Project support activity using numerical simulation

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● **Abstract**

Utilize the simulation technology of Reserch Unit III to deal with the technical problem solving in current JAXA project, and respond to the request for the project concerning issue. In addition, it realizes "added value (efficiency improvement, high reliability, cost / period reduction, ripple effect, etc.)" unique to numerical simulation technology.

Ref. URL: http://www.kenkai.jaxa.jp/eng/research/software/software.html

● **Reasons and benefits of using JAXA Supercomputer System**

In order to respond timely to project requirements, it is necessary to simulate complex geometries of actual spacecraft and to analyze a large number of conditions in a short period.

● **Achievements of the Year**

With regard to JAXA projects such as H3, SLIM, MMX, HTV-X, and so on, evaluation of design and risks as well as studies for improvement were carried out by making full use of the simulation technology of Reserch Unit III and JSS3.

● **Publications**

N/A

● **Usage of JSS**

● **Computational Information**

Process Parallelization Methods	MPI
Thread Parallelization Methods	FLAT
Number of Processes	12 - 400
Elapsed Time per Case	100 Hour(s)

● **JSS3 Resources Used**

Fraction of Usage in Total Resources[*1](%): 0.75

Details

Computational Resources		
System Name	CPU Resources Used (core x hours)	Fraction of Usage[*2](%)
TOKI-SORA	11,997,857.59	0.52
TOKI-ST	779,112.44	0.78
TOKI-GP	0.00	0.00
TOKI-XM	0.00	0.00
TOKI-LM	11,327.84	0.76
TOKI-TST	1,404,109.00	37.00
TOKI-TGP	469.44	87.87
TOKI-TLM	43,552.50	90.51

File System Resources		
File System Name	Storage Assigned (GiB)	Fraction of Usage[2] (%)
/home	4,379.60	3.97
/data and /data2	235,174.15	1.81
/ssd	17,454.90	2.42

Archiver Resources		
Archiver Name	Storage Used (TiB)	Fraction of Usage[2] (%)
J-SPACE	197.69	0.88

[1]: Fraction of Usage in Total Resources: Weighted average of three resource types (Computing, File System, and Archiver).

[2]: Fraction of Usage：Percentage of usage relative to each resource used in one year.

● **ISV Software Licenses Used**

ISV Software Licenses Resources		
	ISV Software Licenses Used (Hours)	Fraction of Usage[2] (%)
ISV Software Licenses (Total)	4,712.30	3.28

[2]: Fraction of Usage：Percentage of usage relative to each resource used in one year.