

**Scientific Impacts and Opportunities in High Performance Computing
Young Investigators Symposium**

***Possible Funding Opportunities
for YOU!!***

- Collaborating with Japanese Researchers -

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Is it really possible?
Not easy,
but there is a chance.

JSPS ([Japan Society for the Promotion of Science](#))
International Scientific Exchanges Program

JST ([Japan Science and Technology Agency](#))
Strategic International Cooperative Program

JSPS

International Scientific Exchanges Program

➤ **What to fund?**

- (1) Joint research projects
- (2) Joint seminars
- (3) Researcher exchanges

➤ **Where to apply?**

- (1) Japanese Researchers --> JSPS
- (2) Collaborative Researchers --> Counterpart Agency

➤ **How much?**

Up to 2.5 million yen/year (\$25,000/year) for Japanese researcher(s) [similar amount for collaborative researcher(s)]

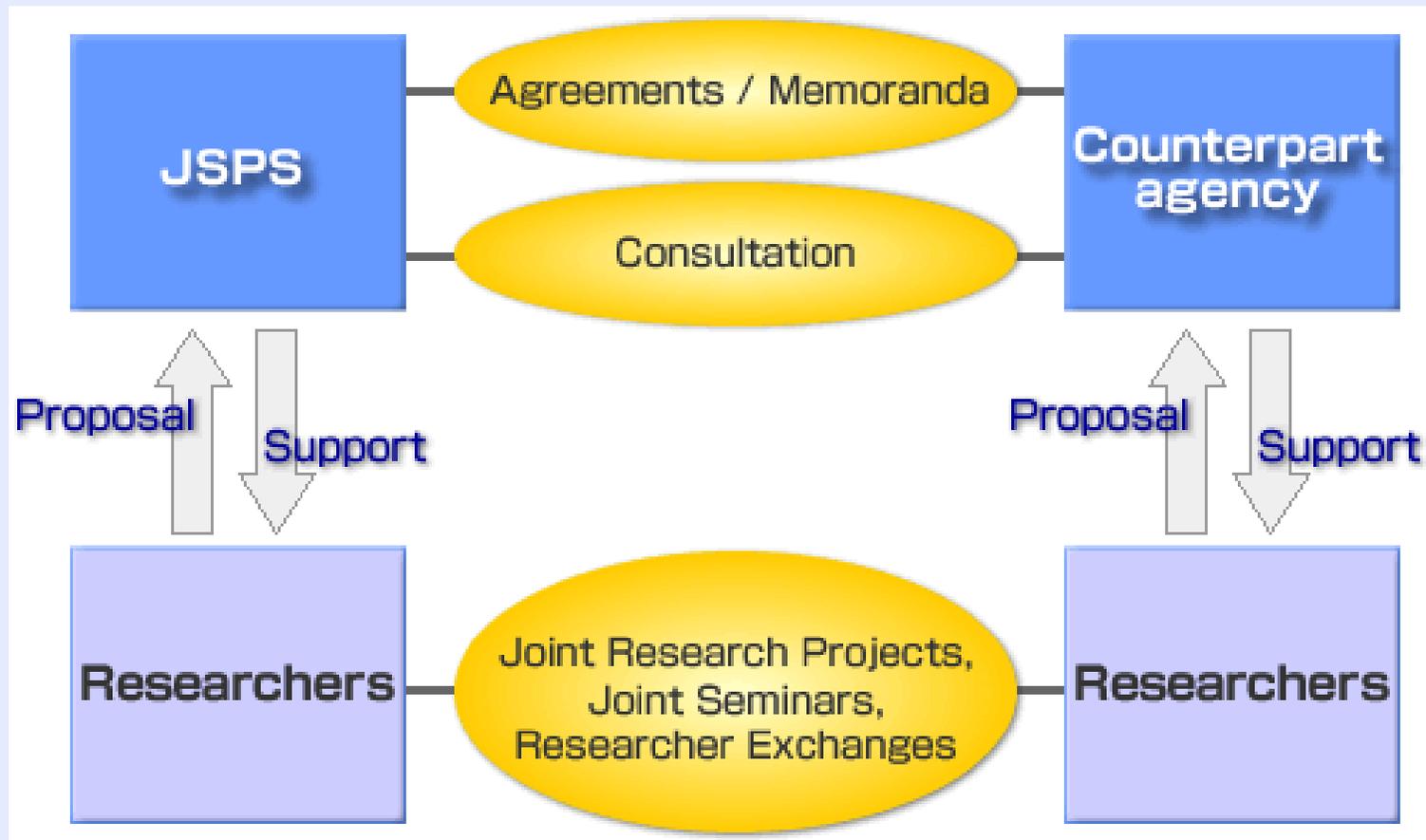
➤ **How long?**

2 to 3 years

JSPS

International Scientific Exchanges Program

- ◆ Needs agreements/Memoranda



JSPS

International Scientific Exchanges Program

Country	Counterpart Agency
France	Centre National de la Recherche Scientifique (CNRS), Institut National de la Santé et de la Recherche Médicale (INSERM), Institut National de la Recherche Agronomique (INRA), Ministry of Foreign Affairs (MAE), Ministère de l'enseignement supérieur et de la recherche (MESR), National Institute for Research in Computer Science and Control (INRIA), Institut des Hautes Etudes Scientifiques (IHES)
Germany	Alexander von Humboldt Foundation (AvH), German Academic Exchange Service (DAAD), German Research Foundation (DFG), Max Planck Society for the Advancement of Science (MPG)
Italy	National Research Council (CNR), Italian Ministry of University and Research (MUR)
Sweden	Royal Swedish Academy of Sciences (RSAS) Swedish Agency for Innovation Systems (VINNOVA) Swedish Foundation for Strategic Research (SSF)
UK	Royal Society, British Academy, British Council, Engineering and Physical Science Research Council (EPSRC)
USA	National Science Foundation (NSF), National Institutes of Health (NIH), National Cancer Institute (NCI), National Academy of Sciences (NAS), Social Science Research Council (SSRC)

JST

Strategic International Cooperative Program

➤ **What to fund?**

- (1) Joint research activities
- (2) Research meetings
- (3) Dispatching and invitation of researchers

➤ **Where to apply?**

- (1) Japanese Researchers --> JST
- (2) Collaborative Researchers --> Counterpart Agency

➤ **How much?**

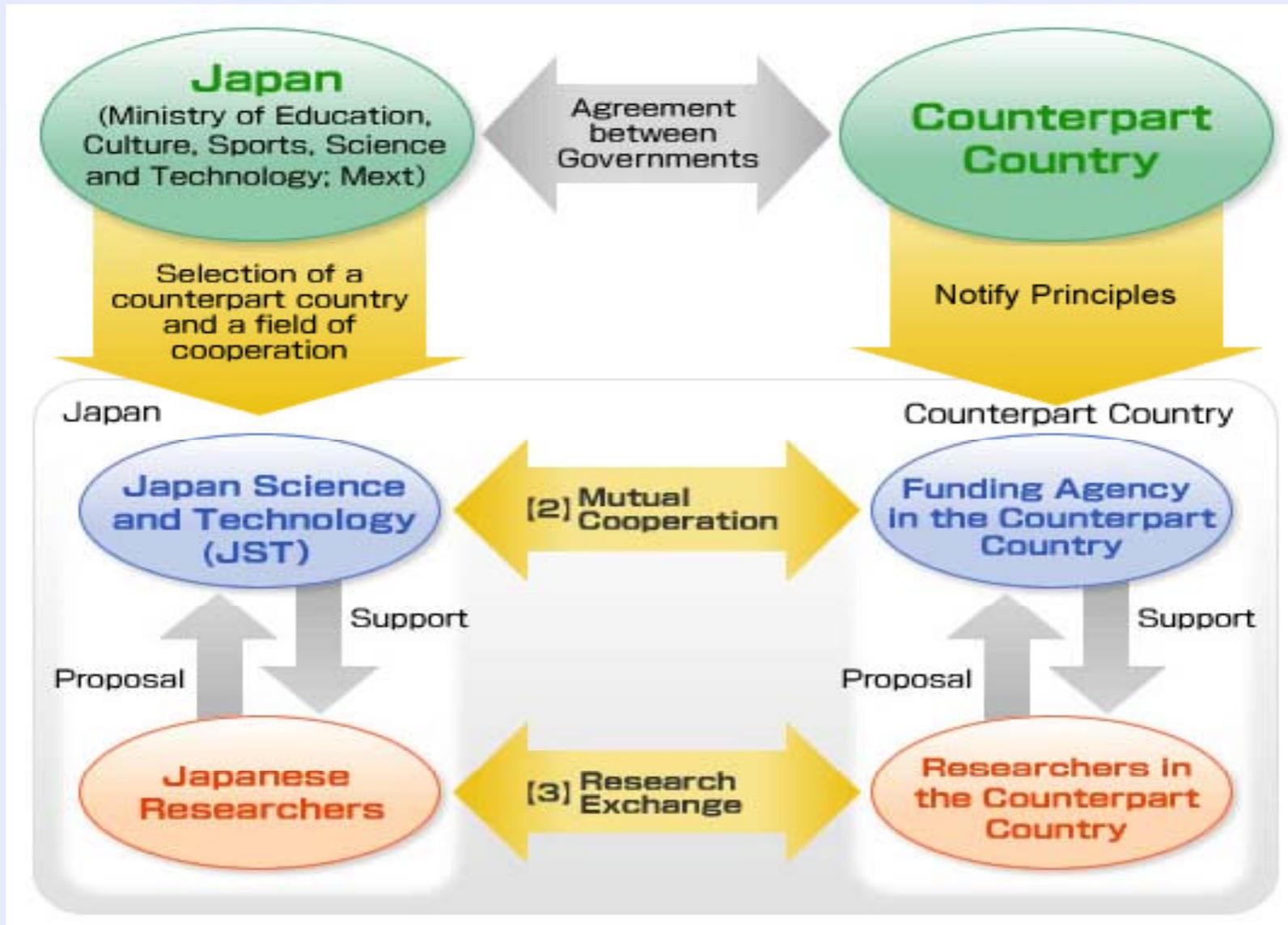
5 to 10 million yen/year (\$50,000 to 100,000/year) for Japanese researcher(s) [similar amount for collaborative researcher(s)]

➤ **How long?**

Up to 3 years

JST

Strategic International Cooperative Program



JST

Strategic International Cooperative Program

Cooperation with Each Country

As of April, 2008

Counterpart Country (main distribution organization)	Current Field of Cooperation	Number of Supporting Projects (Number of Finished Projects)
USA (NSF)	Science and Technology for a Safe and Secure Society (Robotics and Sensor Technology)	11 (6)
UK (BBSRC, EPSRC)	Bionanotechnology Structural Genomics and Proteomics	10 (9)
Sweden (VINNOVA, SSF)	Multidisciplinary Life sciences	6 (9)
France (CNRS, ANR)	ICT including Computer Science	14 (1)
Germany (DFG)	Nanoelectronics	8 (0)
total		49 (25)

JST

Strategic International Cooperative Program

Cooperation with Each Country

For FY2009

Counterpart Country (main distribution organization)	Field of Cooperation
USA (NSF)	Science and Technology for a Safe and Secure Society (Robotics and Sensor Technology)
UK (BBSRC, EPSRC)	Systems Biology Advanced Materials
Sweden (VINNOVA, SSF)	Multidisciplinary Life sciences
France (CNRS, ANR)	ICT including Computer Science Marine Genomics
Germany (DFG)	Nanoelectronics

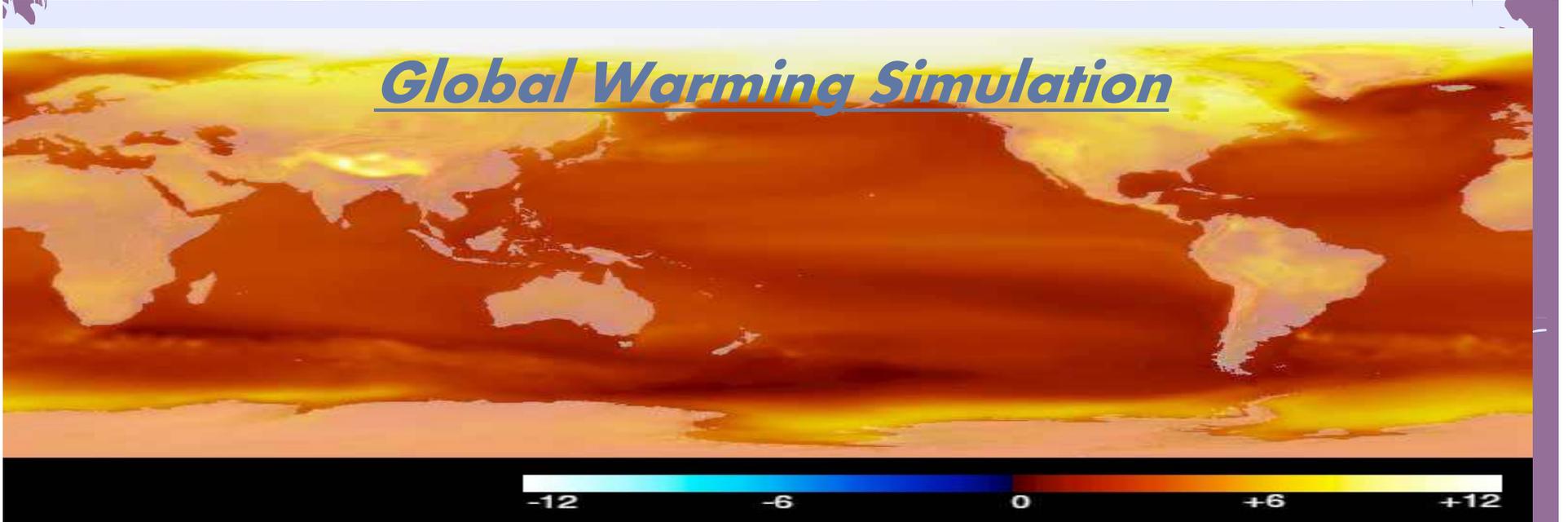


***Government of Japan's Approach
to
High Performance Computing***

The Earth Simulator



Global Warming Simulation



Upgrading the Earth Simulator System

Outline of the new system

Vendor: NEC Corporation

**Type: vector type processor architecture
(shared memory multi-node)**

Peak performance:

131 teraflops (current system: 40 teraflops)

**Application sustained performance (estimated):
twice that of existing system**

Main memory capacity:

20 terabytes (current system: 10 terabytes)

Date of upgrade: March 2009

A Next Generation Supercomputer Project

➤ Purpose of policy:

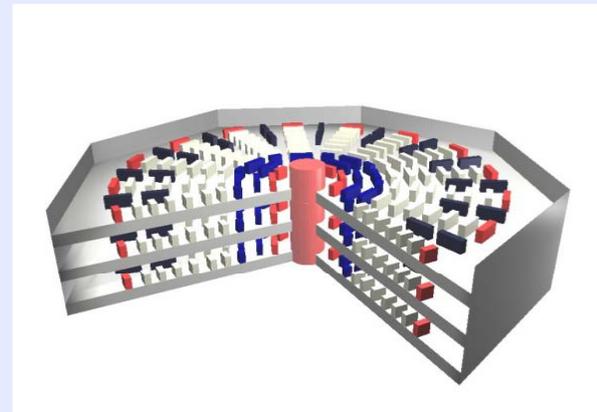
development, installation and application of an advanced high performance supercomputer system, as one of Japan's "Key Technologies of National Importance"

➤ Total Budget:

about 115 billion Yen (1.1 billion US dollars)

➤ Period of Project:

FY2006 – FY2012



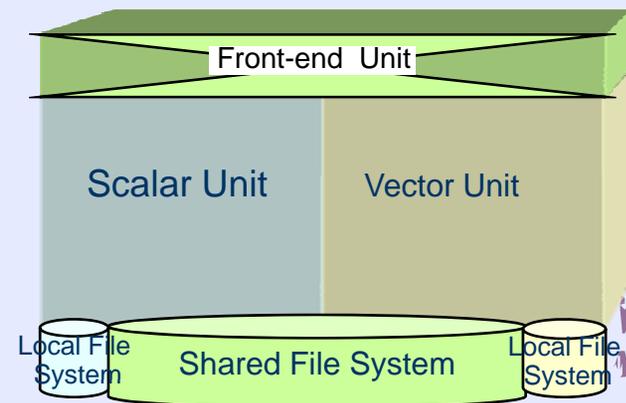
Basic Design of Supercomputer System

Type: The hardware system consists of scalar and vector processor units.

The target performance of Linpack BMT:
10 petaflops

Conducting Body: RIKEN

Vendor: Fujitsu
NEC Corporation
Hitachi



Goals of the Next Generation Supercomputer Project

- Development and installation of the most advanced high performance supercomputer system
- Development and wide use of application software to utilize the supercomputer to the maximum extent
- Establishment of “Advanced Computational Science and Technology Center” (tentative name)

International Cooperation in the Field of HPC

➤ **Key Points**

- ✓ **Keen international competition**
- ✓ **Some difficulty in active cooperation**
- ✓ **HPC is indispensable for advanced basic research**
- ✓ **Collaboration of HPC scientists and another basic research scientists**

➤ **Directions**

- ✓ **Selecting important fields**
- ✓ **Workshops, Researchers exchange**
- ✓ **Addressing the matter in intergovernmental meetings**

Existing International Collaboration

- **USA** Scripps Institution of Oceanography, University of California, San Diego
National Energy Research Scientific Computing (NERSC) Center, Lawrence Berkeley National Laboratory
The University of Texas at Austin
The International Arctic Research Center (IARC), The University of Alaska Fairbanks
Department of Geology and Geophysics, University of Minnesota (DGG/UMN)
- **Canada** Recherche Prévision Numérique, Meteorological Service of Canada (PRN/MSC)
- **UK** NERC Centre for Global Atmospheric Modeling (CGAM)
MET Office, Hadley Centre For Climate Prediction and Research
- **France** Centre National de la Recherche Scientifique (CNRS), France
Institut Français de Recherche pour L'exploitation de la Mer (IFREMER), France
- **Italy** Italian Aerospace Research Center (CIRA)
- **Singapore** Institute of High Performance Computing (IHPC)
- **Taiwan** The National Applied Research Laboratories (NARL)
- **Republic of South Africa**
The Meraka Institute of the CSIR (MI),