Data Sharing for Research on Airframe Noise Reduction Design (FQUROH-2)

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Abstract

Major airports are considering increasing the number of takeoffs and landings to meet the projected demand for air travel, enhance the international competitiveness of Japan's airports, and improve passenger convenience. It is essential to advance technologies that minimize airframe noise generated by high-lift devices and landing gear to reduce noise in the areas surrounding airports, even with the expected rise in takeoffs and landings. Our comprehensive approach includes developing a flight test plan using a commercial aircraft to demonstrate airframe noise reduction. Additionally, we have prepared an 8%-scale semi-span wind tunnel model of the NASA High-Lift Common Research Model (CRM-HL) for further demonstrations using a generic aircraft mode. These are part of our efforts to develop noise reduction technology practically. We used computational simulations to verify the feasibility of practical noise reduction concepts and design methods. This business code was used for data sharing of computational results.

Ref. URL: http://www.aero.jaxa.jp/eng/research/ecat/fquroh/

Reasons and benefits of using JAXA Supercomputer System

The JSS3 has been used to understand the detailed noise generation physics and optimize noise reduction designs. The FQUROH project aims to accelerate the technology maturity of airframe noise reduction methods using advanced, large-scale, high-fidelity computational simulations on the JSS3's high-performance computing platform and to demonstrate the high-fidelity design technologies through flight tests. Computational simulations using the JSS3 have made it possible to design low-noise devices by understanding detailed physical phenomena that were difficult to obtain through wind tunnel testing alone. In addition, the JSS3's large hard disk and tape devices can store large amounts of data generated by unsteady numerical analysis for both short and long periods of time.

Achievements of the Year

This business code was used for data sharing of computational results.

Publications

N/A

Usage of JSS

- **Computational Information**

Process Parallelization Methods	N/A
Thread Parallelization Methods	N/A
Number of Processes	1
Elapsed Time per Case	1 Second(s)

- **JSS3 Resources Used**

Fraction of Usage in Total Resources[*1](%): 0.00

Details

Computational Resources		
System Name	CPU Resources Used (core x hours)	Fraction of Usage[*2](%)
TOKI-SORA	0.00	0.00
TOKI-ST	0.00	0.00
TOKI-GP	0.00	0.00
TOKI-XM	0.00	0.00
TOKI-LM	0.00	0.00
TOKI-TST	0.00	0.00
TOKI-TGP	0.00	0.00
TOKI-TLM	0.00	0.00

File System Resources		
File System Name	Storage Assigned (GiB)	Fraction of Usage[*2] (%)
/home	20.65	0.01
/data and /data2	7,946.45	0.04
/ssd	0.00	0.00

Archiver Resources		
Archiver Name	Storage Used (TiB)	Fraction of Usage*2 (%)
J-SPACE	190.64	0.62

*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)	0.00	0.00

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