Keynote

Thu. Nov 12, 2026 9:00 AM - 10:30 AM JST | Thu. Nov 12, 2026 12:00 AM - 1:30 AM UTC | Room A (Oshidori) (2F)

Keynotes A2

Chair: Fumio Inagaki, Swadhin Behera

9:55 AM - 10:15 AM JST | 12:55 AM - 1:15 AM UTC

[MW49V9HW-04] Research Information Infrastructure for AI-Driven Science: Integrating HPC, Research Data Management, and Advanced Analytics

*Shintaro MOMOSE[1] (1. NEC (Japan))

The rapid advancement of artificial intelligence is transforming scientific discovery and industrial research. While high-performance computing (HPC) remains an essential foundation for large-scale simulation, modeling, and data-intensive computing, the importance of research data has grown significantly. In the emerging era of AI for Science, scientific competitiveness is increasingly determined not only by computational capability but also by the ability to manage, share, and utilize heterogeneous datasets generated across simulations, experiments, and observational facilities.

To address this challenge, NEC is developing a Research Information/Intelligence Infrastructure (RII), a data-centric research platform that integrates HPC resources, research data management, data sharing, provenance management, and AI-enabled analytics. RII aims to establish an environment in which research data can be continuously collected, curated, shared, and reused throughout the research lifecycle, supporting collaboration across computational and experimental domains while improving the accessibility and value of scientific data.

This presentation introduces the architectural concept of RII and discusses three fundamental capabilities required for next-generation research infrastructures: efficient movement of large-scale datasets across distributed environments, automated provenance capture to enhance reproducibility and transparency, and advanced data utilization through AI and optimization technologies. Together, these capabilities enable a seamless connection between data generation, management, and knowledge extraction, reducing barriers to data-driven research and accelerating scientific workflows.

The presentation also explores the evolving role of research data management as a key component of modern HPC ecosystems and discusses how integrated cyberinfrastructure can support AI-driven discovery, digital engineering, and future research environments in both academia and industry.

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