



IAEA

Atoms for Peace
and Development

International Symposium on Artificial Intelligence and Nuclear Energy

IAEA Headquarters

Vienna, Austria

3-4 December 2025

Organized by the
International Atomic Energy Agency

Announcement

A. Background

The use of Artificial Intelligence (AI) is rapidly evolving and growing in all spheres of life, including in nuclear science and technology. The advancement of AI is expected to add to demands for services of ever-growing data centres and their associated increasing energy requirements. This underscores the need for sustainable energy solutions. Operating nuclear reactors provide clean, reliable, and adaptable energy options while new advanced nuclear reactor designs, including small modular reactors (SMRs) and microreactors, could enable nuclear power to expand its role in the global transition to the sustainable energy systems of the future, including to support the anticipated increasing energy demand deriving from the expansion of AI technologies. The IAEA is actively engaging with governments, regulators, and industries to support their deployment.

Machine learning and AI techniques are also increasingly used to accelerate technological development in the nuclear field, and the sector is making good progress in seizing on those opportunities. The nuclear industry is also using of AI methodologies and tools, including integrated large language models, for a variety of applications, such as design, construction optimization, and operational efficiency. The use of AI in advanced manufacturing enables increased efficiency, flexibility and customization in production processes while also driving down costs and improving quality. These advancements contribute to the sustainability and competitiveness of nuclear energy in the modern energy landscape. All these applications may be able to resolve some of the key bottlenecks that have impeded the industry's progress in several markets. As the trajectory shows, while an increase in the use of AI in the nuclear industry is contributing to efficient clean energy solutions, careful navigation is vital to ensure safe and effective implementation.

With its global membership, technical expertise, established role in promoting peaceful uses of nuclear energy, facilitating international cooperation, setting safety standards and security guidance as well as implementing international safeguards, the IAEA is uniquely positioned to convene a global dialogue on this topic. The effective integration of AI into the nuclear sector, with related risks managed by fully adhering to the principles of safety, security, and non-proliferation, is a priority for the IAEA. It is in this context that the IAEA will organize the International Symposium on Artificial Intelligence and Nuclear Energy from 3–4 December 2025, at its Headquarters in Vienna, Austria.

B. Purpose and Objective

The principal objective of the International Symposium on Artificial Intelligence and Nuclear Energy will be to bring together relevant stakeholders to review and explore opportunities for cooperation and mutual benefit towards the use of nuclear energy to power data centres, including for enabling AI's expansion, and the use of AI to drive innovation and efficiencies in the nuclear industry.

The two-day event will primarily focus on assessing and strengthening synergies between nuclear power and AI, from powering data centres to enhancing and accelerating nuclear innovation. It will also be an opportunity for the AI and nuclear sectors and their associated industries to establish new and/or strengthen synergistic relationships going forward.

Technical panel discussions will aim to bring together diverse international perspectives from various experts to foster a comprehensive understanding of how nuclear power can support and address projected energy needs to help ensure that the full scope of opportunities and innovations that AI has to

offer come to fruition. The symposium will also elaborate on the IAEA's role vis-à-vis emerging end-users, such as the AI industry, as prospective protagonists in the nuclear energy ecosystem. The dialogue will explore the gamut of nuclear power development and deployment including the complexities of technology selection, infrastructure development, stakeholder engagement, financing, construction, operation, decommissioning and the management of safety, security, safeguards and human resources.

C. Target Audience

The International Symposium on Artificial Intelligence and Nuclear Energy foresees the participation of high-level representatives from the nuclear industry (executive-level representatives from nuclear utilities, suppliers, and regulators, focusing on organizations with experience in the deployment of AI-based solutions) and the AI sector (executive-level representatives from AI organizations), as well as representatives from government, international organizations, industry, youth, technical experts, academia, international development banks as well as non-governmental organizations, energy companies, and nuclear regulatory bodies.

D. Structure

The symposium programme will take place in a plenary setting consisting of an opening session, topical sessions, and a closing session:

- The symposium will begin with keynote speeches from high-level representatives from both the nuclear and AI sectors, which will aim to highlight the key opportunities that lie ahead in their respective industries and the opportunities for a synergistic relationship between the two sectors.
- Authoritative panel discussions will then bring together diverse international perspectives to foster a comprehensive understanding of how the nuclear power sector can support and address the full scope of challenges, opportunities, and innovations that AI has to offer and, in turn, how AI technologies can benefit the nuclear industry.
- Important industry stakeholders from relevant companies and organizations will be able to interact through dedicated networking spaces, exhibitions, side events and booths, as well as with relevant representatives from both the IAEA and national nuclear regulators.

E. Expected Outcomes

The symposium aims to help establish a framework of cooperation between the AI and nuclear sectors and associated industries under the auspices of the IAEA in the global efforts to promote efficient and effective clean energy solutions.

F. Themes and Topics

Powering Data Centres with Nuclear Energy

Discussions will explore the significant surge in energy demand from data centres, including driven by the expanding computational requirements of advanced AI systems, and the role of nuclear power, including operating, soon to be restarted and advanced large reactors as well as SMRs and microreactors as innovative clean energy solutions capable of providing stable and reliable power.

- Panellists will discuss the potential of these technologies to meet the growing energy needs of the tech industry. The discussion will extend to the demand aggregation model, highlighting the adoption of cutting-edge technologies for synergistic operation of diverse energy systems to contribute to the global decarbonization of the electricity sector.

Participants will discuss the intricacies of incorporating SMRs and microreactors into the dedicated energy infrastructure of data centres, covering regulatory frameworks, their environmental impacts and safety protocols.

- Panellists will explore solutions for integrating these advanced nuclear technologies with existing data centre energy infrastructure, potential issues in regulatory compliance, and best approaches for ensuring operational safety.

Opportunities and Challenges for AI in the Nuclear Sector

Discussions will take place on the integration of AI with nuclear power technologies, focusing on the pivotal role AI plays and the expanded role it could play in enhancing operational efficiency and electricity production as well as in the advancement of next-generation reactors, including SMRs and microreactors. The dialogue will delve into the transformative potential of AI.

- Panellists will explore how leveraging real-time data through AI can optimize power generation, improve fuel efficiency, and maximize energy output. Additionally, the discussion will cover the possible integration of AI systems and robotics in automating routine tasks, thereby minimizing the necessity for human intervention and enhancing safety and reliability. Opportunities for leveraging AI within the supply chain and for regulatory process optimization will also be examined. The conversation aims to illuminate the synergies between AI and nuclear power technology in driving forward the nuclear industry's evolution.

G. Participation and Registration

All persons wishing to participate in the event must be designated by an IAEA Member State or should be a member of an organization that has been invited to attend.

Registration through the InTouch+ platform:

1. Access the InTouch+ platform (<https://intouchplus.iaea.org>):

- Persons with an existing NUCLEUS account can [sign in here](#) with their username and password;
- Persons without an existing NUCLEUS account can [register here](#).

2. Once signed in, prospective participants can use the InTouch+ platform to:

- Complete or update their personal details under ‘Basic Profile’ (if no financial support is requested) or under ‘Complete Profile’ (if financial support is requested) and upload the relevant supporting documents;
- Search for the relevant event (**EVT2500837**) under the ‘My Eligible Events’ tab;
- Select the Member State or invited organization they want to represent from the drop-down menu entitled ‘Designating authority’ (if an invited organization is not listed, please contact Conference.Contact-Point@iaea.org);
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- Based on the data input, the InTouch+ platform will automatically generate Participation Form (Form A);
- Submit their application.

Once submitted through the InTouch+ platform, the application together with the auto-generated form(s) will be transmitted automatically to the required authority for approval. If approved, the application together with the form(s) will automatically be sent to the IAEA through the online platform.

For additional information on how to apply for an event, please refer to the [InTouch+ Help](#) page. Any other issues or queries related to InTouch+ can be sent to InTouchPlus.Contact-Point@iaea.org.

If it is not possible to submit the application through the InTouch+ platform, prospective participants are requested to contact the IAEA’s Conference Services Section via email: Conference.Contact-Point@iaea.org.

Participants are hereby informed that the personal data they submit will be processed in line with the [Agency’s Personal Data and Privacy Policy](#) and is collected solely for the purpose(s) of reviewing and assessing the application and to complete logistical arrangements where required. Further information can be found in the [Data Processing Notice](#) concerning IAEA InTouch+ platform.

H. Exhibitions

A limited amount of space will be available for industry stakeholders from relevant companies and organizations during the conference. Interested parties should contact the Scientific Secretariat by email AI-Symp-2025@iaea.org by 1 September 2025

I. Working Language

The working languages of the symposium will be English. All communications must be sent to the IAEA in English.

J. Venue and Accommodation

The symposium will be held at the Vienna International Centre (VIC), where the IAEA’s Headquarters are located. Participants are advised to arrive at Checkpoint 1/Gate 1 of the VIC one hour before the start of the event on the first day in order to allow for timely registration. Participants will need to present

an official photo identification document in order to be admitted to the VIC premises. Participants must make their own travel and accommodation arrangements. Hotels offering a reduced rate for participants are listed on <https://www.iaea.org/events>. Please note that the IAEA is not in a position to assist participants with hotel bookings, nor can the IAEA assume responsibility for paying fees for cancellations, re-bookings and no-shows.

K. Visa

Participants who require a visa to enter Austria should submit the necessary application to the nearest diplomatic or consular representative of Austria as early as three months but not later than four weeks before they travel to Austria. Since Austria is a Schengen State, persons requiring a visa will have to apply for a Schengen visa. In States where Austria has no diplomatic mission, visas can be obtained from the consular authority of a Schengen Partner State representing Austria in the country in question. For more information, please see the Austria Visa Information document available on <https://www.iaea.org/events>.

L. Symposium Secretariat

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M. Symposium web page

Please visit the IAEA symposium web page regularly for new information regarding the Conference: