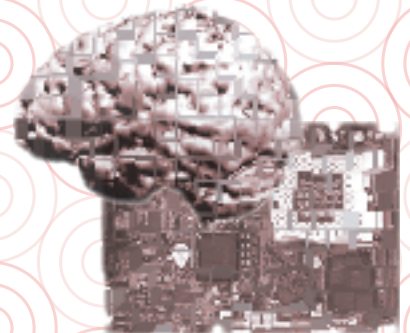


The Development of Data Grid Environment for Neuroinformatics — Concept

Brain is one of the most complex system in this world. Understanding the structure, function and development of the brain is a key to understand human beings and improve its quality of life. To the end, the approach from the integrated view of medicine, biology and informatics is indispensable. Such approach was defined as "Neuroinformatics" by OECD Megascience Forum in 1997.

"Neuroinformatics is interdisciplinary, combining research in neuroscience and informatics (including computation) to develop and apply advanced tools and approaches needed for understanding the brain. In its study of the competence and flexibility of the brain, neuroinformatics research is uniquely placed at the intersection of medical, biological, and behavioral science, computer science, mathematics and engineering. The resultant synergy from combining these approaches will accelerate scientific and technological progress resulting in major medical, social and economic benefits."



Targets of Neuroinformatics

Data sharing

Sharing data, information and knowledge acquired from various experiments to promote collaboration between experts from diverse research fields.

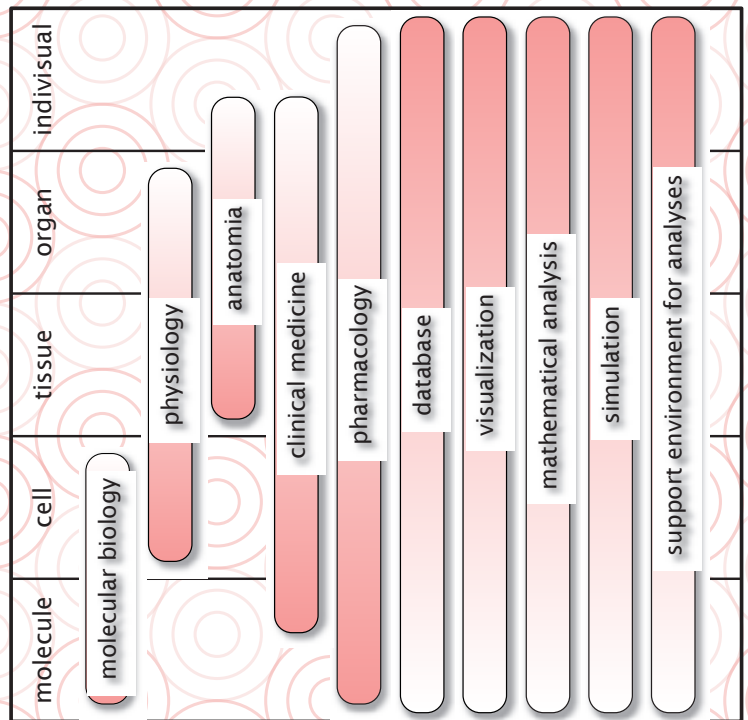
Numerical models

Establishing numerical models which explain experimental data by computer simulation. These models will enable us, for example, to reveal mechanisms of brain diseases or development of neural computers.

Theoretical models of the brain

Establishing brain models based on informatics to understand the brain as an information processing device. This will bring about great breakthroughs in many research areas such as intelligent engineering.

Scope of Neuroinformatics



Resource Examples of Neuroinformatics

Data

image data



annotation

```
<date>20030513</date>
<name>foobar</name>
<size>1mb</size>
```

genome data

```
taantgagat ctaggattata
gaggtgagaa tagtcacctg
aagagtgcaa gcgctccagc
```

time-series data



Tool

experimental device



visualization



database



computing resource

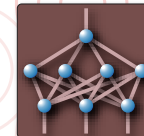


Model

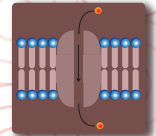
molecular model



neural network



cell model



model of higher brain functions

memory, learning, thinking, etc.

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