

### POLICY PAPER OCTOBER 2025

# EU-Japan supercomputing collaboration boosts disruptive research and innovation

## To maximise the benefits, sustainable structures and funding are required

Research and innovation (R&I) and digital technologies are critical enablers of competitiveness, productivity and prosperity in today's global economy. R&I efforts pave the way for new scientific breakthroughs, which help solve the many challenges our societies face in this tumultuous time, including more effective treatments towards diseases, the discovery of new and better materials for industries, or solutions to mitigate the consequences of climate change.

High-performance computing (HPC) is one of the critical technologies to enable scientific advances. EU and Japan, as like-minded partners and two world-leading HPC superpowers, should work together even more closely to leverage the best expertise and resources to reach the highest possible potential of the existing and future computing infrastructures and achieve a leading position in scientific innovations and global competition. For this, sustainable structures and funding to support concrete collaborations at both national and EU level are required.

This entails finalising Japan's association to the Horizon Europe programme, agreements to enable mutual access to supercomputing resources, as well as continued support for cooperation activities, such as researcher and engineer mobility or joint workshops and events.

# Global race for leadership in science and technology

In the race towards a leading technological position, various regions in the world have made huge investments in the development of critical technologies and technological

infrastructures, such as highperformance computing (HPC) and artificial intelligence (AI), as well as developing related competences. Economic giants, like the US and China



are currently leading the development efforts both in the amount of investments as well as pure computing power, but other areas, such as Europe and Japan, are close behind.

EU, the **EuroHPC** the Joint Undertaking has established a broad European ecosystem of world-class and supercomputers competence centers, which is currently being even further expanded with an emphasis on Al via the creation Al Factories and plans for Al Gigafactories. Quantum and data capabilities are also addressed, for instance, through the integration of multiple quantum computers to the EuroHPC systems and the Data Labs envisioned in conjunction with the Al Factories. Japan is also developing a successor to its world-leading

supercomputer Fugaku and is in the process of establishing a broad quantum ecosystem with multiple home-grown and procured quantum computers.

As the global landscape becomes increasingly more divided, working together with partners who share the same values and goals is exceedingly important. By joining forces and connecting the best tools with the best experts across borders, it is possible to magnify the impact of technological investments and significantly boost scientific innovation.

with Japan, which is identified as a strategic partner with the same values and interests, including democracy, human rights, multilateralism, free and fair trade, and the green transition. In the recent years, cooperation around digital technologies between the EU and Japan has grown ever closer the EU-Japan through Digital **Partnership** (2022),promoting collaboration around critical **HPC** technologies, such as and quantum, AI, digital connectivity and data flows. At the moment, the EU and undergoing are formal negotiations on Japan's association to the EU's research and innovation framework programme Horizon Europe, which would be the closest form possible of science technology cooperation between the

This provides the EU and Japan a unique opportunity to join forces and share knowledge, expertise resources to achieve the best scientific possible and results ensure success and welfare of both regions. While the strong political support provides a framework for concrete cooperation, further support on both national and international levels is required to establish and uphold the necessary structures to build strong, sustained collaborations.

regions.

# EU-Japan collaboration in digital technologies

The European Union has a longstanding relationship of cooperation



### Towards sustainable collaboration

The HANAMI project is an initiative under the umbrella of the Digital Partnership, funded by the EuroHPC Joint Undertaking, to strengthen ties and advance collaboration between the two superpowers in HPC, EU and Japan. We believe that a strong collaboration in HPC is integral to be able to leverage European and Japanese computing infrastructures to the best extent possible and boost disruptive research and innovation. Thus, to achieve the benefits outlined above, we recommend the following:

#### Finalising Japan's association to the Horizon Europe (HE) funding programme

Multilateral cooperation between European actors within the EU HPC ecosystem is already established, but collaboration with Japanese actors is mostly based on bilateral agreements between institutions. Japan's HE membership as an associated partner would create a natural framework for cooperation between European and Japanese institutions and make it possible to pursue joint RDI projects and funding without additional barriers to the cooperation.

### Enabling access to supercomputing resources between the two regions via national or EU-level agreements

Allowing researchers in both regions to access a variety of powerful infrastructures with different architectures facilitates scientific collaboration and makes it possible to improve HPC systems and software through performance testing, benchmarking and optimization, which further increases the value of investment in these technologies.

### Upholding commitment to strategic international partnerships via continuous dialogue and stable support to maintain established, concrete cooperation

For instance, researcher and engineer mobility and joint workshops and events are effective ways to build strong, valuable connections and long-standing collaboration, but require predictable and mutual funding mechanisms for the cooperation to be sustainable. Stable collaboration mechanisms make it possible to train a new generation of HPC experts with the best competences who share multicultural, open values and a mindset for innovation and cooperation.

### **About the HANAMI Project**

HANAMI is a collaboration between 14 topclass HPC centers and research institutes in Europe and 10 in Japan.

The project focuses on co-development, optimisation and benchmarking of HPC applications in three strategic scientific areas: climate simulation, materials science, and biomedicine.

The views expressed in this policy brief represent the views of the project consortium, and have no relation to the views or opinions of the EuroHPC Joint Undertaking or the European Commission.







This project received funding from the project HANAMI, funded by the European High Performance Computing Joint Undertaking (EuroHPC JU) under the European Union's Horizon Europe framework program for research and innovation.