilities in the region in a common infrastructure, and provide operational solutions for it

❖ Open regional HPC infrastructure to a wide range of new user communities, including those of less-resourced countries

❖ Ensure establishment of national HPC initiatives, aiming to attract local political & financial support for long-term sustainable eInfrastructure

❖ Contribute to stabilisation and development of South-East Europe, enabling collaborative high-quality research across a spectrum of scientific fields

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Regional HPC Resources

HPC Resources, available for RENAM users' community:

SGI UltraViolet 1000 supercomputer cluster at NIIFI, located in Pecs, Hungary. 1152 CPU, 6057 GByte memory

HPCG cluster located at IICT of Bulgarian Academy of Sciences. 576 computing cores. The storage and management nodes have 128 cores.

There is an Agreement with the partner institution West University of Timisoara, Romania, concerning access of Moldavian researchers to Blue Gene/P supercomputer which deployment finishes in the nearest future.

Applications Development

Data Visualization

- PRNNS - Patterns Restoration using Neural Networks Simulation

    The application is designed to process and restore damaged images using Neural Networks. It represents a single module written in Java which is send to the gird with a set of teaching patterns, then the synaptic weights generated during the teaching are being retrieved as the result. Later they could be used to process and restore images.

Environmental sciences

- GreenView, developed in collaboration with Technical University of Cluj-Napoca, Romania

    Application will provide the user community the possibility to get information on the current status and to make prediction on the future evolution of the vegetation and environment. The quality of the environment will be supervised in order to carry out the appropriate actions and take the best decisions.

Computational Physics

- AMR_PAR (Parallel algorithm and program for the solving of continuum mechanics equations using Adaptive Mesh Refinement),

    Application developed in the Institute of Mathematics and Computer Science of the Academy of Sciences of Moldova and ported to the regional HPC infrastructure with support of RENAM specialists.

Thank you!

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