OpenScienceSim: An Infrastructure for e-Science based on the 3D Internet and NII’s Cyber Science Infrastructure

Objective

Our objective is to develop a foundation for e-Science ‘workbench’ on virtual world. The framework is composed of advanced communication, collaboration, and facilities for participatory science based on the an online three dimensional world like environment or immersive virtual worlds.

Approach

We make use of existing data from a diverse set of application areas including astrophysics, molecular science and we also utilize the computing facilities such as NAREGI Grid infrastructure to build e-Science workbench.

e-Science Workbench

Astro Users
Specialists/laymen in stellar dynamics (IAS, Princeton, NAOJ, Caltech, MIT, etc), MICA group, KIRA group

Bio Users
Researchers in molecular modeling & dynamics (e.g. Saarland University)

All Users
Researchers and students around the world

Platform for Participatory Science: not only experts, but also general public can easily contribute to scientific discovery and innovation (=democratization of e-Science)

Covers a diverse set of application areas

Bridges the gap between large-scale data and users.

Collaborative Scientific Visualization

Collaborative exploration, discovery, and understanding

Easy Access

Interactive labeling of star by color

Molecular Science

Think it was a 4-body interaction

Or, two single stars meeting a double-star simultaneously

Collaborative molecular visualization & modeling, and understanding

Multimedia Interaction

This is Salicin. Can you convert it to Aspirin?

I will try. What is this molecule?

Any user – with an ordinary computer and Internet connection – can engage in e-Science, anytime, from anywhere

Live collaboration in e-Science education

Powerful multimedia visualization and interaction

Increases awareness of environmental issues by allowing anyone to experience the consequences of behavior choices in the environment.

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