NSTC 國家科學及技術委員會
National Science and Technology Council

NSTC Core Computing Service
高效能核心計算服務

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Institute of Physics, Academia Sinica
January 2026

Promotion of NSTCCore Center Services At TPS

- **TPS 2024** : National Central University
  - Promotion booth
- **TPS 2025** : National Sun Yat-sen University
  - Promotion booth
  - Satellite session : https://indico4.twgrid.org/event/61/
- **TPS 2026** : National Chung-Cheng University
  - Promotion booth
  - Satellite session : https://indico4.twgrid.org/event/70/

4:00 PM → 4:10 PM **一、NSTCCore 計劃簡介 NSTCCore Project Overview**
Convener: Prof. Song-Ming Wang (ASGC)

4:10 PM → 4:30 PM **二、資源與服務概況 Overview of Resources and Services**
Convener: Prof. Eric Yen (ASGC)

4:30 PM → 5:25 PM **三、交流與討論 Discussion and Exchange**
Convener: Mr Felix Lee (ASGC)

5:25 PM → 5:30 PM **四、問卷調查 Questionnaire**

NSTCCore Center

Goal of NSTCCore Center:

- To provide reliable mid-size data center computing service to the Taiwan Scientific communities
  - Research teams do not have to set up their systems (usually at smaller scale) and operate it.
    - Enable them to focus on their research work
  - Allow each research team to be able to access to hundreds of high-performance CPU cores at fractional fee compare to commercial data centers
  - Collaborate with them to
    - Customize big data analysis processes
    - Improve their scientific computing performance
- To develop tools and technology to improve the data center service capabilities
- Cultivate talents

NSTCCore Center

Center Location:

Academia Sinica Grid Computing (ASGC) Center, at the Institute of Physics of Academia Sinica

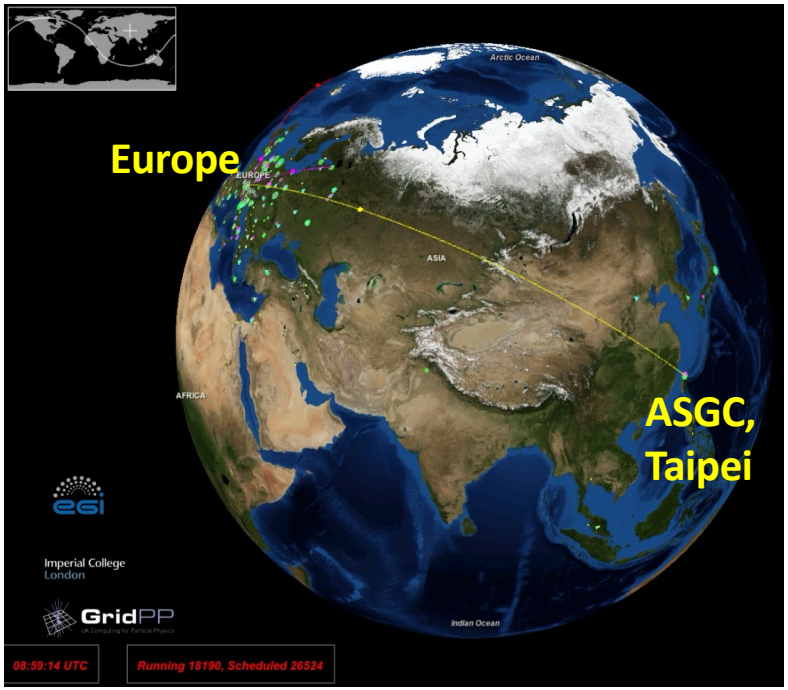
Funding from:

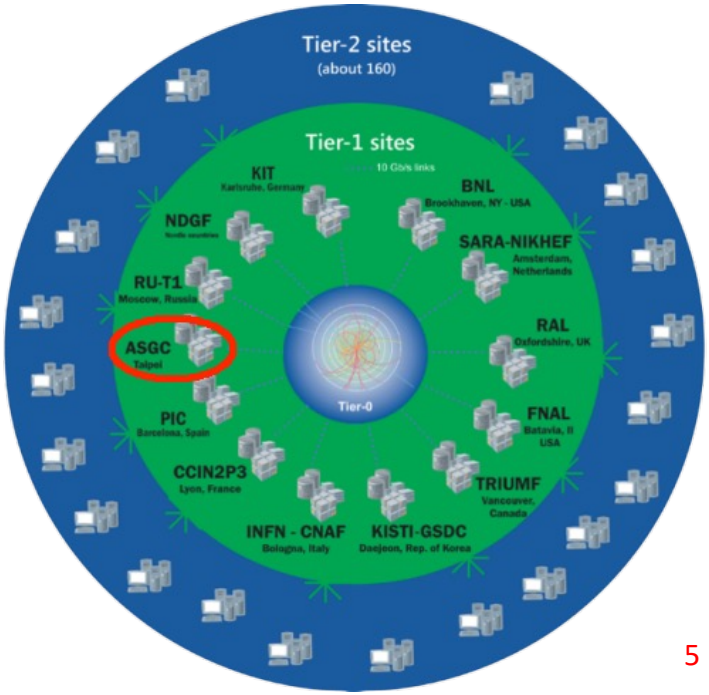
The Taiwan National Science and Technology Council (NSTC) (國家科學及技術委員會)

History

ASGC (Academia Sinica Grid Computing) center:

- Established in 2005 as one of the Tier-1,2 centers of the Worldwide LHC Computing Grid (WLCG)
  - To support the data analyses of the LHC experiments via distributed computing
- Through this work, ASGC gained much valuable experiences on distributing computing, working with users, and also collaborating with other WLCG sites around the world
- ASGC also works closely to support research groups of multiple disciplines in Academia Sinica





History

NSTCCore Center Program:

- In late 2022 NSTC initiated the NSTCCore program (高效能核心計算服務計畫)
- Invited submission of proposals of project to service the domestic scientific research and education community
  - with a medium size high performace data center
  - to improve research efficiency
- Academia Sinica Institute of Physics was awarded a 3-year program in June 2023 to host the NSTCCore Center at ASGC
- NSTCCore Center began service on August 1st 2023, currently in the 3rd year.

NSTCCore Resources

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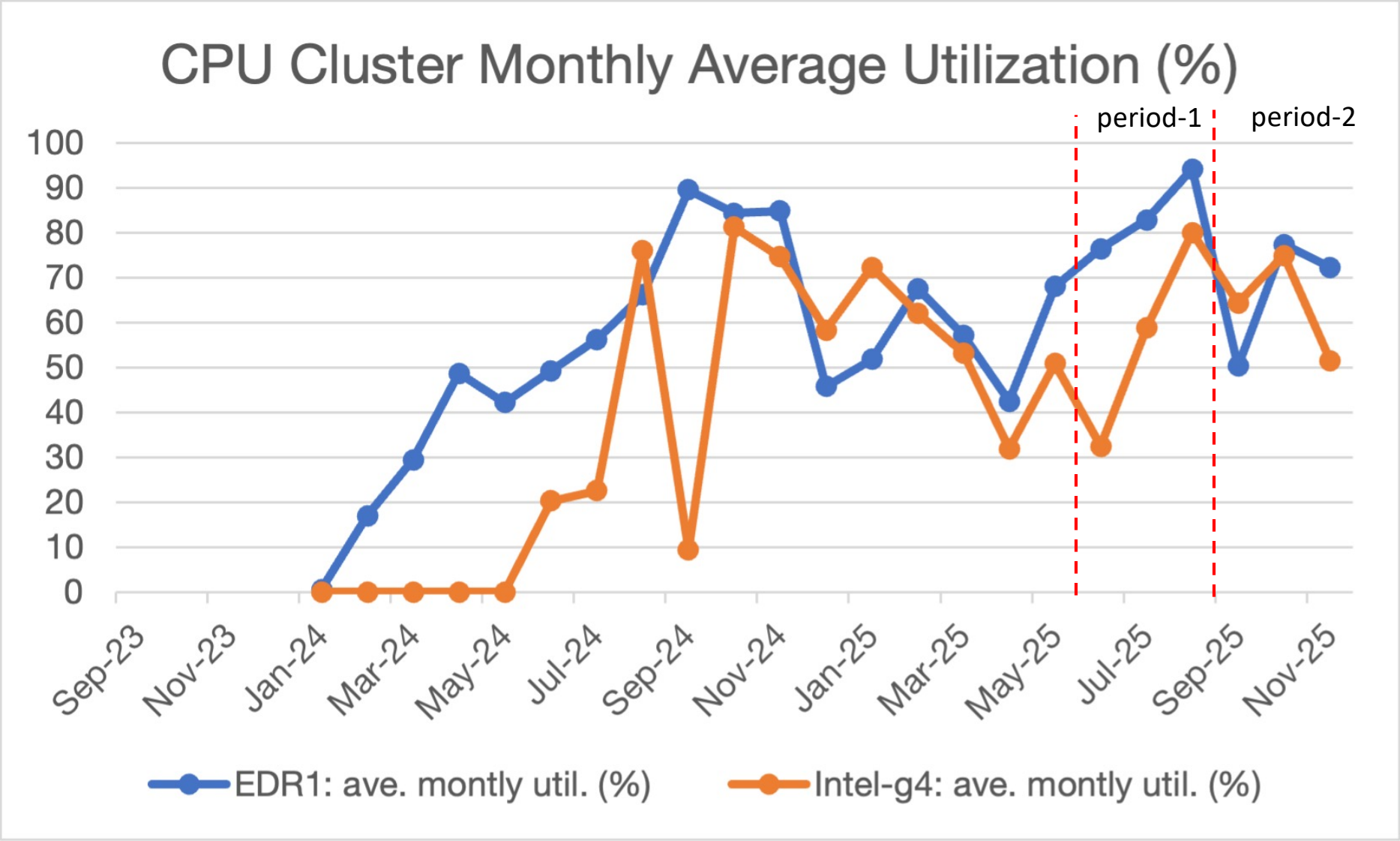
•Current available computing resources

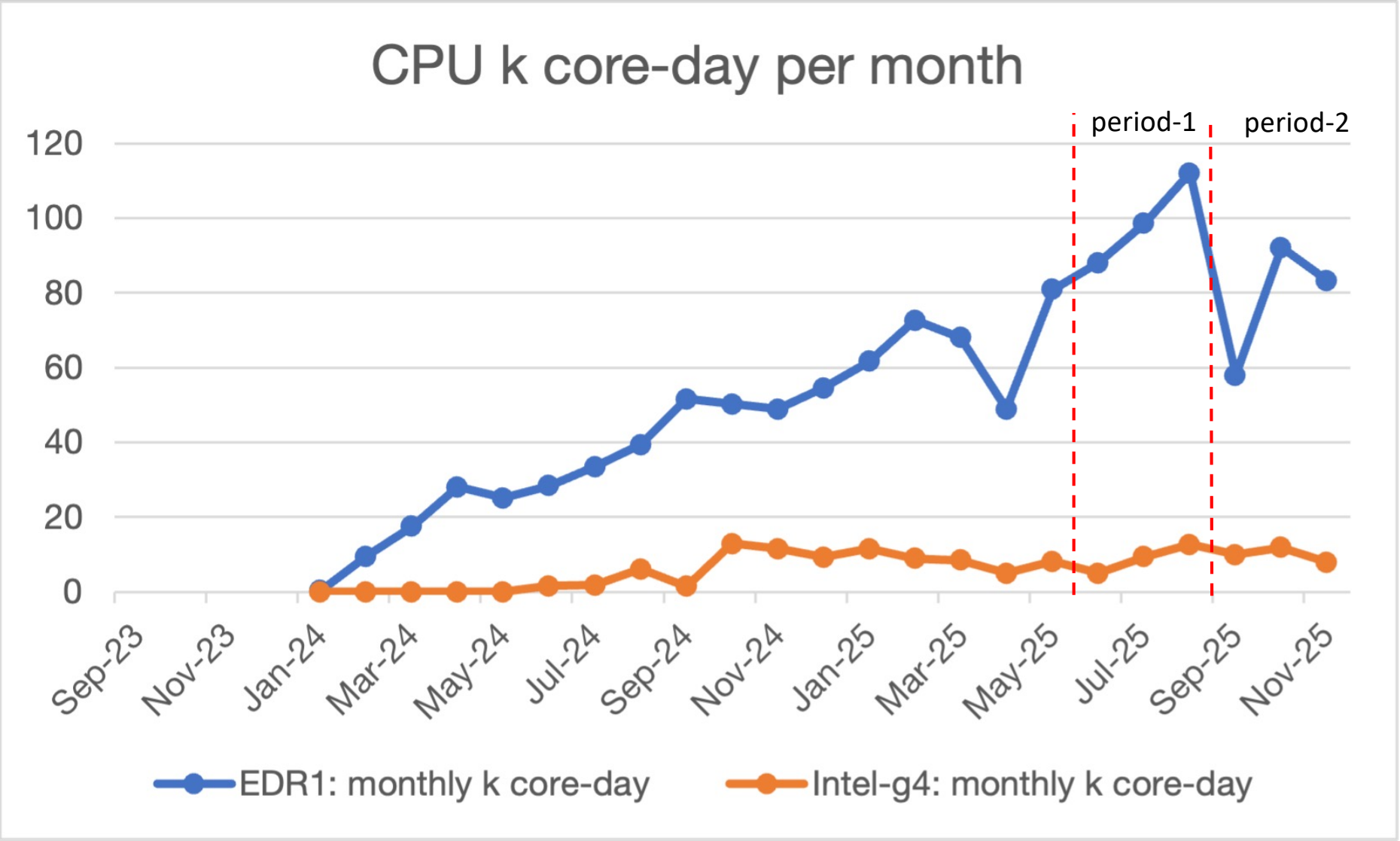
	Cluster	Specifications	CPU core / GPU board
CPU	EDR1	AMD Genoa 9654	3840
	Intel-G4	Intel Xeon 6448H	512
GPU	A100	8 GPU/Server, 80 GB	24
	L40S	4GPU/Server, 48 GB	4
	4090	8 GPU/Server, 24 GB	16
	3090	4 or 8 GPU/Server, 24 GB	56
	V100	8 GPU/Server, 32 GB	48
	P100	4 GPU/Server, 32 GB	16
Storage	Disk (PB)	CephFS	12
	Tape (PB)	LTO9 (18TB/tape)	10

Computing : CPU



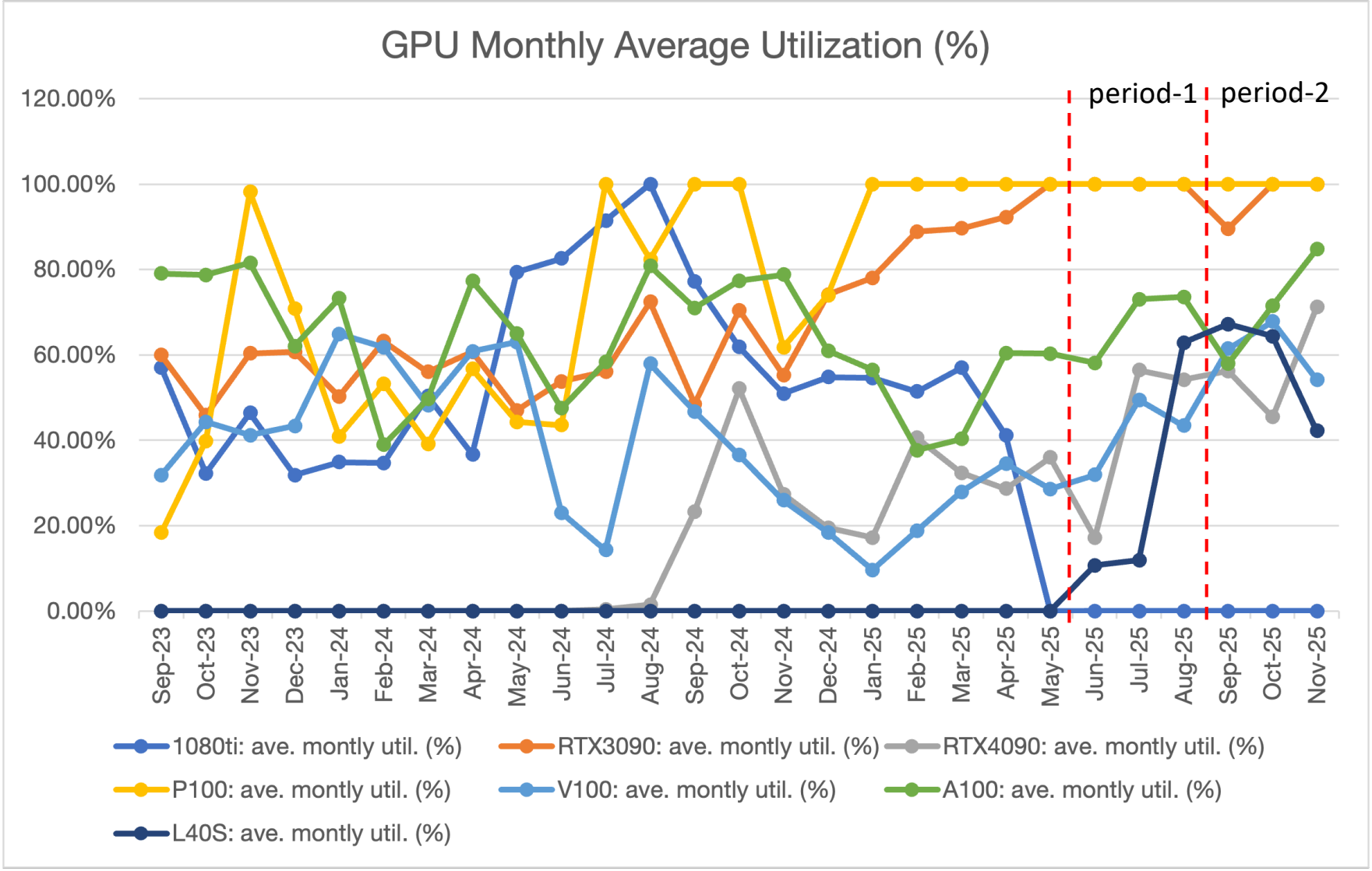
- Average utilization per month of the two CPU clusters

Computing : CPU



- Total CPU core-days per month of each CPU cluster

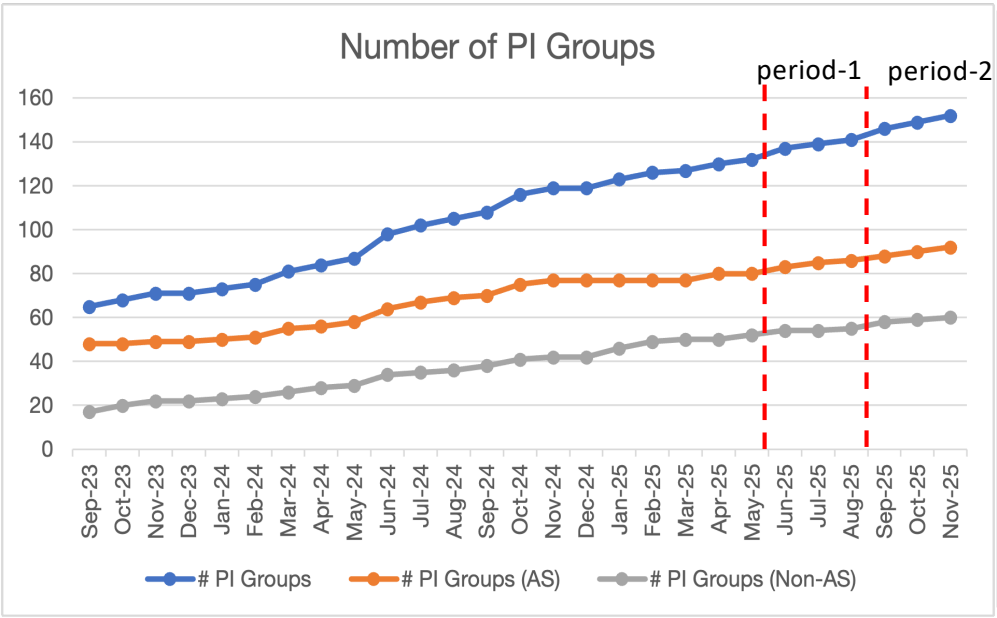
Computing : GPU

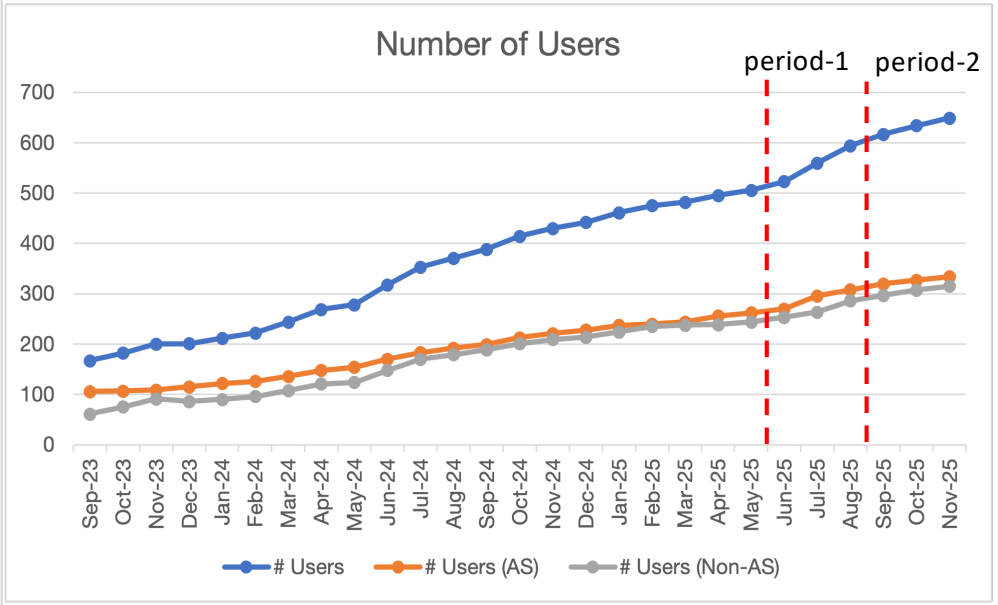


- Average utilization per month of each GPU cluster

PI Groups and Users

- Our users are from many different research fields:
  - Astrophysics, Biomedicine, Chemistry, Climate Research, Earth Science, Information Technology, Mathematics, Microbiology, Particle Physics, and Space Science





- Steady increase of PI groups (LEFT) and users (RIGHT) registering to use the NSTCCore facility

Outreach Events

- Organize frequent workshops and events to advertise the NSTCCore services
- In 2025:
  - 6 workshops (NSTCCore training sessions, or theme-based training organized with research teams)
  - summer student program
- In 2026 January:
  - Booth at 9th Earthquake Research Center Annual meeting (Jan 6th,7th)
  - Workshop at Taiwan Instrumentation Detector Consortium (TIDC) (Jan 7th)
- *MANY THANKS to the tireless effort of the ASGC/NSTCCore team!*

- Two articles published about NSTCCore services
  - 科學推展中心 (2025/12)：
    - **【專題企劃18】高效算力驅動未來知識革命—專訪國科會高效能核心科學計算中心暨暨中研院網格計算中心**
    - https://spec.ntu.edu.tw/profile/profile-detail288
  - 物理雙月刊 (2025/12/25) :
    - **善用國科會核心高效能科學計算服務，開啟科研新境界**
    - https://bimonthly.ps-taiwan.org/articles/694b5982324a61f221ee6972

Plans

- In the process of adding another 1920 CPU cores and 3 PB of disk storage space
  - Expect to receive at end of January, available to users in ~1-2 months
- We are also getting 2 servers with total 16 RTX Pro 6000 GPU boards
- Will be submitting a new NSTC proposal to apply for another 3-year support of the NSTCCore center
- For next 3 years:
  - Increase CPU resources to 10k cores
  - Add more intermediate and advance GPU boards
  - Improve user services:
    - Understand more about users' needs via:
      - Workshops
      - Questionnaires when PIs/users applying for accounts
    - Monitor users' job submission patterns and their jobs queuing time
  - Improve the data center efficiency with automatic and intelligent monitoring tools

BackUp

Out Reach Events

•Organizing frequent workshops and promotional events to advertise the NSTCCore services

Event	Location	Date	# of Attendence
The 1st NSTCCore Computing Service User Workshop in 2025	TPS 2025, NSYU	Jan 14-16 2025	
TAML (Telescope Array Machine Learning) 2025 Workshop	Academia Sinica	Mar 25-29 2025	~40
The 2nd NSTCCore Computing Service User Workshop in 2025	National Biotechnology Research Park, Academia Sinica	April 10th, 2025	25
114年化學學門整合型計畫成果發表暨媒合交流研討會 (link)	NTU	April 26th, 2025	111
Genomic Epidemiology Workshop	Academia Sinica	July 21-25 2025	150
Summer Student Program	IoP, Academia Sinica	Aug 13, 15, 2025	27
The 3rd NSTCCore Computing Service User Workshop in 2025	NTHU	Oct 15th, 2025	est. ~50
Telescope Array Data Analysis & Machine Learning Workshop 2025	Academia Sinica	Oct 15-17, 2025	~30
The 4th NSTCCore Computing Service User Workshop in 2025	TIDC 2025, National Museum of Natural Science	Jan 7, 2026	