Designing and Building of Quantum Chemistry Grid

Takeshi NISHIKAWA
Grid Technology Research Center
e-mail: t.nishikawa@aist.go.jp
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We developed "Quantum Chemistry Grid/Gaussian Portal" to utilize efficient resource usage without special knowledge of computer. The system realizes a problem solution environment of computational chemical research.

The design concepts are :

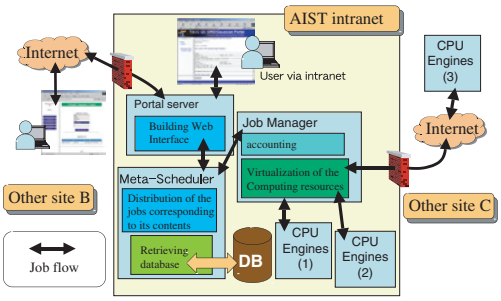
(1) Preservation of specialist's know-how in a database for a resource selection with analysis of the input-parameter.

(2) Preservation of reliable results in a database avoiding the same job execution by different users.

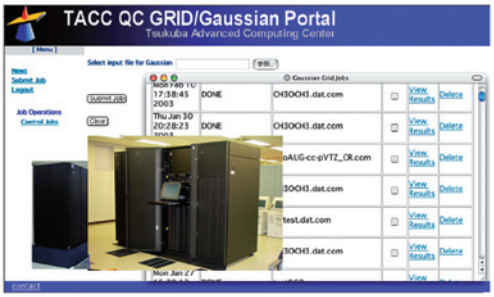
(3) Management of users and accounting information about the calculation resources.

(4) Easy access via Web interfaces.

Gaussian Portal is the first implementation of application service portal for Quantum Chemistry Grid. Gaussian is widely used in computational chemical research.



Overview of Quantum Chemistry Grid



Computing resource of Gaussian portal and Web interface. The Gaussian portal has been employed with Tsukuba Advanced Computing Center, AIST since 2002

Development of Self-Reconfigurable Modular Robotic System M-TRAN II

Akiya KAMIMURA
Intelligent Systems Institute
e-mail: kamimura.a@aist.go.jp
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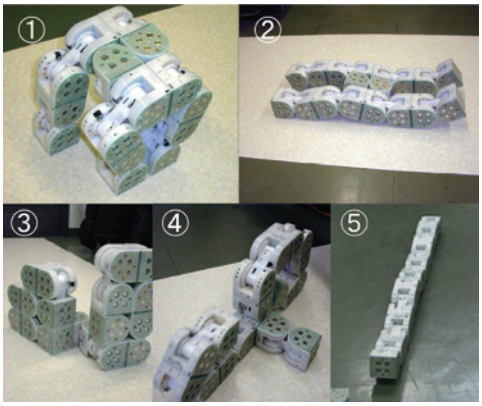
A Distributed System Design Research Group of Intelligent Systems Institute, AIST developed a self-reconfigurable modular robotic system called M-TRAN II, which were fully upgraded in its performance compared to the first generation. Each M-TRAN II module has two degrees of freedom and six connection surfaces with permanent magnets. Robotic configurations made by several modules such as a snake-type crawling robot and a quadrupedal walking robot can move independently by using internal batteries and microprocessors. They can also transform themselves into other configurations according to a control command by a remote controller using RF wireless system. This robot is expected to be applied to such areas as rescue missions or space exploration.



Experiment on a series of locomotion and transformation