



Contribution ID: 402

Type: Talk

AASTU HPC-BDA Center: Advancing Cyber-Infrastructure for Data-to-Decision Transformation in Africa

The newly established High-Performance Computing and Big Data Analytics (HPC-BDA) Centre of Excellence at Addis Ababa Science and Technology University (AASTU) represents Ethiopia's bold entry into the continental cyber-infrastructure landscape, complementing South Africa's CHPC and NICIS. Anchored in state-of-the-art laboratories spanning Business Analytics, HPC & Cloud Systems, Bioinformatics, Agro-Informatics, Computational Science, Cybersecurity, and Meteorological Modelling, the Centre employs a dual-layer strategy that couples foundational infrastructure with high-impact applications in agriculture, healthcare, climate resilience, and the digital economy. By embedding bioinformatics and genomics with secure, INSA-supported data governance frameworks, the Centre uniquely integrates life sciences, policy alignment, and advanced computation into actionable decision systems. Positioned as a "Research Gravity Zone," it aspires to attract partnerships, catalyze funding, and advance Ethiopia's Digital Ethiopia 2025 and STI policy priorities, while fostering regional collaboration toward a pan-African HPC-BDA ecosystem that translates data to decisions.

High-Performance Computing (HPC) and Big Data Analytics (BDA) are rapidly transforming the global research and innovation landscape, enabling nations to turn massive data streams into actionable insights. While South Africa's Centre for High Performance Computing (CHPC) has demonstrated continental leadership, emerging ecosystems across Africa now have the opportunity to complement and expand this capacity. This presentation introduces the newly established HPC-BDA Centre at Addis Ababa Science and Technology University (AASTU), Ethiopia, as a strategic initiative designed to position Ethiopia as a regional knowledge hub.

The Center integrates state-of-the-art laboratories in Business Analytics, Cloud & HPC Systems, Bioinformatics, Computational Science, Agro-Informatics, Network & Cybersecurity, and Meteorological Modelling. Its dual-layer strategy links advanced cyber-infrastructure with thematic domains of national priority, agriculture, healthcare, climate resilience, and the digital economy. By embedding bioinformatics and genomics, the Center uniquely connects life sciences with data-driven decision systems, strengthening Africa's capacity for health security and food sustainability. Supported by the Information Network Security Administration (INSA), the Center also incorporates advanced cybersecurity and governance frameworks, ensuring ethical, secure, and policy-aligned use of HPC-BDA resources for both national and international collaboration.

The paper will highlight how this ecosystem fuels data-to-decision pipelines through advanced HPC workflows, robust partnerships, and alignment with Digital Ethiopia 2025 and the national Science, Technology, and Innovation (STI) policy framework. Furthermore, it will discuss the Center's regional role in fostering collaboration with continental cyber-infrastructure leaders, including CHPC and NICIS, towards a pan-African HPC-BDA network.

By demonstrating Ethiopia's novel model of integrating cyber-infrastructure, applied research, and innovation ecosystems, the AASTU HPC-BDA Center aspires to create a "Research Gravity Zone" in Africa, an engine attracting partnerships, funding, and global recognition while directly advancing the CHPC 2025 theme of From Data to Decisions.

Presenting Author

A. A. Woldesemayat

Email

adugna.abdi@aastu.edu.et

Student or Postdoc?

No. Not a student nor Postdoc.

Institute

Addis Ababa Science and Technology University

Registered for the conference?

No

CHPC User

Yes

CHPC Research Programme

Anti-cancer drug discovery (HEAL1237) Research

Workshop Duration

Primary author: Dr WOLDESEMAYAT, Adugna (Addis Ababa Science and Technology University)

Presenter: Dr WOLDESEMAYAT, Adugna (Addis Ababa Science and Technology University)

Session Classification: HPC Technology

Track Classification: HPC Technology