

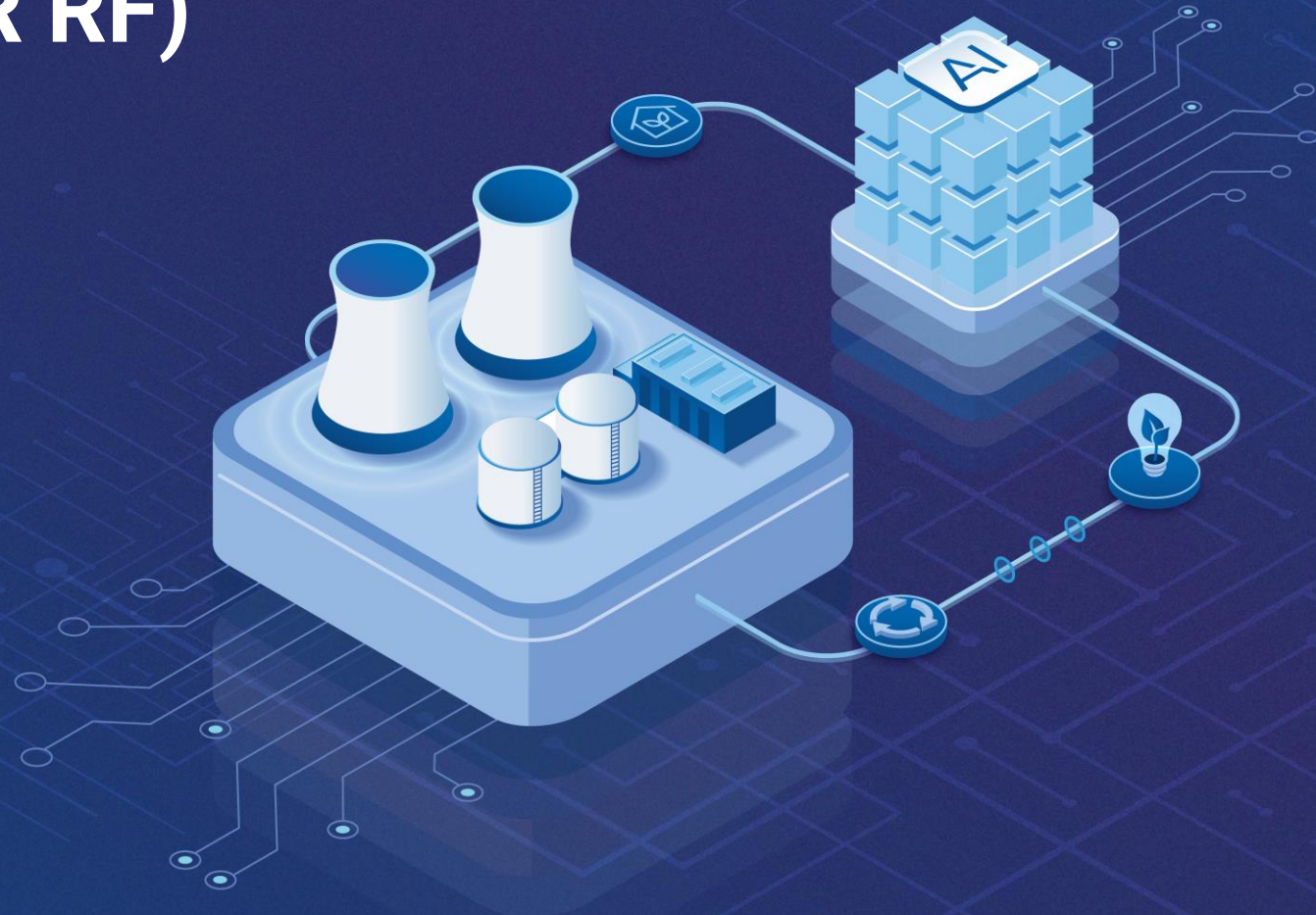
Side Event on the SMR Regulators' Forum (SMR RF)

Regulating New Technologies

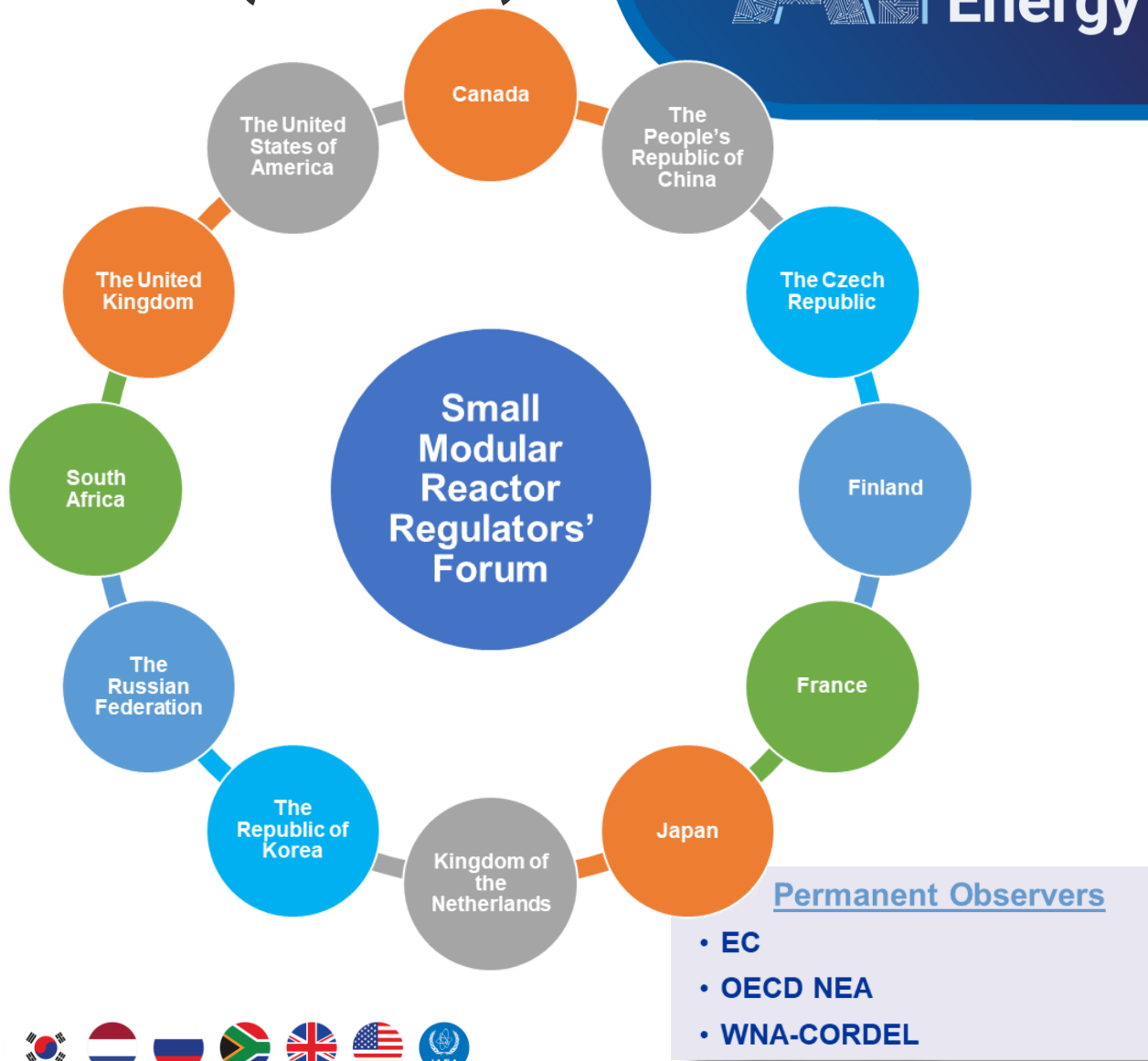
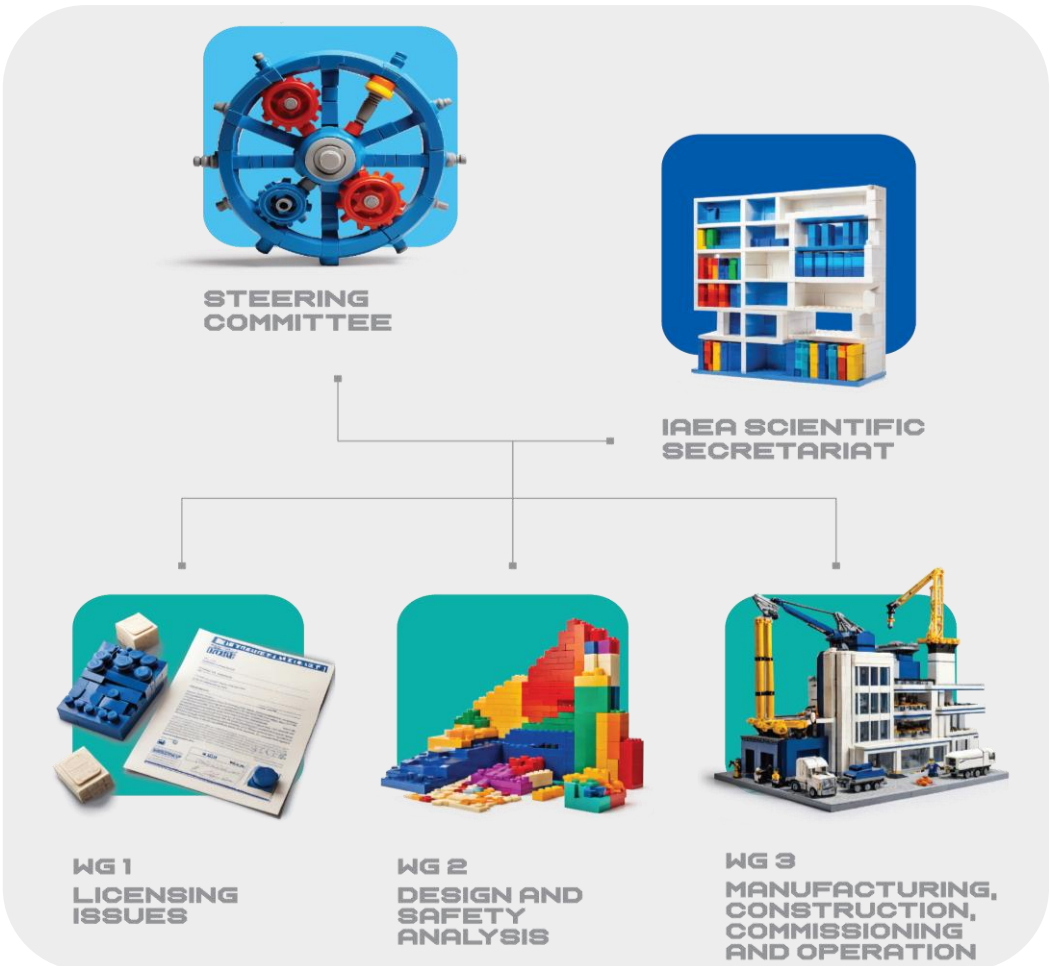
Ms Paula Calle Vives

Technical Lead for New Technologies
Regulatory Activities Section | IAEA

Vienna, 4 December 2025



The SMR Regulators' Forum (SMR RF)



The SMR RF Technical Topics by Work Phase

Phase 1 (2015 – 2017)

- Graded Approach
- Defence-in-Depth
- EPZ Size

Phase 2 (2018 – 2020)

- Licensing Issues
- Design and Safety Analysis
- Manufacturing, Commissioning and Operation

Phase 3 (2021 – 2023)

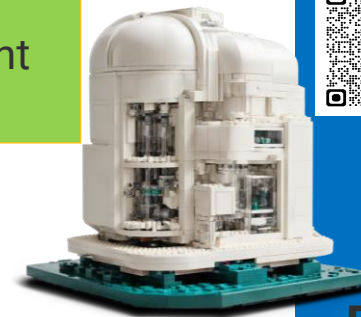
- NHSI
- Safety, Security and Safeguards from a regulatory perspective
- Containment/confinement
- Regulatory considerations in pre-licensing engagement for long-lead requests and items
- Conduct of authorised activities: Impact on stakeholders' organisational capabilities

Phase 4 (ongoing)

- NHSI
- Continuation of 3S topics and mechanistic source term
- Manufacturing and deployment in the absence of a Licensee, construction oversight and organisational capability of a new licensee (no prior nuclear experience)



Phase 3 Webinars



Phase 3 Publications

Phase 2 Publications



SMR RF Upcoming Webinars 2026

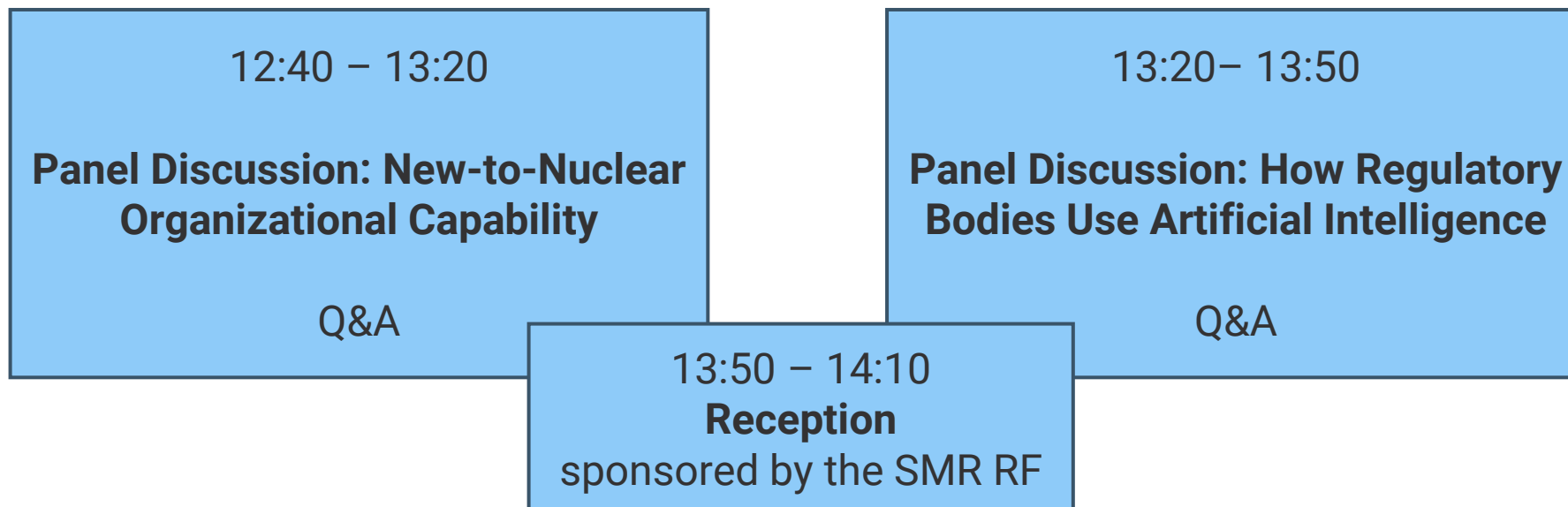
Webinar Series on the SMR RF Phase 4 Reports:

- Desing and Safety Analysis (DSA) Working Group, **24 February 2026**, from 13:00 to 14:30 CET
 - ❑ Mechanistic Source Term – *Advancing methodologies for realistic accident analysis, particularly for non-light water reactor designs*
- Manufacturing, Construction, Commissioning and Operation (MCCO) Working Group, **11 June 2026**, from 13:00 to 14:30 CET
 - ❑ Fleet-Wide Deployment – *Exploring regulatory strategies for standardized SMR designs deployed across multiple site and jurisdictions*
 - ❑ Manufacturing Without an Owner – *Exploring the innovative concept of off-the-shelf manufacturing for SMR components and modules in scenarios without a designated Owner or Licensee*

Overview

This side event highlights the work of the SMR RF, its importance and ongoing activities. It includes:

- two panel discussions;
- an open Q&A session facilitated through SLIDO; and
- a networking reception.

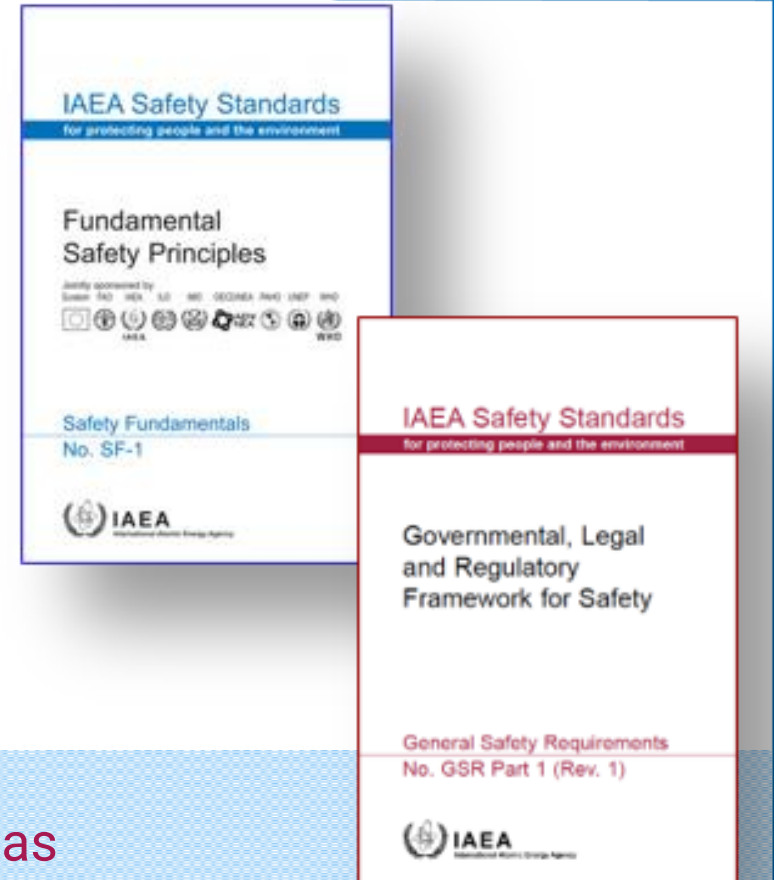


Panel Discussion

New-to-Nuclear Organizational Capability

Background

- **SF-1** 3.4. Authorization to operate a facility or conduct an activity may be granted to an operating organization or to an individual, known as the licensee.
- **GSR Part 1 (Rev.1)** 4.29. Different types of authorization shall be obtained for the different stages in the lifetime of a facility or the duration of an activity. The regulatory body shall be able to modify authorizations for safety related purposes.



For a Nuclear Power Plant (NPP), Authorization is often referred to as licensing (issuing a licence). The holder of a licence is the licensee who is the person or organization having overall responsibility for the NPP.

Panel Discussion

New-to-Nuclear Organizational Capability

SMR Licensees

- SMR licensees are often small organizations relying on suppliers and contractors.
- Size is not a safety criterion; capability to perform authorized activities is key.
- Licensees must have resources to act as an Intelligent Customer and manage supplier risks.

The licensees need to have comprehensive understanding of the design and resources and capability for adequate oversight of the procurement process and the supply chain to ensure nuclear safety.



Working Group on Manufacturing, Construction,
Commissioning and Operation

Phase 3 Report

**Conduct of Authorised Activities
Impact on Stakeholders'
Organisational Capabilities
(Designers, Vendors, Manufacturers,
Supply Chains, Operators)**

December 2023



Panel Discussion

New-to-Nuclear Organizational Capability

Scenarios

- New licensee with experienced vendor
- Experienced licensee with new vendor
- New licensee with new vendor
- New vendor and no licensee during early stages
- Experienced vendor in another country

The SMR RF publications consider the impact of these scenarios on the regulatory bodies and other stakeholders.



Working Group on Manufacturing, Construction,
Commissioning and Operation

Phase 3 Report

**Conduct of Authorised Activities
Impact on Stakeholders'
Organisational Capabilities
(Designers, Vendors, Manufacturers,
Supply Chains, Operators)**

December 2023



Panel Discussion *New-to-Nuclear Organizational Capability*



Mr Paul Stenhoff

Nuclear Site Licensing Lead
United Kingdom's Office for
Nuclear Regulation (ONR)



Mr Sean Belyea

Senior Advanced Reactor
Licensing Officer
Canadian Nuclear Safety
Commission (CNSC)



Ms Wilma Tolud

Senior Advanced Reactor
Licensing Officer
Dutch Authority for Nuclear
Safety and Radiation
Protection (ANVS)



Mr Eetu Ahonen

Project Manager
Radiation and Nuclear
Safety Authority in Finland
(STUK)

PLEASE SHARE YOUR QUESTIONS

- Q&A: Joint at *slido.com* OR Use the QR code
Event: #RegNewTech
Passcode: SMRRF



New-to-Nuclear: Typical Scenarios



Mr Paul Stenhoff

Nuclear Site Licensing Lead
United Kingdom's Office for
Nuclear Regulation (ONR)

Paul Stenhoff is the Nuclear Site Licensing Lead for New Build at the UK ONR. He spent 35 years in the nuclear industry with Urenco UK, where he held roles including Scientist, Isotope Separation Specialist, Site Operations Shift Manager, Operations Director, and Chief Nuclear Officer. Paul serves as the Vice-Chairperson of the SMR RF.

KEY MESSAGES

- **The UK is seeing a wide range of designs and operating models emerging.**
 - **Large SMRs with multiple deployments on a single site – essentially GWe deployments with traditional org. models**
 - **Multiple deployments on single and multiple sites – fleet deployments with new org. models – shared services/capability?**
 - **Micro- reactors with small organisations**
 - **ANT reactors with advanced passive features requiring significantly less intervention – smaller org. models**
 - **Traditional Vendors and Operators, but also Vendors/Operators, many projects coming with end user, e.g. AI Data Centres**

New-to-Nuclear: Characteristics of New-to-Nuclear Organizations



Mr Sean Belyea

Senior Advanced Reactor
Licensing Officer
Canadian Nuclear Safety
Commission (CNSC)

Sean Belyea is a Senior Advanced Reactor Licensing Officer at the CNSC. He specializes in applying the CNSC regulatory framework to SMRs and has broad experience in licensing and pre-licensing activities. Sean chairs the SMR Regulators' Forum Licensing Working Group, which is now on loan to the IAEA NHSL.

KEY MESSAGES

- **Canada is seeing a mix of experienced and 'newer' to nuclear proponents.**
- **All proponents have a need to ensure licensing is efficient and effective.**
 - **Sharing best practices - especially for Nth-of-a kind projects – is key for regulators and proponents alike.**
- **Public and Indigenous engagement throughout a project is a must.**

New-to-Nuclear: The Challenges



Ms Wilma Tolud

Specialist/Expert in Human and Organizational Factors
Dutch Authority for Nuclear Safety and Radiation Protection (ANVS)

Wilma Tolud is a specialist in Human and Organizational Factors (HOF) at the ANVS. She has over 14 years of experience in the nuclear industry as an inspector and has served as the Site Inspector for both the research reactor and the NPP. Wilma is a member of the MCCO WG of the SMR Regulators' Forum.

KEY MESSAGES

- **Build HTO capability – continuously align people, technology, and organizational processes to build a capable, safe, and effective nuclear licensee**
- **Engage early with the Regulator – get to know the regulatory framework and use pre-licensing reviews to reduce surprises, building trust**
- **Leverage technology and design knowledge and experience – work closely with vendors, study FOAK/NOAK lessons, and prepare high-quality, regulator-aligned documentation, understand the design**
- **Demonstrate organizational Readiness/ Resilience – SQEP staff, strong management systems, safety culture, operational preparedness, Intelligent Customer and Design Authority**

New-to-Nuclear: Learning From Past Experiences



Mr Eetu Ahonen

Project Manager
Radiation and Nuclear
Safety Authority in Finland
(STUK)

Eetu Ahonen is a project manager in STUK, the Finnish nuclear regulator. His main area of responsibility is nuclear new builds, especially pre-licensing. He is also invested in AI and is part of an internal task force on AI. Eetu is the Steering Committee Member of the SMR Regulators' Forum for Finland.

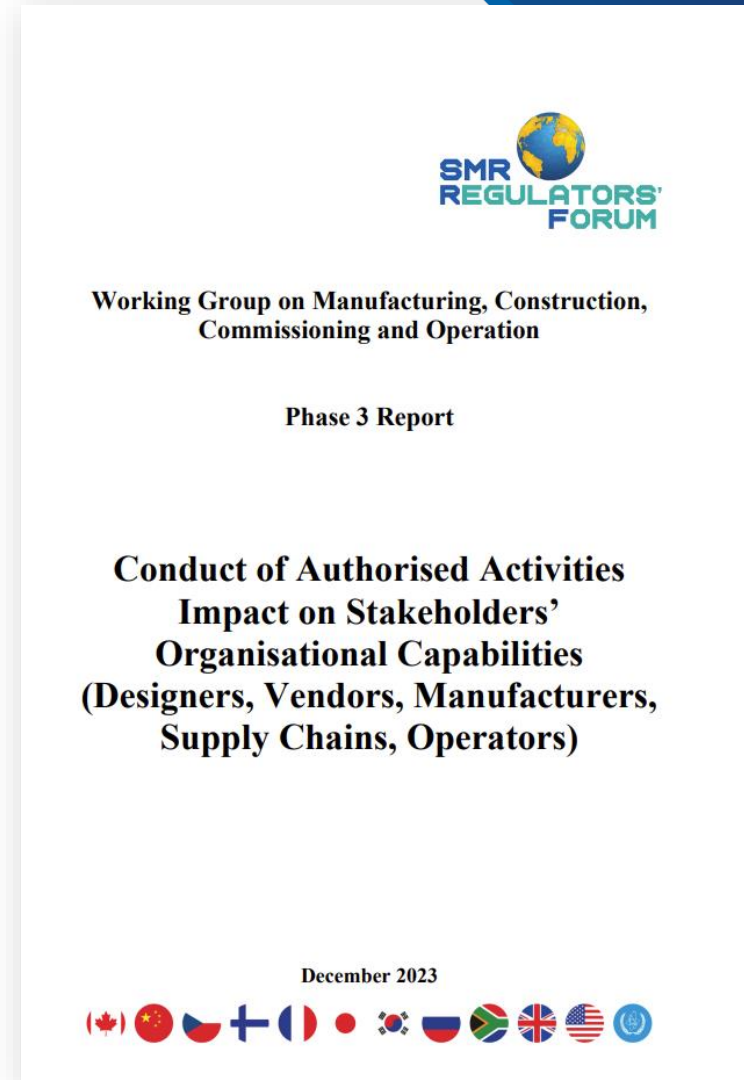
KEY MESSAGES

- **It takes time to build a capable organization from scratch, around 10 years without outside help.**
- **Early engagement is key for both vendors or licensees and regulators, as it helps in understanding the viewpoints of both sides.**

New-to-Nuclear

The SMR RF Key Common Positions

- Regulatory bodies need to consider how Intelligent Customer requirements may be achievable for small licensees organizations.
- Benchmarking is key due to limited SMR operational experience.
- No minimum size for licensees if they can fulfill authorized activities.
- For FOAK deployments, identify a capable licensee early.



DISCUSSION AND Q&A

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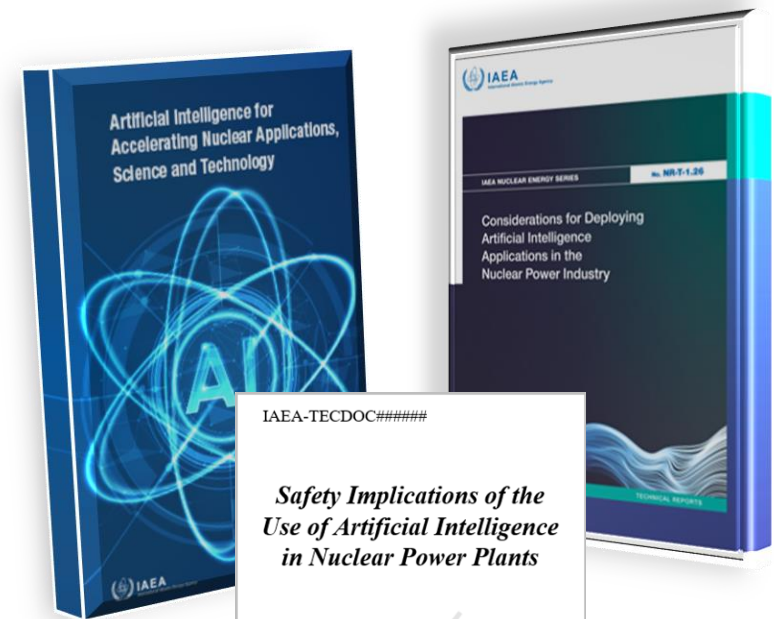
PANEL DISCUSSION

How Regulatory Bodies Use Artificial Intelligence (AI)

IAEA has initiated work on the use of Artificial Intelligence in Nuclear Power Plants, but current efforts do not yet address how regulatory bodies are using AI—this remains a new and largely unexplored area.



SMR Regulation and Cooperation Hub



IAEA-TECDOC#####

Safety Implications of the Use of Artificial Intelligence in Nuclear Power Plants

DRAFT

Panel Discussion

How Regulatory Bodies Use AI



Mr Kevin Lee

Senior Innovation Officer
Canadian Nuclear Safety
Commission (CNSC)



Mr Victor Hall

Acting Director of the Division
of Systems Analysis
U.S. Nuclear Regulatory
Commission (U.S. NRC)



Mr Eetu Ahonen

Project Manager
Radiation and Nuclear
Safety Authority in Finland
(STUK)

PLEASE RAISE YOUR QUESTIONS

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Enabling the Safe Use of AI in Nuclear Regulation



Mr Victor Hall

Acting Director of the
Division of Systems Analysis
U.S. Nuclear Regulatory
Commission (NRC)

Victor Hall leads the NRC's Division of Systems Analysis overseeing AI strategy and advanced reactor research. He has over 20 years of experience in nuclear regulation, including AP1000 licensing, supply chain oversight, and international cooperation through the OECD NEA.

KEY MESSAGES

- **AI can strengthen NRC's safety mission, when we understand the technology.**
- **Responsible use of AI requires transparency, explainability, and governance.**
- **International collaboration builds consistent expectations to keep AI use safe and trustworthy.**

International Collaboration on AI: Experiences and the Role of IAEA Publications



Mr Kevin Lee

Senior Innovation Officer
Canadian Nuclear Safety
Commission (CNSC)

Kevin Lee leads the CNSC team analysing Disruptive, Innovative and Emerging Technology (DIET), readying the CNSC to evaluate and regulate nuclear activities that will deploy DIET. His area of expertise is AI and its use in nuclear activities. Kevin serves on several IAEA groups, including the Steering Committee for the Network for Innovation to Support Operating Plants (ISOP), the Working Group on Explainable AI for the Nuclear Power Industry and as Co-Lead of the Human Factors and Knowledge Management sub-group.

KEY MESSAGES

- **Licensees are increasingly using AI to prepare regulatory submissions; regulators require AI to assist in processing the uptick in licensee "data".**
- **Licensees and proponents need to be open and transparent with their AI plans, giving regulators time to respond.**
- **Collaboration between regulators is essential.**

Building AI Expertise in Regulatory Bodies: Strategies and Opportunities



Mr Eetu Ahonen

Project Manager
Radiation and Nuclear
Safety Authority in Finland
(STUK)

Eetu Ahonen is a project manager in STUK, the Finnish nuclear regulator. His main area of responsibility is nuclear new builds, especially pre-licensing. He is also invested in AI and is part of an internal task force on AI. Eetu is the Steering Committee Member of the SMR Regulators' Forum for Finland.

KEY MESSAGES

- **Regulatory bodies should try and experiment with different applications of AI to find the best user cases.**
- **At STUK, we have experimented using AI to analyse regulatory findings, emergency drills and internal guides.**
- **Encourage people to use AI – create guidelines to facilitate this**

DISCUSSION AND Q&A

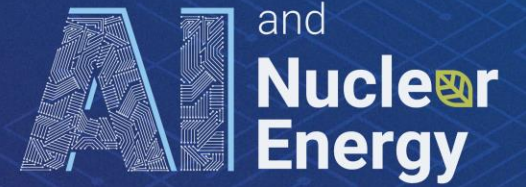
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New Book Alert:

IAEA Nuclear Safety and
Security Publications



Thank you!

SMR Regulators' Forum:

<https://www.iaea.org/topics/small-modular-reactors/smr-regulators-forum>

#NuclearAI



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Issue 5, Nov. 2025