



# Deliverable D3.1 (WP3)

## Summary report on interactions with other networks

**Authors:** Martin Pecanka, Gilles Queneherve, Vincent Chauvet (LGI), Richard Ivens (Foratom), Emilia Janicz (ENS), Louise Coiffeau (Innoenergy)

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## Summary

This deliverable monitors and sums up the information on major interactions that SNETP has maintained and/or initiated with its pillars over the 10 years of its history. The interactions with other networks and institutions are sorted out in the following categories: formalised interactions (through mandates, memoranda of understanding, and agreements on cooperation or similar) and informal cooperation (through mutual invitations to events, organisation of joint events, sharing of information, and contribution to joint position papers or similar).

## Table of contents

1.	Introduction.....	5
2.	SNETP interactions with other networks.....	5
2.1	Mandate for the Nuclear GEN II & III Association (NUGENIA).....	5
2.2	Task force for SNETP evolution.....	6
2.3	Interactions with OECD/NEA.....	6
2.4	Interactions with EERA JPNM.....	7
3.	NUGENIA interactions .....	8
3.1	Memoranda of understanding (MoU) .....	8
3.1.1	Memorandum of Understanding with IAEA .....	8
3.1.2	Memorandum of Understanding with Finnish R&D national programme SAFIRE .....	9
3.1.3	Memorandum of Understanding with MENA.....	10
3.2	Honorary membership.....	10
3.2.1	European Commission Joint Research Centre (EC-JRC).....	10
3.2.2	EPRI .....	11
3.2.3	ENEN .....	11
3.2.4	WNA .....	11
3.2.5	CIRTEN.....	12
3.2.6	FinNuclear .....	12
3.2.7	CEIDEN .....	13
3.2.8	CANDU Owners Group (COG) .....	13
3.2.9	Nuclear Valley .....	14
3.3	Stakeholders engagement .....	14
3.3.1	First International Stakeholders Conference .....	14
3.3.2	Second NUGENIA Stakeholders Conference.....	15
3.3.3	National Stakeholders meetings .....	15
3.3.4	Member targeted and Projects related meetings .....	16
4.	ESNII interactions.....	18
4.1	International level.....	18
4.1.1	IAEA / INPRO .....	18
4.1.2	GIF - Generation IV International Forum (GIF).....	18
4.2	ESNII Technology level level.....	19
4.2.1	ASTRID.....	19
4.2.2	MYRRHA .....	19
4.2.3	ALLEGRO.....	19
4.2.4	ALFRED .....	20
5.	NC2I interactions .....	20

5.1	International level .....	20
5.1.1	GEMINI Initiative .....	20
5.1.2	PRIME Initiative .....	20
5.2	National level .....	20
5.2.1	Poland .....	20
<b>6.</b>	<b>Other interactions.....</b>	<b>21</b>
6.1	Interactions with the SET-Plan .....	21
6.2	ENEF – European Nuclear Energy Forum.....	21
6.3	FORATOM.....	22
6.4	ENS – European Nuclear Society.....	22
6.5	EIT InnoEnergy .....	23
6.6	Jules Horowitz Consortium (JHR).....	23
6.7	EMIRI.....	24
6.8	Energy modelling platforms.....	24

## 1. Introduction

Since its creation in 2007, SNETP has initiated a number of strategic and technical interactions with various European and international stakeholders (networks, institutions, etc.). These interactions are monitored and animated at distinct levels and with various degrees of regularity and intensity.

The SNETP Secretariat have the overall visibility concerning the different interactions performed by the governing bodies and within the pillars and keeps track of these in the operational documents, meeting presentations, annual reports and in its electronic archive.

The objective of the SPRINT project is to promote, support and systemise the monitoring of the different interactions. In this deliverable are therefore consolidated the most recent and relevant interactions of SNETP and its pillars with the aim to make it easier for the SNETP Secretariat and the representatives of the SNETP governing bodies to build further on these relations, renew any relevant agreements and/or eventually reinforce already established interactions with concerned actors.

## 2. SNETP interactions with other networks

SNETP engaged in a number of formalised interactions with its counterparts and the following chapter will describe one by one the formal arrangements and/or conditions of the interaction.

### 2.1 Mandate for the Nuclear GEN II & III Association (NUGENIA)

Nuclear Gen II & III association was established as an international non-profit association under the Belgian law in 2011 and formally launched in 2012. In **March 2012**, the SNETP Governing Board Chair and the NUGENIA President agreed on and signed a SNETP mandate allowing NUGENIA to implement the R&D objectives of the SNETP Generation II & III pillar (TWG Gen II/III). The three-years mandate was renewed in **April 2015** for a duration of 3 years.

The content of the mandate covers the following rights and obligations. It states that NUGENIA shall:

- Act as the driving force to represent the GEN II/III pillar of SNETP
- Possibly manage funds by delegation from SNETP, if/when applicable
- Solicit SNETP to facilitate the dialogue with the high level stakeholders and forums (such as ENEF, ENSREG, other Technology Platforms, etc.)
- Assure that Communication on NUGENIA is included in the public communication plan and activities of SNETP.

The mandate sets the following obligations on NUGENIA :

- Periodically report to the management bodies of SNETP, on the basis of equivalent management levels, including brief reports on projects launched under its umbrella
- Permanently invite a representative of the SNETP management bodies to the NUGENIA management bodies meeting, on the same basis of equivalence
- Contribute to updating SNETP's strategic documents if/when relevant
- Acknowledge SNETP in its public communication, with the SNETP logo and the following wording: "NUGENIA is mandated by the SNETP to coordinate nuclear Generation II&III R&D"
- Urge European members and candidates of NUGENIA, which are not members of SNETP to apply for membership of SNETP
- SNETP requests that non-European members of NUGENIA have no role in decision-making on matters related to the definition of European nuclear R&D strategic or financing orientations, this request is to be implemented in the NUGENIA internal rules.

**Conclusion:** In April 2018, the discussions on the evolution of SNETP towards a legal entity are ongoing and the preferred option is to transform the NUGENIA legal entity into an SNETP umbrella organisation covering the 3 pillars (NUGENIA, ESNII, and NC2I). As the discussions are ongoing, the mandate was not explicitly renewed but is considered as valid during the transition period during which both mandates of the SNETP governance and the NUGENIA presidency were prolonged by their respective General Assemblies.

**Source:** <http://www.snetp.eu/nugenia/>

**Source:** <https://app.lgi-consulting.org/ecm/snetp-ecm-folder-1896>

## 2.2 Task force for SNETP evolution

The SNETP Governing Board set up a Task Force to prepare SNETP's evolution with all concerned parties, respectively the SNETP Governing Board and representatives of the SNETP pillars and relevant working groups.

NUGENIA Executive Committee set up an internal ExCom Task Force to interact with the SNETP counterparts regarding the options considered by SNETP for the evolution of the platform towards a legal entity. As per the decision of the General Assembly, the Task Force instructed SNETP on evolution options and on the different conditions to be considered if NUGENIA is to be the vehicle used for the transformation.

Joint meetings were organised between SNETP and NUGENIA representatives and official written positions were exchanged in order to take into consideration all the different level of details in terms of strategy, scope, members, governance, financial sustainability and daily management.

**Conclusion:** By April 2018, the discussions were still ongoing and details on the suggested next steps are on the agenda of next meetings. More information on the history and needs for SNETP's evolution are available in the SPRINT deliverable D33 – Summary report on SNETP evolution options.

**Source:** <https://app.lgi-consulting.org/ecm/snetp-ecm-folder-5449>

## 2.3 Interactions with OECD/NEA

- **OECD / NEA – Publication of Roadmap NI2050**

NI2050 was launched in July 2015 by a high level meeting gathering representatives of Nuclear Energy Agency Member Countries and heads of major laboratories and research organisations. The first Phase aimed at collecting information on national nuclear R&D activities and budgets through a survey. **Phase 2 was initiated in 2016**, starting with focussed Expert Meetings aiming at defining priority areas for innovation in nuclear fission.

Using the outcomes, the Advisory Panel further elaborated the NI2050 concepts and goals. Using a list of agreed criteria, a more refined list of **priority topics** was established. The work in 2017 was mainly dedicated to drafting the so-called "NI2050 templates (standard format)" for each of the topics. These are considered as "R&D vision documents/roadmaps" on subjects that shall accelerate development and market deployment of innovative technologies for the given topics. The third Phase started in **January 2018** and involves the other stakeholders of innovation (industry and the regulators/TSOs). The aim is to conclude on a detailed Programme of Action: projects scope, interactions, timeline, infrastructure needs, etc.

**Conclusion:** SNETP and its pillars representatives were invited to contribute to the preparation and consolidation of the document. NUGENIA contributed to the NI2050 roadmap aiming at paving the

way for a Carbon-free Energy Future. Some of the NUGENIA ExCom members were part of NEA's committees, which bring together top governmental officials and technical specialists from NEA member countries and strategic partners to suggest best practices and to promote further international collaboration. NC2I representatives contributed to the HTR section of the roadmap using the strategic national document prepared by Poland. ESNII representatives were involved in the roadmapping exercise representing the 4 ESNII GEN IV technologies.

The NEA/OECD representative, Marc Deffrennes, is regularly invited to SNETP meetings to inform on the progress of the roadmap preparation and consider the feedback from the SNETP community. Lately he participated in the Nuclear Days 2018 organised jointly by NUGENIA and SNETP.

**Source:** <https://www.oecd-nea.org/ndd/ni2050/>

## **2.4 Interactions with EERA JPNM**

A Memorandum of Understanding signed in December 2016 frames the agreement between the European Sustainable Nuclear Energy Technology Platform and the Joint Programme on Nuclear Materials of the European Energy Research Alliance to a formal coordination of strategy and actions within research lines of common interest on nuclear materials, with the fundamental aim of reaching a higher level of harmonization on their assigned roles and duties within the European Research Area.

Four objectives were consolidated in the document to guide future collaborative work:

**Objective 1. Ensure the consistency of the roadmaps/SRIAs of SNETP and EERA-JPNM in the respective parts.**

It is agreed that the vision of each Party will be considered for future updates of the other Party's strategic documents. This objective will be accomplished via, as a minimum, mutual consultations and citations, and, preferably, active participation of the Parties in the elaboration of their corresponding strategic research agendas and roadmaps. For the sake of clarity, it is recalled that each Party has an advisory, and not decision-making, role on the other Party's roadmap elaboration.

**Objective 2. Identify technical areas of common interest for JPNM and SNETP pillars.**

A fundamental objective of the MoU is to work together in order to agree on the definition of specific technical activities of common interest between EERA-JPNM and SNETP covering ESNII, NUGENIA and NC2I. The MoU does not affect areas specific to JPNM or SNETP, for which both Parties will work under a separate basis, but coordinated.

Specific cross-cutting research topics and integrated strategic vision papers will be developed in the frame of this MoU. This activity will help to form the knowledge base for supporting coordinated recommendations to institutional stakeholders in Europe. Such joint research topics will be proposed by the Parties via the Coordination Team and will be elaborated by the Technical team.

**Objective 3. Define the dialogue structure between the Parties**

An operative procedure of regular communication between both Parties will be set up. A matrix of representatives will be defined, at governing body and pillar levels. This dialogue structure will facilitate regular interactions with cross-participations at management and technical levels. The representatives of one Party in the other Party's bodies will act as observers without any decision-making rights.

**Objective 4. Cross- and joint communication**

For the objectives of the MoU, the Parties should guarantee regular involvement of SNETP and its pillars, and EERA-JPNM, in their corresponding events and workshops, as a way to guarantee coordinated work on:

- definition of research strategies;
- dissemination of results;
- contacts with public and private stakeholders;
- educational, communication and outreach tasks.

Both Parties will also seek, whenever relevant, to organize joint communications with external stakeholders, including but not limited to joint papers in conferences, organization of common workshops, joint publications or position papers, and so on.

**Conclusion:** In 2017 a comprehensive annex to the MoU was concluded detailing the contact persons for each technical area in order to foster efficient communication and collaboration. The first positive outcomes from the collaboration resulted in a joint preparation of the technical sessions within the Nuclear Days. EERA JPNM and the SNETP pillars managed to organise cross-cutting talks and roundtables to identify future challenges and also interested partners for collaborative projects.

**Source:** [https://www.eera-set.eu/wp-content/uploads/JPNM\\_Management\\_Report\\_2016.pdf](https://www.eera-set.eu/wp-content/uploads/JPNM_Management_Report_2016.pdf)

**Source:** <https://app.lgi-consulting.org/ecm/snetp-ecm-folder-1886>

### 3. NUGENIA interactions

NUGENIA, as a legal entity (international association established under Belgian law), managed in the past years to establish a number of formalised interactions with various sectorial, national and international initiatives. The following chapter summarises the interactions agreed via Memoranda of Understanding, explains the honorary membership within the association and informs about interactions with targeted stakeholder groups.

#### 3.1 Memoranda of understanding (MoU)

##### 3.1.1 Memorandum of Understanding with IAEA

The NUClear GENeration II and III Association (NUGENIA) and the International Atomic Energy Agency (IAEA) signed a practical arrangement on 16 September 2015 to foster future scientific and technical collaboration in the area of safe, reliable and competitive operation and construction of nuclear power plants.

The event celebrating this signature took place as a side event to the 59th IAEA General Conference, prior to the 5th Nuclear Operation organisations cooperation Forum on “ Nuclear generation in the next decade: challenges and solutions for 2015-2025”. This event was attended by the Chairman of SNETP (H. Ait Abderrahim), the Vice President of NUGENIA (R. Rintamaa), Mrs V. Decoubert from Westinghouse and member of the SNETP Governing Board, and two members of the NUGENIA Executive Committee (E.K. Puska, VTT and A. Al Mazouzi, EDF). On behalf of NUGENIA, the Vice President underlined that, “This event is for us the signal opening up a new era in the young age of our Association. This agreement with the Agency demonstrates that NUGENIA, with its 100+ members, has made a significant step in the coordination of nuclear research. Certainly, the collaboration with the agency will help NUGENIA, as one of the pillars of the Sustainable Nuclear Energy Technology Platform (SNETP), to evolve towards an internationally acting body by establishing strong and balanced collaboration with all players and decision makers for safe, reliable and sustainable nuclear energy.” The Chairman of SNETP highlighted the fact that, “This practical arrangement with the IAEA and NUGENIA, one of the pillars of SNETP, is a first and important achievement for SNETP. It is a first step for a larger collaboration between SNETP and IAEA and we are



looking to such an endeavour in the field of next generation reactors and beyond electricity applications of nuclear energy. Not to forget education and training as well as knowledge preservation, harmonisation and management, which are common concerns and objectives for IAEA and SNETP.”

The arrangement between the two organisations focuses on actions that will:

- Strengthen the capabilities of operating existing and future nuclear power plants using R&D feedback
- Align research and innovation strategies, better plan future R&D activities and enhance dialogue within the international nuclear community, including among policy makers
- Facilitate the launching of new nuclear R&D programmes and projects, in support of nuclear energy initiatives for newcomer countries and countries with existing nuclear programmes
- Harmonise and disseminate state-of-the-art knowledge related to the safe, reliable and efficient operation of nuclear power facilities, including training and qualification of staff
- Facilitate access to nuclear R&D infrastructures worldwide
- Cooperate in all other areas of common interest in the field of decommissioning and dismantling of nuclear facilities

**Conclusion:** The three-year collaboration covers the exchange of information and the widest dissemination possible. Within the collaboration framework with NUGENIA the Association jointly with EC JRC, EPRI and EDF were invited to support the organisation of the Fourth PLIM2017 conference in Lyon in October 2017. This collaboration was formalised and a 1-year preparatory work executed under the operational leadership of EDF and NUGENIA representatives. With more than 400 participants, the event was considered and reported at different levels as a success.

The IAEA representative was invited to the second edition of the Nuclear Days in Prague (April 2018) and discussions were launched on how to renew the collaborative framework with NUGENIA and SNETP after the end of the MoU duration (September 2018).

**Source:** <http://www.snetp.eu/nugenia-and-iaea-join-forces-to-support-safe-and-efficient-nuclear-energy/>

**Source:** <https://app.lgi-consulting.org/ecm/nugenia-ecm-folder-1649>

### **3.1.2 Memorandum of Understanding with Finnish R&D national programme SAFIRE**

NUGENIA and the Ministry of Economic Affairs and Employment of Finland signed a Memorandum of Understanding (MoU) on 29 August 2016 to foster future scientific and technical cooperation in the area of nuclear safety research.

The SAFIR2018 programme is governed by the Ministry of Economic Affairs and Employment of Finland and ensures that authorities possess sufficient technical expertise and competences to rapidly determine the significance of an issue related to the safe use of nuclear power plants if it arises. This MoU provides a framework for cooperation between NUGENIA and the Ministry for the promotion of nuclear safety research in the areas that are common to SAFIR2018 and the NUGENIA Technical Areas.

**Conclusion:** The SAFIR programme representatives regularly inform the NUGENIA secretariat regarding events, calls and reports communicated within its activity. It is expected that a contribution to the NUGENIA roadmap will be provided. NUGENIA also organises jointly with the Finnish stakeholders a dedicated session to which the programme officials will be invited in June 2018.

**Source:** <http://nugenia.org/nugenia-and-finnish-ministry-of-eco-affairs-sign-mou-nugenia-and-finnish-ministry-of-eco-affairs-sign-mou/>

**Source:** <https://app.lgi-consulting.org/ecm/nugenia-ecm-folder-5450>

### **3.1.3 Memorandum of Understanding with MENA**

The MoU signed between NUGENIA and European Radiation Protection Research Platforms (MELODI, EURADOS, NERIS, ALLIANCE: MENA) identifies the areas of common interest identified in both NUGENIA and the Radiation Protection Research Platforms` (MENA) roadmaps. The signatory organisations have decided to increase their cooperation and to strengthen dialogue between them. To successfully achieve this goal, the MoU provides that NUGENIA and MENA will share their views during the updating process of their respective Strategic Research Agendas and research roadmaps. Further cooperation may also take the form of transverse interactions, including the organisation of workshops or conferences in areas of common interest. This MoU is concluded for a 4-year period and can be extended through a tacit agreement.

**Conclusion:** The representative of the MENA is in regular contact with NUGENIA governance in terms of contribution to cross-cutting sections of the strategic documents, representation at joint events and harmonisation of positions towards the European or other institutions. Lately the MENA representative gave a talk at the technical session of Nuclear Days 2018 and provided a list of topics for further discussion throughout 2018.

**Source:** <https://eu-neris.net/home/newsletters/143-memorandum-of-understanding-between-nugenia-and-the-4-european-research-platforms.html>

**Source:** <https://app.lgi-consulting.org/ecm/nugenia-ecm-folder-5419>

## **3.2 Honorary membership**

The status of a NUGENIA Honorary member was created for groupings (i.e. consortia, associations, networks, clusters, platforms, federations, organisations with particular status...) to act as representative of a number of different organizations which are not at all, or only some of them, members of the NUGENIA Association. Such membership shall allow access to the flow of information within NUGENIA in the same way as a full member, especially regarding the roadmapping, setting up of priorities and monitoring the project creation process within the open innovation platform. The Honorary member can express on behalf of its members its opinion and interest on activities within NUGENIA and report to them. To become officially a NUGENIA Honorary member, the organisation has to be invited by the Executive Committee and ratified by the NUGENIA General Assembly.

### **3.2.1 European Commission Joint Research Centre (EC-JRC)**

Joint Research Centre of the European Commission is one of the founding organisations of NUGENIA, but considering its institutional status, it cannot be considered as a regular association member. Therefore, it is considered as Honorary member of NUGENIA. Its representatives are actively involved in the technical work and support of the NUGENIA Secretariat. EC JRC contributes in particular to the activities of ENIQ (TA8) and TA6 in NUGENIA.

From the perspectives of other pillars, active contributions are provided to the materials and fuels efforts for ESNII, in cooperation with EERA JPNM. The STRESA (Storage of Thermal REactor Safety Analysis Data) information system was developed by JRC-Ispira in the year 2000 to disseminate documents and experimental data from large in-house JRC scientific projects on severe accidents. Since then, it has been extensively used as a repository of experimental data. In 2017 the Nuclear

Reactor Safety Assessment (NRSA) Unit of the JRC Institute for Energy & Transport in Petten (NL) has updated and re-launched a new version of the STRESA information system assuring the secure use of its severe accident experimental data and calculations.

**Conclusion:** The EC-JRC representatives are regularly attending the SNETP and NUGENIA governing meetings as well as the management bodies of ESNII and NC2I. They contribute proactively to the work and act as a natural bridge between the SNETP community and the EU institutions in terms of information flow and institutional support.

**Source:** <https://ec.europa.eu/jrc/en>

### 3.2.2 EPRI

The Electric Power Research Institute (EPRI) conducts research, development, and demonstration projects for the benefit of the public in the United States and internationally. As an independent, nonprofit organization for public interest energy and environmental research, EPRI focuses on electricity generation, delivery, and use in collaboration with the electricity sector, its stakeholders and others to enhance the quality of life by making electric power safe, reliable, affordable, and environmentally responsible.

As a NUGENIA honorary member since 2013, EPRI is regularly involved in consultations regarding technical analysis and representatives are invited to annual technical and management meetings.

**Conclusion:** EPRI representatives regularly attend selected meetings and events organised by NUGENIA and inform on the situation in the US. The exchange of information and more targeted cooperation is difficult due to different natures of both organisations, EPRI and NUGENIA.

**Source:** <https://www.epri.com/#/>

### 3.2.3 ENEN

The European Nuclear Education Network AISBL, (ENEN AISBL) is an international non-profit organization established on 8 September 2017 under Belgian law. During the year 2018, European Nuclear Education Network AISBL will absorb the activities of the Réseau Européen pour l'Enseignement des Sciences Nucléaires. The mission of ENEN is the preservation and the further development of expertise in nuclear fields by higher Education and Training. This objective should be realized through co-operation between universities, research organisations, regulatory bodies, the industry and any other organisations involved in the application of nuclear science and ionising radiation.

**Conclusion:** The ENEN representatives are regularly invited to NUGENIA and SNETP meetings and events. Coordinated efforts are expected on ETKM issues with SNETP in 2018.

**Source:** <http://www.enen.eu/en/about/what-is-enen.html>

**Source:** <https://www.euronuclear.org/events/nestet/nestet2016/index.htm>

### 3.2.4 WNA

World Nuclear Association is the international organization that represents the global nuclear industry. Its mission is to promote a wider understanding of nuclear energy among key international influencers by producing authoritative information, developing common industry positions, and contributing to the energy debate. World Nuclear Association is the only industry organisation with a global mandate to promote nuclear energy. It is in a unique position to share and advance best practice and common messages globally, working alongside partner organisations: the IAEA, the inter-governmental body for technical and scientific cooperation in nuclear energy; WANO, the industry's reactor safety organisation; and other regional and national nuclear associations around the world.

**Conclusion:** Interactions between NUGENIA and WNA were evolving since the NUGENIA Forum 2017 in Amsterdam and formally ratified by the NUGENIA General Assembly in April 2018 when WNA became NUGENIA honorary member

**Source:** <http://www.world-nuclear.org/our-association/who-we-are/mission.aspx>

### 3.2.5 CIRTEN

CIRTEN is an Interuniversity Consortium for Technological Nuclear Research, constituted in 1994 with an official act subscribed by the Rectors of six Italian Universities where there are still active a Masters Degree or Courses in Nuclear Engineering, like the following: *Polytechnic of Milan, Polytechnic of Turin, University of Bologna, University of Padova, University of Palermo, University of Pisa, University of Roma1 "La Sapienza"*.

The Italian Universities, within the CIRTEN consortium, have promoted scientific and technical research activities, which have always constituted one fundamental part of the University, allowing the upgrading of knowledge in the field of Italian Nuclear Engineering. The principal purposes are:

- Promoting the Scientific and Technological Research of Universities at National and International levels on nuclear issues (i.e. European - Framework Programs);
- Motivating and coordinating the university members of the CIRTEN Consortium to achieve and maintain the current high level of knowledge in the nuclear field;
- To coordinate participation in research programmes at National and International levels;
- To coordinate the university members of the CIRTEN Consortium with research organisations, industry for R&S activities in the nuclear sector;
- To coordinate the university members of the CIRTEN Consortium with Research Organizations and Industry for R&D activities in the nuclear sector;
- Education and dissemination/information of knowledge in nuclear field.

**Conclusion:** The CIRTEN representatives are invited regularly to the NUGENIA meetings but no particular interactions and/or cooperation were launched so far.

**Source:** <http://www.cirten.it/en/>

### 3.2.6 FinNuclear

Founded by industrial organisations, FinNuclear Association's purpose is to promote Finnish companies' general preconditions, cooperation, competences, international profile in manufacturing, construction and service activities in the nuclear energy field. FinNuclear Association's field covers the whole lifecycle of nuclear power plants and associated plants, including design, licensing, construction, operation, maintenance, modernisation, fuel cycle, waste management and decommissioning as well as related research activities. Association's activities support the safe use of nuclear energy by ensuring the availability of equipment and services, based on Finnish competence during the entire lifecycle of nuclear power plants.

Nuclear energy is the largest single source of energy for electricity production in Finland. The sustaining principle in Finnish nuclear legislation is that the use of nuclear energy has to be in accordance with Finnish society's overall interest that emphasises the significance of domestic deliveries for the existing and new nuclear power plants. The future nuclear projects are seen as remarkable opportunities to expand the Finnish industrial competences in the nuclear field in addition to numerous companies already possessing nuclear expertise.

FinNuclear activities started as a part of national Centre of Expertise Programme in 2007 with a cooperation of five Finnish organisations working in the nuclear field. The starting point was to make better use of Finnish competences nationally and internationally in nuclear energy projects. In order to strengthen the juridical basis, FinNuclear activities were organized into a registered association in spring 2011. A FinNuclear-unit of Prizztech Ltd. was responsible for practical implementation of activities at the beginning, but later developed into an independent spin-off company to act as the operational unit of the FinNuclear Association.

**Conclusion:** The FinNuclear representatives are invited regularly to the NUGENIA meetings but no particular interactions and/or cooperation were launched so far. Potential new actions may be envisaged following the physical meeting with Finnish stakeholders and the NUGENIA ExCom in June 2018.

**Source:** <http://english.finnuclear.fi/finnuclearassociation>

### 3.2.7 CEIDEN

CEIDEN is a Spanish Technology Platform for nuclear fission energy. It aims at coordinating and supporting R&D&I activities in the field of Nuclear Fission Energy in Spain. The platform is a channel for proposing and jointly undertaking projects between companies, research centres and universities. Most of the active Spanish institutions on nuclear R&D&I are represented in CEIDEN. The Platform also contributes to define the national research planning on nuclear matters and keeps tight collaboration with international bodies. The activities conducted within the CEIDEN framework are mainly of an in-kind nature, so that organisations involved in the CEIDEN work programme provide a strong commitment.

Among the main ongoing work programmes, those on nuclear spent fuel storage & transportation and highly irradiated materials (reactor internals and concrete) are worth highlighting (some of them have entailed also international projection). Finally, Education and Training and Knowledge Management played a role in recent years in order to provide a comprehensive catalogue of education and training capabilities in the Spanish regions.

**Conclusion:** The cooperation with CEIDEN is a result of a NUGENIA ExCom session with Spanish stakeholders organised in 2017. Lately CEIDEN showed interest in a possible contribution to the NUGENIA secretariat and other activities.

**Source:** <https://ceiden.com/>

### 3.2.8 CANDU Owners Group (COG)

The CANDU Owners Group (COG) is a private, non-profit corporation funded voluntarily by CANDU operating utilities worldwide, Canadian Nuclear Laboratories (CNL) and supplier participants. COG is a trusted nuclear industry leader comprised of highly-skilled employees with extensive experience in many facets of CANDU nuclear technology.

COG's vision is CANDU excellence through collaboration. To achieve its vision, COG and its members work together with suppliers and other stakeholders to solve the industry's most challenging technical problems, share operating experience and work toward regulatory acceptance through collaboration to enhance safety and reliability, strengthen human performance, reduce environmental impacts and reduce costs. Joint Projects and Services departments develop solutions to issues shared by two or more COG members through shared resources. Research and Development is a mechanism for Members to share the risks, costs and the rewards of R&D projects in six program areas. Information Exchange leverages experience across the industry and among CANDU utilities to share experience

and best practices. Nuclear Safety and Environmental Affairs (NSEA) facilitates industry alignment with industry and regulatory standards. COG meets the needs of an evolving industry, enhances Member value and engages international members.

**Conclusion:** The COG representatives are invited regularly to the NUGENIA meetings but no particular interactions and/or cooperation were launched so far.

**Source:** <http://www.candu.org/Pages/ABOUT.aspx>

### 3.2.9 Nuclear Valley

NUGENIA invited as its honorary member an extended French network of SMEs active in the nuclear sector - Pole Nuclear Bourgogne. Initiated by a dozen local operators, it has more than 200 members, stakeholders in the French nuclear sector, mainly located in Burgundy, the Rhone Valley and the Paris region. In 2017 the PNB was transformed and renamed as Nuclear Valley. Nuclear Valley is a not for profit organisation created in 2005 by industrials and public bodies located in Burgundy, the historical centre of boiler making and sheet metal work for the French nuclear industry. It was selected by the French state as one of the 71 competitiveness clusters, the only one dedicated to the civil nuclear industry. In its role as a cluster, the objective of Nuclear Valley is to:

- encourage innovation, particularly in SMEs, by means of collaborative research projects which qualify for public funding,
- work towards the setting up of training courses which meet the requirements of the sector,
- develop synergy and cooperation between members.

**Conclusion:** The representatives of PNB were regularly invited to the NUGENIA meetings and a number of joint dissemination actions took place. Since the transformation in 2017 no formal interactions were launched between NUGENIA and the Nuclear Valley cluster and the honorary membership and further cooperation is an open question for 2018.

**Source:** <https://www.nuclearvalley.com/en/the-pnb/presentation/>

## 3.3 Stakeholders engagement

### 3.3.1 First International Stakeholders Conference

The NUGENIA Stakeholders Conference aims at opening a dialogue with EU Member States representatives in the fission community and European and international organisations active in the field. The purpose is to discuss the pathways to reach a mutual understanding on the necessary structuring of the R&D needs essential to ensure safe and efficient operation of Generation II and III nuclear plants worldwide, including sharing and management of knowledge and building competences and infrastructure.

The first edition of the event was held on 18 March 2015 in Brussels and gathered more than 80 participants including representatives from the EU, USA and Canada, and provided the opportunity to open a dialogue between NUGENIA and the civil society, member states, international organisations such as the OECD and the IAEA, and policy and decision-makers within the European Commission.

It allowed NUGENIA to express its commitment to:

- provide all its stakeholders with tangible scientific and technical results with added value to its end users
- create the necessary platform for dialogue between all stakeholders, and thus to allow for harmonisation of good practices and transfer of knowledge

- establish stronger link with universities as well as small and medium size enterprises
- maintain and develop the necessary skills and competences for the safe and reliable use of nuclear energy both “existing” and “new build” throughout their lifecycle.

**Source:** <http://nugenia.org/european-nuclear-gen-ii-iii-iv-days/>

### **3.3.2 Second NUGENIA Stakeholders Conference**

The second NUGENIA Stakeholders conference organised as a side event during IAEA’s 60th General Conference. International stakeholders in the field of safe and efficient nuclear energy gathered in Vienna, Austria, at the IAEA Head Office. During this session, high level officials shared their views on how to overcome the challenges that Generation II and III reactor technology R&D programmes face and more specifically on how research and development can bring added value to the sector, contribute to maintain necessary competences, and support knowledge and technology transfer.

**Source:** <http://nugenia.org/press-release-nugenia-second-stakeholder-conference/>

### **3.3.3 National Stakeholders meetings**

- **NUGENIA meets Spanish R&D Stakeholders**

NUGENIA Executive representatives met in Madrid on 14 February 2017 at Empresarios Agrupados, a Spanish industrial company that helped NUGENIA to gather relevant national nuclear R&D stakeholders. The participants from CEIDEN (The Spanish Nuclear Fission Technology Platform), CSN (Consejo de Seguridad Nuclear), CIEMAT, UNESA, Iberdrola, Gas Natural Fenosa, Universidad Politecnica de Madrid, Empresarios Agrupados and Centro Tecnológico de Componentes had the opportunity to share their views on NUGENIA activities and the broader European and international context in the nuclear R&D fission field.

**Source:** <http://nugenia.org/nugenia-meets-with-spanish-nuclear-rd-stakeholders/>

- **NUGENIA meets Czech R&D Stakeholders**

NUGENIA Executive Committee representatives met at UJV Rez (Czech Republic) on 31 May 2017 and invited Czech nuclear R&D and industry stakeholders. The participants from TPUE (The Czech Energy Technology Platform), UJV Rez, CVR, CEZ, Doosan Skoda, Elexim, NUVIA, UJP, Skoda JS, ZAT and universities from Prague, Brno and Pilsen had the opportunity to share their views on NUGENIA activities and the broader European and international context in the nuclear R&D fission field. The NUGENIA association representatives appreciate the strong involvement of the Czech partners in promoting safe, reliable and efficient nuclear production and recognise their broad knowhow, valuable expertise and strong sectorial engagement. After meeting Spanish and Czech nuclear R&D stakeholders, the next appointment is envisaged for December 2017 in Manchester with UK representatives.

**Source:** <http://nugenia.org/nugenia-meets-czech-nuclear-rd-and-industry/>

- **NUGENIA meets UK R&D stakeholders**

In conjunction with the 44th NUGENIA Executive Committee meeting hosted by Wood in Manchester, the Association organised, with the support of NNL and Wood colleagues, the third “NUGENIA stakeholders session”, this time dedicated to UK nuclear R&D organisations. John Starmand (Wood), Steve Napier on behalf of Rob Whittleston (NNL), Xuan Tran (EDF Energy), Richard Taylor (University of Manchester), Bernd Baufeld (NAMRC), Andrew Howarth (NIRO UK) and James Townes (University of Bristol) attended the meeting to share with NUGENIA their expertise, projects and priorities for the future. The exchanges took place in Manchester, an area considered as one of the most important

hubs, if not the most important for nuclear research in the UK with its numerous and dynamic R&D facilities, training infrastructures and well-coordinated industrial organisations.

**Source:** <http://nugenia.org/nugenia-holds-third-stakeholders-session/>

- **NUGENIA meets French R&D stakeholders**

The French Stakeholders' session took place on 6th March 2018 at CEA premises in Paris. Representatives from Framatome, CEA, CNRS, EDF and IRSN provided insights on their R&D priorities, upcoming projects and results from recent studies. After the Spanish, Czech and UK sessions, it is the fourth meeting of this kind. A specific focus was made on innovations and new technologies explored in France.

**Source:** <https://app.lgi-consulting.org/ecm/nugenia-ecm-folder-5451>

### 3.3.4 Member targeted and Projects related meetings

- **NUGENIA Academia Day**

In cooperation with ENS and ENEN, NUGENIA hold its first Open Academia Day on 23 – 24 May 2016 during the NESTet Conference in Berlin. The invited speakers Hans Henriksson (Vattenfall, Strategic Development) gave a talk on the efficient use of industrial funding for education and academic R&D in nuclear through collaboration, and Pascal Gain (CORYS, Vice President Business Development) illustrated examples of collaboration between CORYS, private industrial companies and academic organisations on simulation-based training products to improve the quality of training delivery. Monica Sbaffoni (IAEA/Knowledge Management Specialist) gave a broader international perspective on education and training programmes and Concetta Fazio (JRC-ITU) presented ideas and considerations on how the nuclear passport can evolve in the near future. From the NUGENIA side, Steve Napier (NUGENIA ExCom Chair) presented the education programme in the UK and Abderrahim Al Mazouzi (Secretariat member) gave a presentation and shared his experience as lecturer at the Materials Ageing Institute ([www.themai.org](http://www.themai.org)). In addition, at the end of the NESTet 2016 conference, NUGENIA participated in the ANNETTE project workshop on "How to attract the best talents to the nuclear sector", organised by ENEN. NUGENIA was represented by newly-elected Vice-President Satu Helynen.

**Conclusion:** The overall conclusion was that the Academia members involved in SNETP and NUGENIA did not actively search for involvement to the event and their representation was considered rather low.

**Source:** <http://nugenia.org/nugenia-open-academia-day-at-nestet-2016/>

- **NUGENIA SME Days**

NUGENIA presented its activities with a stand at the World Nuclear Exhibition 2016 on 28-20 June 2016. The association invited its SME members to share the stand so that they can promote their products, services and activities. NUGENIA and SNETP are present at the World Nuclear Exhibition in Paris.

**Conclusion:** The overall conclusion was that the SMEs members involved in SNETP and NUGENIA did not actively search for involvement to the event and their representation was considered rather low.

**Source:** <http://nugenia.org/visit-the-nugenia-snetp-stand-at-wne-open-sme-days/>



- **NUGENIA Coordinators' Day**

NUGENIA wishes to support a greater diversification of funding resources for R&D&I projects and help its members with the mapping of the most relevant financing opportunities. To achieve this purpose, NUGENIA organised an event on 5 November 2015 dedicated to all NUGENIA members who are either involved in an ongoing collaborative project or intending to submit a project proposal in the coming months. The one-day event provided insight on how to build successful proposals and create interaction between experienced and future project coordinators with NUGENIA representatives.

**Conclusion:** Its short-term objective is to enhance the chances of nuclear-oriented research to be supported by other funding schemes and help NUGENIA's members prepare eligible proposals.

**Source:** <http://nugenia.org/register-for-the-coordinators-day-event/>

- **The European Nuclear Gen II, III, IV Days**

The organisation of what is now called "nuclear days" came in the second half of 2014 when the Secretariats of SNETP and NUGENIA coordinated different types of meetings for the different SNETP pillars and their respective supporting Euratom projects. Following a result of different consultation it was opted to organise a joint event putting together rather formal meetings (General assembly of SNETP and NUGENIA) together with the rather technical & strategic meetings (ESNII conference, NUGENIA Stakeholders conference, NC2I information session).

The **first edition** of the event took place in Brussels from 17-19 March 2015 as a three-day happening co-organised by SNETP, ESNII, NC2I and NUGENIA during which a series of events will be held. On the Agenda were the:

- Fourth NUGENIA General Assembly on 17 March 2015
- Stakeholders Conference on 18 March 2015
- ESNII meeting
- NC2I information meeting

**Conclusion:** Based on the rather positive feedback from the event that put formally together the representatives of the 3 SNETP pillars, it was recommended by the different management bodies within SNETP and its pillars to work further the format of a similar event and envisage a next edition.

**Source:** <http://www.snetp.eu/european-nuclear-gen-ii-iii-iv-days/>

The **second edition** of the "Nuclear Days" was organised jointly with the 7<sup>th</sup> NUGENIA Forum in Prague the week of 10<sup>th</sup> April 2018. The event gathered the 3 SNETP pillars (NUGENIA, ESNII and NC2I) as well as EERA JPNM (Joint programme for nuclear materials) to strengthen collaboration and share views on cross-cutting issues and future needs.

The event was a major success in terms of participation. Around 250 delegates attended the event representing 100 members (industry, R&D, TSOs, SMEs, academia) from 24 countries. Representatives from the European Commission (DG-RTD and DG-JRC) as well as international organisations such as the IAEA and OECD/NEA also attended the event.

The introductory plenary session focused on industrial perspectives and was followed by a full day of technical parallel sessions allowing a great deal of dialogue between the 3 pillars of SNETP both to define the communalities between different fission technologies and to identify common topics of collaboration.

**Conclusion:** The event was considered as successful even though by some of the participants did not allow for more detailed discussions. An online survey was launched in May 2018 to receive more detailed feedback that will be reported to NUGENIA and SNETP management bodies.

**Source:** <http://www.snetp.eu/look-back-at-nuclear-days-and-nugenia-forum/>

#### 4. ESNII interactions

ESNII addresses the need for demonstration of Gen-IV Fast Neutron Reactor technologies, together with the supporting research infrastructures, fuel facilities and R&D work. As indicated in its Strategic Research & Innovation Agenda, SNETP has prioritised the different Gen-IV systems and is proposing to develop the 4 projects: ASTRID, MYRRHA, ALLEGRO and ALFRED.

The representatives of the 4 technological projects are represented at the ESNII Executive Board and regularly inform on the progresses the members of the ESNII Task Force. Inputs and representation at international level is coordinated with the ESNII management bodies.

##### 4.1 International level

###### 4.1.1 IAEA / INPRO

The International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO) was established in 2000 to help ensure that nuclear energy is available to contribute to meeting the energy needs of the 21st century in a sustainable manner. It is a mechanism for INPRO Members to collaborate on topics of joint interest. The results of INPRO's activities are being made available to all IAEA Member States. INPRO plays an important role in understanding:

- the future development of nuclear energy systems from a national, regional and global perspective, and
- the role of innovation in technologies and institutional arrangements in support of this development.

INPRO provides a forum for discussion and cooperation of experts and policy makers from industrialized and developing countries on sustainable nuclear energy planning, development and deployment. It promotes a mutually beneficial dialogue between countries with nuclear technology and countries considering these technologies to develop new nuclear energy capacity. INPRO supports national strategic and long-term planning and decision making and an awareness of technology innovation options for the future.

**Conclusion:** SNETP is regularly invited at the level of the Governing Board chair to attend the selected IAEA INPRO meetings. SNETP is usually represented by its chair or by the chair of the ESNII pillar. Regular feedback from the INPRO meetings are channelled to the management and governing bodies of SNETP from these meetings.

**Source:** <https://www.iaea.org/INPRO/about.html>

###### 4.1.2 GIF - Generation IV International Forum (GIF)

The Generation IV International Forum (GIF) is a co-operative international endeavour which was set up to carry out the research and development needed to establish the feasibility and performance capabilities of the next generation nuclear energy systems. The Generation IV International Forum has fourteen Members which are signatories of its founding document, the GIF Charter.

The goals adopted by GIF provided the basis for identifying and selecting six nuclear energy systems for further development. The selected systems are based on a variety of reactor, energy conversion and fuel cycle technologies. Their designs include thermal and fast neutron spectra cores, closed and open fuel cycles. The reactors range in size from very small to very large. Depending on their respective degree of technical maturity, the first Generation IV systems are expected to be deployed commercially around 2030-2040.

The Euratom Community is a partner in the GIF and is represented by the European Commission's Joint Research Centre. In February 2016, the Council of Ministers approved the extension of the

Euratom/GIF agreement for a further 10 years. SNETP participates in the annual Euratom/GIF coordination meetings hosted by JRC.

**Conclusion:** SNETP is represented at GIF.

**Source:** <https://www.iaea.org/INPRO/about.html>

## 4.2 ESNII Technology level level

### 4.2.1 ASTRID

ASTRID is an experimental programme that supports the development of the technological demonstrator for Sodium-cooled Fast Reactor. The programme is led by CEA and number of industrial partners is involved.

Since 2017 the ASTRID programme is being revised on request of the French government and new requirements are being defined and considered.

**Conclusion:** The technical progresses and strategic discussions are regularly debriefed by ASTRID representative at the ESNII Task Force and ESNII Executive Board meetings. Since the beginning of 2018 the revision of the ASTRID scope and technical requirements is in progress.

**Source:** presentation at Nuclear days 2018: <https://app.lgi-consulting.org/ecm/nugenia-ecm-folder-5352>

### 4.2.2 MYRRHA

MYRRHA (Multiple hybrid research reactor for high-tech applications) is a project to demonstrate the Accelerator Drive System concept. The Belgian Government supports in progressive way the project to support R&D efforts for high level waste, qualification of materials for fusion, the production of radioisotopes and fundamental nuclear research with relevant national counterparts.

**Conclusion:** The technical progresses and strategic discussions are regularly debriefed by MYRRHA representative at the ESNII Task Force and ESNII Executive Board meetings. Early in 2018 Myrrha was awarded an IAEA infrastructure price.

**Source:** presentation at Nuclear days 2018: <https://app.lgi-consulting.org/ecm/nugenia-ecm-folder-5352>

**Source:** [http://sckcen.be/en/Technology\\_future/MYRRHA](http://sckcen.be/en/Technology_future/MYRRHA)

### 4.2.3 ALLEGRO

ALLEGRO is an experimental fast reactor cooled with Helium being developed by the European V4G4 Consortium "V4G4 Centre of Excellence" of the nuclear research organizations of the Czech Republic, Hungary, Poland and Slovakia associated with CEA, France. It is guided by a common expression of willingness to cooperate on building future nuclear technologies in Central European countries. Through the legal establishment of V4G4 Centre of Excellence Association, VINCO project represents the joint efforts for development of Gen IV nuclear technologies with the special emphasis on gas-cooled reactors.

**Conclusion:** The technical progresses and strategic discussions are regularly debriefed by ALLEGRO representative at the ESNII Task Force and ESNII Executive Board meetings.

**Source:** presentation at Nuclear days 2018: <https://app.lgi-consulting.org/ecm/nugenia-ecm-folder-5352>

**Source:** <http://project-vinco.eu/allegro/>

#### 4.2.4 ALFRED

ALFRED programme stands for Advanced Lead-cooled fast reactor European demonstrator and associated research infrastructures. It is promoted by the FALCON consortium since 2013 through its members Ansaldo, ENEA and ICN Raten.

**Conclusion:** The commitment of the Romanian government has been recently expressed and commitments in terms of funding are expected. The progress of the work was recognised at ESNII ExBoard level early in 2018 and further evolution will be regularly reported at ESNII Task force level.

**Source:** presentation at Nuclear days 2018: <https://app.lgi-consulting.org/ecm/nugenia-ecm-folder-5352>

**Source:** <http://www.alfred-reactor.eu/>

### 5. NC2I interactions

#### 5.1 International level

##### 5.1.1 GEMINI Initiative

The GEMINI Initiative is based on a simple, transparent, accountable and strong international agreement between American and European research organisations and industry to work with their respective governments towards the deployment of commercial High Temperature Gas-cooled Reactors (HTGR) on both continents.

The key idea is to combine the best engineering and research talents from both parts of the Atlantic, as well as mutualise industrial capabilities. Moreover, the GEMINI Initiative's objective is to reduce the costs for each partner involved and make the construction projects more attractive for investors. The Next Generation Nuclear Plant Industry Alliance in the US and the Nuclear Cogeneration Industrial Initiative at the European level are official authorities in charge of the review and approval processes required in the GEMINI Initiative.

**Conclusion:** The interactions of the GEMINI initiative are supported since September 2017 by the EU cofunded project GEMINI+ and progresses reported at NC2I Task Force level.

**Source:** <http://www.gemini-initiative.com/about/>

##### 5.1.2 PRIME Initiative

The PRIME Initiative stands for Polygeneration reactor with inherent safety modularity and economic competitiveness. It is a partnership that has not yet been formally established but is under discussion between NC2I, US, Poland and their counterparts in Japan and Korea. It is considered to be a next step started by the establishment of the GEMINI initiative with stronger representation by the American nuclear companies.

**Conclusion:** The discussion for further evolution of this initiative will be followed under the GEMINI+ project and reported to the NC2I Task force.

**Source:** <https://app.lgi-consulting.org/ecm/geminiplus-ecm-file-9381>

#### 5.2 National level

##### 5.2.1 Poland

High Temperature Reactor deployment is listed among priority projects in the Polish governmental document "Strategy for Responsible Development" published in 2017. In January 2018 The Ministry

of Energy published the Report of The Committee for Analysis and Preparation of Conditions for Development of High-Temperature Nuclear Reactors (the HTR Committee) that recommends HTR technology as the best option for industrial heat applications. In the Report the HTR Committee suggests to establish a special company run by industrial heat users that would conduct the process of design and development of the 165 MWth commercial reactor. At the same time 10MWth experimental reactor is planned to be designed and constructed in National Centre for Nuclear Research (NCBJ) in Świerk, near Warsaw.

Preparing its Report the HTR Committee i.a. made use of research results of projects initiated by NC2I. In fact the Gemini+ project is a tool to implement NC2I strategy and achievements in Poland. Strong relation between NC2I and the Polish HTR program is also reflected by the fact that the Chairmen (Grzegorz Wrochna) is from Polish research organization (NCBJ) and the Vice-chairmen (Marek Tarka) is the representative of Polish industry (PROCHEM).

**Source:** NCBJ/internal

## **6. Other interactions**

### **6.1 Interactions with the SET-Plan**

The interactions with the SET Plan were closely followed and are summed up below:

- Participation in the work of the SET-Plan Steering Committee
- Launch of ESNII at the SET-Plan Conference in Brussels on 15 November 2010
- Input into SET-Plan Action 10 (Nuclear)
- Participation in the SET-Plan Action 10 Final Workshop in July 2017
- Contribution to the Action 10 Implementation Plan

**Source:** Foratom/internal

### **6.2 ENEF – European Nuclear Energy Forum**

The European Nuclear Energy Forum (ENEF) is a unique platform for a broad discussion about the opportunities and risks of nuclear energy. These discussions are linked to the energy challenges faced by the EU and its Member States and in particular to the role of nuclear energy within the strategic framework for the Energy Union.

Founded in 2007, ENEF gathers all relevant stakeholders in the nuclear field: governments of the 28 EU Member States, European institutions including the European Commission, European Parliament and the European Economic and Social Committee, representatives of the nuclear industry and regulators, electricity consumers, and civil society.

ENEF holds annual plenary meetings alternating between the capitals of the host countries – Slovakia and the Czech Republic. The Prime Ministers of the host countries are regular speakers in the opening sessions of ENEF and normally deliver robust supporting statements regarding nuclear energy. The topics under discussion at ENEF are selected each year and frequently include items with a technical or research focus. For example, in June 2018, ENEF will include a panel session on “Small modular reactors – EU and worldwide perspectives”. FORATOM and many other members of SNETP participate in these discussions and thereby help to inform EU and national politicians about the importance of nuclear research at EU level. This is the sort of forum where SNETP needs to be more visible in future.

**Conclusion:** SNETP members participate in ENEF. SNETP should seek to strengthen future interactions.

**Source:** <https://ec.europa.eu/energy/en/events/european-nuclear-energy-forum-enef-plenary-meeting>

### 6.3 FORATOM

FORATOM is the Brussels-based trade association for the European nuclear industry. It numbers among its members 15 national nuclear associations, including those of Switzerland and Ukraine, as well as having 2 corporate members from Poland and the Czech Republic. In total, FORATOM represents more than 800 companies active in the nuclear field, acting as the voice of the industry in policy discussions with the EU institutions and other key stakeholders. FORATOM provides information and expertise on the role of nuclear energy; it produces position papers, responses to public consultations, newsfeeds, analyses of public opinion, and organises regular networking events like dinner-debates, workshops, press briefings and visits to nuclear facilities.

FORATOM supports nuclear research as an essential prerequisite for maintaining the operational efficiency and safety of existing nuclear power plants and fuel cycle facilities, as well as the development of more sustainable reactors for the longer term. FORATOM was one of the original driving forces behind the creation of SNETP and has participated in the Platform's Secretariat since the very beginning. FORATOM has senior representatives on the SNETP Governing Board and Executive Committee and is a partner in the EU-funded SPRINT project supporting the communications and outreach functions of SNETP. FORATOM hosts regular meetings of its Innovation, Research & Development Working Group (formerly R&D Task Force) and uses this as a vehicle for providing informed comment on SNETP's activities and output.

**Conclusion:** FORATOM and SNETP are closely interlinked and mutually reinforce political and industry support for nuclear fission research at EU and national level.

**Source:** [www.foratom.org](http://www.foratom.org)

### 6.4 ENS – European Nuclear Society

The European Nuclear Society, ENS, is the association of nuclear professionals in Europe. Through its Member Societies it brings together more than 10.000 nuclear professionals from industry, the academic world, research centres and authorities in 22 European Countries and Israel. ENS is an effective transmitter of scientific information to a growing number of people with a stake in the future of nuclear energy.

ENS is the perfect partner to stimulate collaboration between experts, disseminate information and interact with the nuclear community. ENS is the network of nuclear professionals in Europe and therefore a strong partner to stimulate collaboration between experts, disseminate information and interact with the nuclear community. Many ENS members belong to the SNETP membership. The ENS involvement in: IGD TP, EHRO-N as advisor, ANNETTE as advisor, ENEN+ project, SAMIRA project as advisor (e.g. NRG representative)

Close links to the fusion and nuclear materials community allows the SNETP members to establish cooperation and share the expertise, while at the same time to play a role as a valuable advisor in high-level European projects and platforms.

The recently signed MoU of ENS with the EC JRC on knowledge management and open access to research infrastructure will offer SNETP members to actively participate in the European research projects.

**Conclusion:** ENS, through its active presence in different projects and platforms, enables the SNETP members to strength their visibility EU research and education & training community

**Source:** [www.euronuclear.org](http://www.euronuclear.org)

### 6.5 EIT InnoEnergy

EIT InnoEnergy is a European Public-Private Partnership acting as a catalyzer of innovation in sustainable energy by supporting innovation projects, providing acceleration services to start-ups and organizing Master's and PhD programs. EIT InnoEnergy counts 28 institutions as shareholders and over 90 associated partners, largely research centers and industry such as Areva, EDF or CEA. EIT InnoEnergy supports and invests in innovation at every stage of the journey – from training students to concrete support to innovation projects and start-ups. With its ecosystem, EIT InnoEnergy builds connections across Europe, bringing together inventors and industry, entrepreneurs and markets, graduates and employers, researchers and businesses.

EIT InnoEnergy provides support for finalising and commercialising technological innovations that lead to new products and services in the thematic field “Nuclear instrumentation”. For instance, we are currently running the innovation project HARMONY, designing high definition radiation resistant video cameras, together with the CEA, the French SME Hermes and the Abakus manufacture. Concerning start-ups, InnoEnergy is supporting the Swedish venture LeadCold, which has designed a small nuclear reactor that addresses the need for reliable, sustainable and less costly power in off-grid sites.

On top of these technological innovations, EIT InnoEnergy runs a European Master's in Nuclear Energy (MSs EMINE). The MSc EMINE programme aims at teaching tomorrow's nuclear engineers on how to address the key technical, social and environmental challenges faced by the nuclear industry today and in the future. In the framework of this MSc EMINE programme, EIT InnoEnergy organizes Summer Schools, webinars and other diverse events, covering also nuclear topics.

**Conclusion:** EIT InnoEnergy contributes to the Sustainable Nuclear Energy Technology Platform (SNETP) through the European project SPRINT. We notably participate as speaker to some of its events (e.g. 10th anniversary of the SNETP in Brussels on the 22nd of February 2018). EIT InnoEnergy is also interacting directly with several members of SNETP for the implementation of innovation projects and for the support to start-ups in the field.

Coordination with ENS and SNETP ETKM representatives on E&T activities shall be assured.

**Source:** EIT InnoEnergy/internal

### 6.6 Jules Horowitz Consortium (JHR)

JHR is a research reactor under construction in France open to international collaboration. Research centres of the French Alternative Energies and Atomic Energy Commission (CEA) will make JHR and its ancillary facilities available to institutions from IAEA Member States for education, and joint research and development (R&D) projects. Material Testing Reactors (MTRs) are necessary for development and qualification of materials and nuclear fuel used in nuclear industry. The related studies contribute to safety and optimization of existing or upcoming nuclear power reactors and to development of future reactors. JHR will be also used for nuclear medicine. It will supply hospitals with short-lived radioisotopes used for medical imaging or therapeutic purposes. Furthermore the research facility may be promoted through non-nuclear industrial application capabilities. JHR will provide high performance silicon used in electronic power devices, such as those included in electrical and hybrid vehicles or in energy control systems.

**Conclusion:** At SNETP level, NUGENIA embedded a closer cooperation with the JHR representatives through the support of their R&D project that was prepared following the preparatory meeting at the fifth NUGENIA Forum in Marseille in 2016.

**Source:** <http://www-rjh.cea.fr/index.html>

## 6.7 EMIRI

EMIRI - The Energy Materials Industrial Research Initiative, set up in 2012, is driving forward research and innovation in the advanced materials for low-carbon energy applications. Innovative energy technologies are required to cost-effectively meet Europe's energy and climate change challenges. These technologies will be enabled by the introduction of new, advanced materials. By bringing together research, industry and trade organisations, and leveraging Europe's world-class capability in advanced materials, EMIRI aims to contribute to generating tangible growth in economic value and employment opportunities for Europe.

**Conclusion:** SNETP Secretariat had started preliminary discussions with the representatives of the initiative but any formal interactions or collaboration have not been reached yet so far.

**Source:** <http://emiri.eu/>

## 6.8 Energy modelling platforms

The European platform for energy modelling called EMP-E ("Energy Modelling Platform for Europe") was created within the framework of the EU-funded project REEEM. The SNETP representatives were not attending the events organised by the platform but through SPRINT project the general feedback was that nuclear energy is underestimated if not omitted in some of the modelling scenarios. For the next edition of the event organised by the platform a SNETP representative shall be nominated.