Policy for Advancing Sustainable Computing and Atomic Leadership (PASCAL)

Context

For decades, the United States and European Union (EU) have recognized their shared responsibility to protect the common values of transnational collaboration. PASCAL addresses the unique interests of the EU and the U.S. through (1) **establishing ethical guidelines**, (2) **sustainable energy**, (3) **computational efficiency**,[1] and (4) **supply chain stability**.[2] PASCAL is designed for a Western partnership to advance AI technologies ethically with sustainable energy input and output, while repositioning chip manufacturing away from the looming threat of sovereignty confrontations in China and Taiwan.

Structure

PASCAL establishes a bilateral AI task force of leading governmental agencies from the U.S. and EU, with supporting governmental roles for research and development.

On the American side, the National AI Initiative Office (NAIIO) and the Department of Energy (DoE) will serve as coordinators for the artificial intelligence supply chain and nuclear energy infrastructure. On the European side, tasks may be delegated to EURATOM for nuclear energy development and the European Commission for AI legislation, funding, and research.

Objectives

1) Sustainable & Efficient Energy
2) Supply Chain Stability
3) Optimization of Computational Resources
4) Establishment of International Ethical Guidelines for the Use of AI

Implementation

Through advanced research and development, PASCAL will solidify EU-U.S. superiority in artificial intelligence. By 2035, PASCAL aims to advance computational efficiency through thermodynamic chips and enhance nuclear reactors for AI energy consumption.[3] [4] It will initiate a new avenue for collaboration through funding programs between the U.S. and EU to expand sustainable, ethical standards in AI. Through this approach, PASCAL will:

I. Surpass current computer technology via thermodynamic implementation;
II. Utilize nuclear energy sources to supplement AI energy consumption;
III. Shore semiconductor manufacturing to the EU/U.S. sphere of influence.

[1] Conte, T., DeBenedictis, E., Ganesh, N., Hylton, T., & Strachan, J., et al. (2019). *Thermodynamic computing*. arXiv preprint arXiv:1911.01968. https://arxiv.org/pdf/1911.01968.

[2] Thadani, A., & Allen, G. C. (2023, May 30). Mapping the semiconductor supply chain: The critical role of the Indo-Pacific region. Center for Strategic and International Studies. https://www.csis.org/analysis/mapping-semiconductor-supply-chain-critical-role-indo-pacific-region.

[3] Dam, M., Naimoğlu, M., Shahbaz, M. (2025). Minimizing fossil fuel energy losses: The role of R&D and nuclear energy in the United States. *Elsevier*. Vol. 490, p. 1-10. https://doi.org/10.1016/j.jclepro.2025.144819.

[4] Qu, C., Bang, R. N. (2024). Metals at the nexus: renewable vs. nuclear energy systems, metal import requirements, and energy security in the European Union. *ProQuest*. Vol. 37(1), p. 101-119. https://doi.org/10.1007/s13563-023-00410-1.