

RATEN ICN OPPORTUNITIES AS TECHNICAL SUPPORT ORGANISATION

MIRELA NITOI, ILIE TURCU



Germany - GRS
Founding member since 2006

Independent organisation providing technical and scientific safety expertise to nuclear regulators worldwide. 450 employees.

Finland - VTT
Member since 2008

Independent institution conducting research on safety, waste management, etc. 2,900 employees including 200 people in nuclear activities.

Lithuania - LEI
Member since 2009

Expertise and research organisation in engineering, nuclear safety, hydrology, metrology, environmental protection. 300 employees.

Ukraine - SSTC NRS
Associated member since 2010

State scientific and technical organisation supporting nuclear and radiation safety regulation. 253 employees.

Russia - SEO NRS
Associated member since 2012

Scientific and technical support organisation on nuclear and radiation safety regulation. 350 employees.

Japan - NRA Secretariat
Associated member since 2014
Regulatory organisation 1,000 employees.

Belgium - Bel V
Founding member since 2006

Non-profit nuclear expertise institute for nuclear safety and radiation protection. 80 employees.

United Kingdom - Amec Foster Wheeler RSD
Member since 2015

Independent organisation providing the full range of scientific and technical regulatory support. Core TSO team of 50 augmented by more than 1,000 technical specialists.

France - IRSN
Founding member since 2006

Public institute providing research and expertise in nuclear safety and radiation protection (human and environmental). 1,800 employees.

Switzerland - PSI
Member since 2012

Largest research centre for natural and engineering sciences within Switzerland. Currently 1,800 employees, of which 250 work in the areas of nuclear safety, waste management and radiation protection.

Czech Republic - RO Rez
Member since 2008

Engineering and scientific research private company dedicated to nuclear technology in various domains and focused on sustainable energy. 900 employees.

Italy - ENEA
Member since 2016

Public non-profit organization providing research, technology innovation and advanced services in the energy sector. 2700 employees of which around 25% work in areas relevant to nuclear safety, waste management and radiation protection.

Slovenia - JSI
Member since 2013

Leading Slovenian scientific research institute, covering a broad spectrum of basic and applied research. 930 employees with 60 persons in nuclear activities.

Romania - RATEN ICN
Member since 2017

Research organization providing the scientific and technical support for the nuclear power program in Romania. 650 employees.

Slovakia - VUJE
Member since 2010
Research institute on nuclear facilities in Slovakia. 800 employees with 200 people involved in TSO activities.

Hungary - MTA EK
Member since 2015

Leading Hungarian academic research institute in the field of nuclear safety and security, energy security and materials science. 380 employees with 150 persons in nuclear activities



Specific objectives

- to provide **an appropriate forum for sharing experiences** and exchanging technical and scientific opinions, as well as results of analysis and R&D in the field of nuclear safety;
- to contribute to **promoting the harmonization of nuclear safety practices** in the EU and the world;
- to contribute to **defining nuclear safety research programs** and facilitating their implementation;
- to **facilitate the implementation of the European directives** on nuclear safety, fuel and radioactive waste management;
- to **collaborate** on safety assessments and research projects organized by ETSON members.

- ETSON members expand cooperation in the field of nuclear safety through the participation to common activities on safety assessment and research programs, as well as the sharing of information to improve the knowledge about emergency preparedness, waste management and nuclear safety.



Safety Research

Waste Management



Emergency Preparedness

Independence

- It is a prerequisite for the TSO to **posses the necessary competence and resources** to perform its assigned tasks in an effective, efficient and independent manner

TSO must exercise its professional competence and judgement in a manner that is **not improperly influenced** by external pressures or other considerations (political, financial, etc.).

Transparency

- Transparency is fundamental to **gain public confidence**, but any conflict with confidentiality and security aspects should be avoided. Some information may be sensitive from both the security and the intellectual property point of view (adequate systems must be established to appropriately identify and protect such information).

Global view

- A **long term strategy to develop methods and codes related to nuclear safety** should be developed and implemented, in order to build-up and maintain the necessary knowledge and expertise.
- TSOs must be able to **push the development of nuclear safety** by defining their own research needs, and by using the results and experiences of other organizations.
- The **operational data** should be, to a large extent, **available** for the research needs of TSOs and vice versa, the **research results should sustain an increase of safety** for nuclear installations.
- TSOs must be involved in the exchange of safety related insights, and a good collaboration among different TSOs, which would contribute to the **sharing of knowledge and resources**, is necessary in order to widen and complement their areas of competence, and ultimately, is of the utmost importance for the enhancement of safety.
- International cooperations and the **exchange of experiences, approaches and opinions** are important means for developing and maintaining competencies.



Safety assessment quality

- A **close TSO cooperation with the licensee**, making possible in-depth technical exchanges, and information of the national and international operational experience feedback.
 - For TSO: it enables receiving the updated information regarding technical solutions and obtaining sound experience concerning operating issues and safety related questions
 - For licensee: it allows to have a counterpart in reviewing and assessing technical solutions.
- **Awareness of the technological progress**, the latest technical and scientific results for improving the safety of nuclear installations
- **Efficient knowledge management systems** in place, resulting in available documentation and databases that may be used to sustain a critical assessment from an independent point of view

Assistance in developing rules and regulations

- support the regulator in the development and revision of technical guidelines, rules and regulations concerning technical questions

TSOs are in a position to anticipate possible difficulties in the interpretation of regulations and influence the wording so as to avoid future implementation problems.

A comprehensive knowledge of nuclear safety and its regulatory basis is needed.

Operating experience feedback

- investigate operational experience of the plant and of similar plants worldwide

Based on the operational experience feedback, the regulatory body can ask the licensee to identify preventive measures, avoid recurring events, monitor the trends and verify that lessons have been learned and modifications made have served their purposes.

Decommissioning and waste management

- assess the decommissioning plan and monitor its implementation

Technical safety reviews

- review the safety assessments, evaluate the actions proposed by the licensee and advise the regulatory body concerning any additional measures required to maintain or improve the safety of the installation

Inspection

- proposal regarding the frequency and level of detail of the inspections
- perform inspection activities, informing the regulatory body about license conditions
- assess the way the installation is operated, identify modifications that should be included in the licensing basis and proactively examine any early sign of degradation mechanisms before they become safety problems.
- report periodically about the level of safety in the controlled installation, synthesizing what it has identified as safety issues, and asking for corrective measures.

Emergency planning

- advise the regulatory body about the possible accident scenarios and emergency measures that might be necessary;
- develop computer codes to predict the radiological consequences of accidents.

Licensing support

- An independent analysis of important safety issues is necessary, as a sound technical analysis of the licensee's assessments
- Pre-licensing activities associated with new designs incorporates the following activities:
 - Revision of preliminary safety information and data relating to license applications, and checking the compliance with the regulations in place;
 - Identification of any safety concerns;
 - Interaction with licensee to gain clarification of 'open questions' on design or safety justifications.

- RATEN ICN - ETSON member since 2017
- RATEN ICN activities are financed mainly by the Ministry of Energy. The Institute has dedicated R&D programs for nuclear safety, radiation protection and nuclear waste management, each of the programs having several research themes, on yearly basis.
- ETSON partners share methods, data, and research results that are not directly available to third parties. The affiliation to ETSON allows access to a full range of information on nuclear safety activities that would otherwise be more difficult to obtain.
- ETSON Research Group has the mandate to disseminate knowledge among ETSON partners, by identifying and prioritizing safety research needs, sharing information on research projects in which ETSON members are involved, as well as defining and launching new research projects. All partners benefit from the competitive advantage offered by the network in connection with international projects.

14 topical expert groups in the main fields of competence - to intensify the technical and scientific dialogue between the ETSON partner organizations and to organize joint projects.

Each group wish to:

- share experiences and exchange technical and scientific opinions, together with their nuclear safety research results;
- exchange information on their technical nuclear safety practices and make proposals to harmonise them as far as practicable;
- contribute to the definition of nuclear safety research programs in defining research needs;
- organise cooperation teams for joint projects;
- keep each other informed about new developments in their fields of expertise.

Sharing experience, knowledge, and good practices

-an important part of the ETSON partners work :

- Develop methodological guidance/ safety assessment guides for technical safety assessments, on key topics;
 - Organize the European Nuclear Safety Training and Tutoring Institute (ENSTTI) - role to transfer the knowledge and know-how of the European TSOs;
 - Organize technical workshops on relevant issues;
 - Organize EUROSAFE Technical Conference on Nuclear Safety.
- ETSON members have the opportunity to share their training initiatives with those of other ETSON members:
- can actively contribute to the development of joint training courses;
 - propose lecturers and subjects for group working;
 - send the staff to be trained in ENSTTI.

EUROSAFE Objectives

- to form a suitable forum for exchanges on analyses and R&D in the field of nuclear safety, to share experiences, and to exchange technical and scientific opinions;
- to contribute to fostering the convergence of technical nuclear safety practices in Europe;
- to further the definition and the implementation of nuclear safety research programs.

EUROSAFE TRIBUNE

- GRS and IRSN are publishing twice a year the magazine "EUROSAFE Tribune". This publication provides articles about key issues of nuclear safety and radiological protection, focusing alternately on the respective EUROSAFE Forum's main subject and special topics.



EUROSAFE Forum - international conference on nuclear safety and security, radioactive waste management and radiological protection.

First event: 1999

Participants: representatives of organizations specialized in nuclear and radiological safety techniques, research institutes, utilities, industry, public authorities and non-governmental organizations

International Conference on Challenges Faced by Technical and Scientific Support Organizations (TSOs) in Enhancing Nuclear Safety and Security: Ensuring Effective and Sustainable Expertise, 15–18 October 2018, Brussels, Belgium

Topical sessions:

- The experiences of TSOs and regulatory bodies in working together
- The technical challenges faced by TSOs in nuclear, radiation, waste management, safety and emergency preparedness and response,
- Other challenges related to conflict of interest, civil society, public communication and synergies between safety and security,
- Components, initiatives and solutions needed to support MS in developing and strengthening technical and scientific capabilities.

ETSON association has decided to reward annually collaborative papers written by a group of young experts (<35 years) from different ETSON member organizations

- **Criteria:**

- *Scientific excellence;*
- *Originality and innovation;*
- *Relevant cooperation* between several TSOs (member of the IAEA TSO Forum) or EUROSAFE members, with at least one co-author from ETSON; A paper proposed by a single expert or a group from one ETSON member may however be considered.
- Pertinence with *respect to the ETSON objectives;*
- *Multi-disciplinarity* as an added quality value.
- The winners (first and second place) will be selected in a **two-step procedure**:
 - the Committee will *preselect five best papers* according to scientific content.
 - each pre-selected papers will have to be *presented in a competition* (Science Slam) at the IAEA “International Conference on Challenges Faced by Technical and Scientific Support Organizations in Enhancing Nuclear Safety and Security” in short (max.7min) presentations. The Forum participants will assess the quality of the oral presentation, scientific excellence and results.

The highest overall rating (scientific content and presentation) will be granted the ETSON Awards.

- EUROSAFE News features contributions provided by its members on current projects, scientific or technical issues and ongoing developments in the field of nuclear safety, nuclear waste management and radiological protection, as well as on respective events.
- Each ETSON member has the opportunity to promote its activities using the ETSON newsletter, which has a monthly occurrence. RATEN ICN has prepared the April issue, promoting its contribution to implementation of National Nuclear Safety and Security Strategy, and its research programs activities.



Implementing the Romanian National Strategy for Nuclear Safety and Security

The Romanian National Strategy for Nuclear Safety and Security was approved by Government Decision no. 600 on July 23, 2014.

The fundamental objective of the Strategy is the continuous improvement of nuclear safety and security, namely the protection of personnel, population and environment, against the harmful effects of radiation.

[Read more...](#)

Nuclear Materials and Corrosion Investigations

Nuclear Materials and Corrosion Department infrastructure allows the following investigations: corrosion behaviour of metallic materials from the primary and secondary circuit of the CANDU reactor; corrosion behaviour of advanced materials for Generation IV reactors; microbiologic corrosion in NPPs; DHIC phenomenon and fracture mechanics; structural integrity of metallic components under different conditions; thermal-mechanic behaviour of metallic and ceramic materials under different stress levels and environment conditions; manufacturing experimental nuclear fuel (prototype).



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EUROSAFE

PROMOTING
NUCLEAR SAFETY
IN EUROPE

News

The EUROSAFE News features contributions provided by its members on current projects, scientific or technical issues and ongoing developments in the field of nuclear safety, nuclear waste management and radiological protection as well as on respective events. In addition, it also serves as a platform for information on the activities of the [European Technical Safety Organisations Network \(ETSON\)](#).

To receive regular updates on the EUROSAFE News please [subscribe](#) to its monthly newsletter, that can be found [here](#).

Implementing the Romanian National Strategy for Nuclear Safety and Security

The Romanian National Strategy for Nuclear Safety and Security was



Strengthening the collaboration with local authorities

Since July 2017 a collaboration protocol has been initiated between RATEN ICN Pitesti and The...



Increasing expertise and confidence in our results

Radioactive waste management is one of the important research directions for RATEN ICN. Through...

Training for an efficient response to



Radioactive waste management, environmental protection and decommissioning

Summer Workshop 2018

3rd -7th September 2018



The ETSON JSP Summer Workshop is an annual networking event of young professionals from Technical Safety Organizations. Technical program comprises presentations given by participants, interactive group work and moderated workshops on a specific topic. The workshop encourages inter-cultural interaction, exchange of expert knowledge and good practices and provides to participants a good opportunity to widen their professional network.

Participation to the workshop is free of charge. Participants must be nominated by ETSON member organizations and should have basic knowledge of nuclear safety concepts and methodologies. Candidates are encouraged to contact local ETSON members (information available at: <http://www.etson.eu/jsp>).

Technical Tours

A technical visit of RATEN ICN facilities (TRIGA Research Reactor, Hot Cells and Materials Testing Laboratories) is foreseen.



Venue

The Workshop will be held at the Institute for Nuclear Research (RATEN ICN) premises, in Mioveni, town located approx. 20 km distance from Pitesti.

The closest airport is Henri Coanda - Otopeni (115 km to Pitesti, freeway access).

From Bucharest, Pitesti can be reached:

- by car - on freeway A1;
- by a special bus - from airport to Muntenia hotel - please consult www.mementobus.com/en departure hours and conditions (you need to pay in advance and to receive a voucher);
- by train - from Bucharest North Railway Station (Gara de Nord);
- by bus - almost every 30 min. from Militari Bus Station.

The transport from Pitesti to Mioveni shall be provided by RATEN ICN every morning and afternoon, from and to Muntenia Hotel.

Accommodation

Pitesti recommended hotels:

Hotel Ramada www.ramadapitesti.ro
Calea Bucuresti 31, phone: +4 0372 480500,
Hotel Victoria www.victoriahotel.ro
Str. Egalitatii 21, phone: +4 0248 220777,
Hotel Cara www.hotel-cara.ro
Str. I.C. Bratianu 2, phone: +4 0248 218045,
Hotel Arges www.hotelarges.ro
Piata Muntenia 3, phone: +4 0248 223399,
Hotel Yaky Center www.yakycenter.ro
Bulevardul Republicii 57,
phone: +4 0248 224227
For further information, please contact:
Mirela Nitoi (mirela.nitoi@nuclear.ro)

Project Title	Analysis to Support Implementation in Practice of Articles 8a-8c of Directive 2014/87/Euratom
Contract No.	ENER/17/NUCL/S12.769200
Contracting authority	European Commission / DG ENERGY
Contractor	ETSON consortium formed by GRS (consortium lead), IRSN, Bel V, LEI, VUJE, IJS, CVR, MTA-EK, RATEN, and VTT.
Commencement Date	21/12/2017
Implementation Period	20 months

EC contract

- Tender for the EC project “Analysis to support implementation in practice of Articles 8a-8c of Directive 2014/87/Euratom” - GRS submitted an offer as leading organization of a consortium composed of 10 ETSON partners, including RATEN ICN.
- *Objective*: to perform a study on the available guidance documents for the EU Member States to implement the provisions required by Articles 8a - 8c.

-identify gaps, common approaches, as well as good practices and emphasize the need to develop further guidance to achieve a consistent practical implementation of the objectives in Articles 8a - 8c. Priority topics that should be examined in greater detail in the scope of transposition and implementation monitoring of the Council Directive 2014/87/Euratom by the European Commission will be identified also.

Concluding remarks

- ETSON fosters collaboration between TSO's since more than 10 years
- The affiliation of RATEN ICN to ETSON will contribute in **ensuring the continuity** of its presence in European research programs
- RATEN ICN is **actively involved** in a wide palette of ETSON activities, its affiliation is not a formal one
- The membership will be helpful in **strengthening the collaboration** with ETSON members and in **improving the competences** in the nuclear safety field

THANK YOU FOR YOUR ATTENTION

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