SNETP
Newsletter n° 7

November 2010

A few words from the new Chairman of the Governing Board

- **The third General Assembly will be held in November or December 2011 in Poland.**

On 14 September 2010 SNETP held in Brussels its 2nd General Assembly (GA) with participation of aproximately 200 SNETP members and guests. GA was opened by Christophe Behar, Director of Nuclear Energy, CEA and Chairman of the SNETP Governing Board (GB) and followed by keynote speakers from SCK-CEN, Eurelectric and IEA (more on page 2)

The GA reviewed the SNETP activities since the 1st GA. In short, SNETP has reached an important milestone finalizing the key planning documents: (i) Vision Report; (ii) Strategic Research Agenda; and (iii) Deployment Strategy; characterizing the transition from planning to implementation. First results of SNETP activities are already visibly reflected in research activities within the EURATOM 7th FP as well as R&D activities in Member States.

In near future the progress is expected in all three main pillars of sustainability:

- Supporting GEN II and GEN III reactors with the objective to increase nuclear contribution to EU Energy Plan –(Working Group on Gen II/III)
- Focusing on fast reactor development with the objective to make nuclear energy more sustainable and to convert EU stocks of spent fuel and depleted Uranium to energy resources for thousands of years, contributing to EU energy independence (ESNII).
- Extending the use of nuclear energy also to non electrical applications (Working Group on Cogeneration).

An important component for the future progress is the support activity of Education, Training and Knowledge Management Working Group. Under preparation are documents describing the mission and work plan of the Group.

Key challenges for the future are: (i) prioritising the research over the next decade, and (ii) actually launching the research and implementation projects. ESNII inauguration will be an important step forward to respond to these key challenges on the way to fast neutron reactor technology. Consensus on SNETP strategy for international collaboration is sought.

Prof. Grzegorz Wrochna, director of The Andrzej Soltan Institute for Nuclear Studies in Otwock-Swierk invited SNETP to hold the 3rd General Assembly in Poland in the second half of 2011. GA also approved the new Governing Board met on 15th September and which elected a new chairman and two vicechairmen (Christophe Behar - CEA and Gian Carlo Aquilanti - ENEL).

SNETP welcomes the new Europe 2020 Strategy and its main actions up to 2020 that will steer the process and will be translated into national targets in several directions: (i) Employment, (ii) Research and Innovation, (iii) Climate Change and Energy, (iv) Education, and (v) Combating Poverty. SNETP activities directly link with two of the directions. SNETP will also strengthen the cooperation with other initiatives within EU (ENEF and its Working Groups and IGD-TP - the 'Implementing Geological Disposal of radioactive waste – Technology Platform' and other), and contribute to the updating of the EU Energy Policy Initiatives (Energy Strategy 2020 and Roadmaps/Scenarios 2050).

Close cooperation must be kept also with EERA (European Energy Research Alliance) in their nuclear oriented activity - Joint programme on nuclear materials.

In conclusion, I am very pleased that the GA appreciated the SNETP activities, and confirmed the future orientation and priorities of SNETP. As the new Chairman, I would like to thank the members of the previous GB for their active contribution to our results and wish new members enough invention and force to continue in this work and lead the SNETP to the implementation phase. I am fully aware of the fact that the present success results from efforts of numerous specialists of SNETP member organisations, as well as of Executive Committee, working groups and Secretariat, with important contribution of EC and many others, and I really appreciate their contribution.

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- **SNETP welcomes 11 new members University of Hull (UK), British Energy (UK), Alstom (FR), Belgoprocess (BE), CENELEC (FR), KTH (SE), Slovenské Elektrárne a.s. (SK), INBK (DE), ERSE S.p.A (IT), AGH (PL), LEI (LT).**

SNETP
Sustainable Nuclear Energy Technology Platform

SNETP held its 2nd General Assembly Meeting

MCE Conference Center, Brussels

The second General Assembly of SNETP took place in Brussels on September 14, 2010, in the MCE Conference centre. With around 200 registered participants, this event was successful in bringing together the member organisations representing the various stakeholders of nuclear fission research. The event was again opened to the public and attracted various external stakeholders, including representatives of European institutions and Member States, as well as journalists from specialised press.

The speakers presented the following keynotes:

- (i) The Belgian decision to support MYRRHA Project, presented by Eric Van Walle, Director-General, SCK•CEN;
- (ii) The view of EURELECTRIC on the role of nuclear in the future energy mix in Europe, presented by Susanne Nies, Head of Energy Policy & Generation Unit, EURELECTRIC (from current 134 GWe installed and 870 TWh/year produced in NPP, to 175 GWe and 1 350 TWh/year in 2050);
- (iii) The IEA / NEA Nuclear Technology Roadmap, presented jointly by Steven Lee, Senior Energy Analyst, OECD IEA and Martin Taylor, OECD NEA. The Nuclear Technology Roadmap is a start of the new periodic activity providing an input to the IEA Energy Technology Perspective 2010. Different electrification scenarios, for the period up to 2050 are considered including the Blue Map with 820 GWe and Blue High with 1 300 GWe installed nuclear capacity in 2050, representing 24% and 38% share of world electricity production, respectively.

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Filmed interventions along with presentations are visible at www.snetp.eu

The Euratom Framework Programme – your partner in research

Euratom actions in nuclear fission and radiation protection are implemented in the best interests of the EU and its citizens according to the terms of the Council Decisions of Dec. 2006 establishing Euratom FP7 (2007-11). The FP allows flexibility in the precise topics supported as well as allocation of funding, enabling the programme to adapt to emerging needs and changes in strategic priorities, not to mention results of ongoing projects, during its 5 years.

Since 2006 there have been a number of key developments. Particularly noteworthy is the endorsement by all EU Institutions of the Strategic Energy Technology Plan (SET-Plan). The accession of Euratom to the Generation-IV International Forum is another landmark. The last few years have also seen the continuing evolution of the European Research Area, including the establishment of technology platforms in many fields.

One is of course SNETP, another is the Implementing Geological Disposal TP (www.igdtp.eu). In the area of low-dose research, the Multidisciplinary European Low-Dose Initiative (www.melodi-online.eu) has also been launched to better coordinate public funding.

Each brings R&D stakeholders together around a common vision and research agenda, and the continued commitment of these stakeholders is crucial for ultimate success.

The Euratom programme has adapted to this new landscape while remaining faithful to its original mandate. Effectiveness and EU added value are maximised by concentrating on priorities of the new platforms, and this approach is maintained in the 5th and final call for proposals published on 20 August, deadline 7 April 2011.

It is hoped that a proposal for a 2-year 'business as usual' extension to FP7 for 2012-13 will be adopted by the Commission soon. In any event, DG-Research is now embarking on a thorough ex-ante impact assessment, covering all scientific fields, of future EU-level support for research starting 2014. As project coordinators and partners, your feedback on the Euratom FP to date and perspectives for the future is welcome.

One thing is clear, in light of the progress so far, and in particular the imminent launch of ESNII, SNETP is now playing a pivotal role. Euratom contributes by offering a range of funding schemes that catalyse shared-cost actions and promote cooperation. Its traditional focus has been cross-cutting themes, especially safety-related R&D and waste management / fuel cycle, and this will continue even though the focus is shifting to include more advanced systems.

Simon WEBSTER
Head of Unit 'Fission'
DG-Research
European Commission

NEW 5th Fission call of FP7 has been published: Nuclear Fission and Radiation Protection, Call Identifier: FP7-Fission-2011 Deadline: 7 April 2011, at 17.00.00, Brussels local time Indicative budget: EUR 41 000 000 from 2011 budget

Status of the European Sustainable Nuclear Industrial Initiative

ESNII: Towards a European Industrial Initiative under the SET-Plan

ESNII Team meeting (Sept 2010)

ESNII had already been presented to stakeholders on several occasions earlier this year: ENEF plenary meeting in Bratislava in May, ENC in Barcelona and SET-Plan Conference in Madrid in June (read our newsletter no.6). In September, the members of the ESNII Task Force elected their Chair and Vice-Chair (see box). The Chairman reported to the General Assembly of SNETP on the progress and programme of ESNII.

A major milestone was the first meeting of the "ESNII Team" on the 13th of September (photo). This is the organisational level at which the Task Force interacts with European and national stakeholders of the SET-Plan. The first meeting was organised and co-chaired by the European Commission (DG-Research and DG-Energy). It was the occasion for a delegation from the Task Force to dialogue with Member States (10 countries were represented), the European Investment Bank (EIB), the European Nuclear Energy Forum (ENEF), the European Energy Research Alliance (EERA), the SETIS team, and of course the European Commission. More formal presentations on the programmes were followed by discussions on governance, financing mechanisms and potential interactions.

- To date, 7 Member States have formally expressed their support to ESNII (Belgium, the Czech Republic, Finland, France, Italy, Slovakia and the UK) and others have shown interest in the activities.
- The ESNII Team considers that ESNII has reached the required level of maturity: technical scope, financing perspectives for the first 3 years (690 MEUR for the period 2010-2012, without any benefit from the EERP and the NER300), industrial and Member States' commitment, EC contribution.
- The ESNII Team proposes that both ESNII and the EERA Joint Programme on Nuclear Materials should be officially launched in November 2010.

The next step is the formal launch of the Initiative, which will take place at the High-level Conference on the SET-Plan, organised under the Belgian Presidency of the EU in Brussels, on 15-16 November 2010.

Revised ESNII Concept Paper is now available on-line at www.snetp.eu/esnii

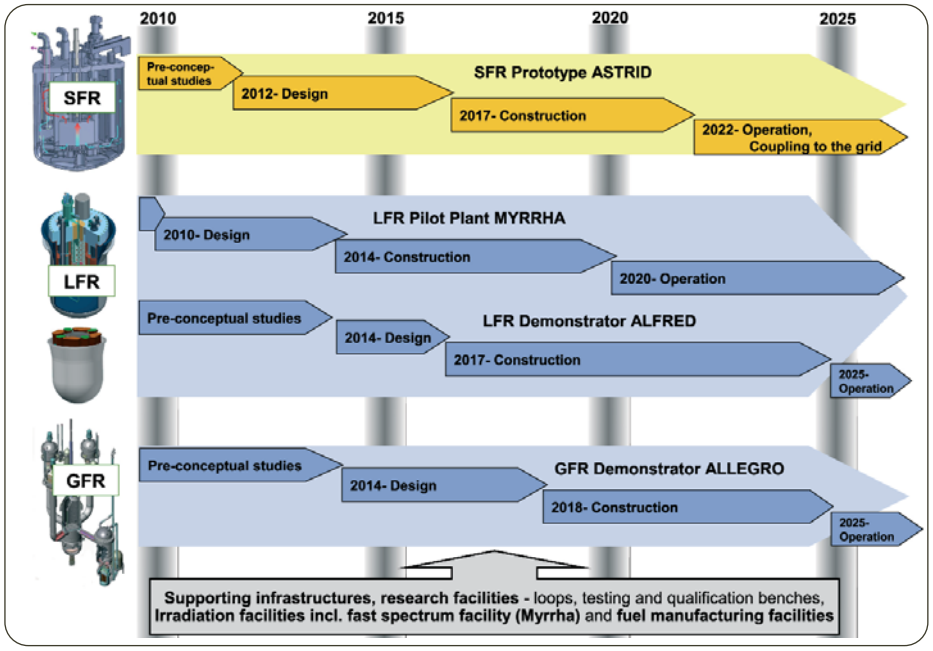
7 September 2010: the ESNII Task Force appointsits Chairs

Chairman:
Dr Noël Camarcat, Special Advisor, Nuclear R&D and International Issues, EDF Generation, France

Vice-Chairman:
Prof. Dr. Peter Baeten, Director of the Institute of Advanced Nuclear Systems, SCK•CEN (Nuclear Research Centre Belgium)

Keep informed about ESNII at www.snetp.eu/esnii

The ESNII Roadmap



Technological Working Group (TWG) on Generation II and III Reactors

The TWG had its second meeting at the Schiphol airport in Amsterdam on October 7, 2010. Status reports on the activities initiated at the first meeting in June 8 were on the agenda: Report and discussion of R&D prioritization, proposal on main lines of work for Gen III reactors and mapping of other bodies and networks, including draft plan for cooperation. Concerning the last issue the TWG reached a consensus that it should focus on establishing its own priorities before looking for active cooperation with other groups. Nevertheless, it was decided that the JRC and VTT representatives will liaise with the International Forum for Reactor Ageing Management (IFRAM).

A major item on the agenda was the discussion of an implementation process for R&D projects, starting with the definition of four main areas of research:

- Long term operation (LTO)
- Advanced technologies for components
- Cross-cutting safety issues
- Fuel-and fuel cycle optimization

For each area two TWG members were appointed to prepare a short area description to be edited by the Chair into a document for presentation at the January 2011 meeting of the Executive Committee.

The meeting was held at the Shiphol airport

Following the definition of main research areas there will be a solicitation process in order to gather those TWG members willing to cooperate on joint projects within each main area.

The TWG also agreed to liaise with SARNET by delegating to that network the management of the R&D scope for severe accidents.

The next meeting of the TWG will take place early March 2011.

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TWG on GEN II and III meeting in Amsterdam

Status of preparation of the TWG

Technology Working Group on Cogeneration

The preparation of the Technological Working Group on nuclear cogeneration of heat and power builds on the ongoing FP7 project EUROPAIRS (www.europairs.eu). This project gathers a wide industrial participation (Air Liquide, Alstom, AMEC, ArcelorMittal, Areva, DSM, E.ON, Fortum, Prochem, Rolls-Royce, Saipem, Technip KTI, Tractebel Engineering, ZAK) ranging from technology providers, utilities, and several energy-intensive industries (process heat end-users).

Recent and future developments in EUROPAIRS include:

- October 2010: Joint workshop in Paris (photo) with the industrial partners in EUROPAIRS and their counterpart of the US "NGNP Alliance" (Chevron, ConocoPhillips, Dow Chemical, Entergy…) where possibilities for cooperation were identified
- October 2010: Presentation of the first results of EUROPAIRS at the HTR-2010 conference in Prague
- December 2010 (tentative): first meeting of the EUROPAIRS Associated Industry Network
- February 2011: release of the final results of the project
- May 2011: EUROPAIRS Open Workshop

The next step is the formal constitution of the SNETP Technological Working Group on Cogeneration, which is under preparation within the EUROPAIRS partnership and beyond.

Joint workshop in Paris with the industrial partners in EUROPAIRS and their counterpart of the US

Who are the members of SNETP?

Focus on Alstom

Alstom Nuclear Business is the world's leading supplier of equipment for conventional islands of nuclear power plants.

A world leader in Power generation

Founded in 1928, Alstom is a worldwide leader in power generation and rail infrastructures. Alstom specialises in innovative and environmentally friendly technologies, providing solutions for tomorrow's world today. Alstom Power strategy, embodied in the motto "Clean Power Today!", is defined to best respond to the needs of our customers.

The Group supplies integrated power plants, equipment and services for virtually every source of energy – coal, gas, hydro, nuclear, wind, solar and geothermal. Alstom provides solutions across the entire spectrum of power generation and takes a proactive approach to the development of clean and sustainable energies.

Alstom products for Nuclear

Nuclear reactors are not part of Alstom products portfolio. Nevertheless, Alstom is the world leader in nuclear turbine islands. Over 40% of the world's Nuclear Power Plants use Alstom-made equipment, and 30% use our steam turbines technology. For the past 50 years, the company has been developing, manufacturing and providing cutting-edge products for the turbine island. The product range covers steam turbines and turbogenerators, moisture separator reheaters, condensers, regenerative feedwater heaters and feedwater tank, the main pumps of the turbine island including the circulating water pumps. Special mention should be made of the ARABELLE™ steam turbine which is central to Alstom's nuclear technology: Recognized as one of the most advanced on the market, the ARABELLE™ steam turbine modular product family offers the full power output range (900 to 1,800 MW) with outstanding efficiency and reliability.

In addition, the portfolio includes a number of equipment associated to the nuclear island, such as the emergency diesel generators, cooling and pumping equipment, hydrogen recombiners, etc.

Alstom services for Nuclear

Alstom covers the full range of services for the turbine island:

Project specific integrated solutions (from equipment packages to full Turbine Island) to respond to the specific Customers needs and project scope, our experience as Plant Integrator® leveraging on our portfolio of best-in-class equipment.

Servicing and retrofitting of the turbine island for existing nuclear power plants. Alstom retrofit solutions have already improved the efficiency and operation of over 60 nuclear turbines worldwide, including some manufactured by other suppliers.

Proven and up-to-date solutions

ARABELLE™ technology has been in operation for over ten years in the four EDF N4 plants in Chooz and Civaux in France. Leveraging on the technical success demonstrated by these 4 units, Alstom has developed a full family of products covering today's reactors and heat sink condition. Among the recent units, the 59th French EDF unit (and first EPR in France) is being erected in Flamanville 3, and in China the first ARABELLE™ has been recently commissioned at Ling Ao 3, the fifth Chinese CGNPC nuclear unit. The turbine generator package of the plant was constructed by Alstom in partnership with China's Dongfang Electric Corporation, Ltd. Work on the second unit of phase II (unit 4) is in full swing and the unit is expected to enter commercial operation in 2011. Alstom is also implementing this technology at Hongyanhe, Ningde, Fuqing, Fangjiashan, Tianwan (current CPR 1000 projects) and Taishan, China's first EPR project. A total over 20 ARABELLE™ turbines are presently being implemented in the world, with China taking the dragon's share.

Solutions for tomorrow

Alstom is increasing its R&D effort and building up partnerships to accompany the launch of these projects and to consolidate its offer for other kinds of reactors presently on the market. In addition, Alstom is carefully monitoring the development of GEN IV reactors and its impact on the Turbine Island technology and is getting ready to provide the required solutions. Alstom's membership of SNETP not only means that it shares the vision of the platform for sustainable nuclear energy, but also that it intends to remain at the forefront of conventional island technology to deliver the highest reliability and performance to its customers.

Patrick Ledermann,
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FP7 project highlights

Thermal-Hydraulics of Innovative Nuclear Systems (THINS)

THINS project is developing new physical models, improvement and qualification of numerical analysis tools and their application to innovative nuclear systems.

The THINS project, a large-scale integrated research project in the 7th Framework Programme FP7 of Euratom, focuses on crosscutting issues of thermal-hydraulics encountered in innovative nuclear systems, such as GEN-IV systems and transmutation systems. Five cross-cutting thermal-hydraulic issues are identified and selected in the THINS project, i.e. (i) advanced reactor core thermal-hydraulics; (ii) single phase mixed convection; (iii) single phase turbulence; (iv) multi-phase flow; and (v) code coupling and qualification.

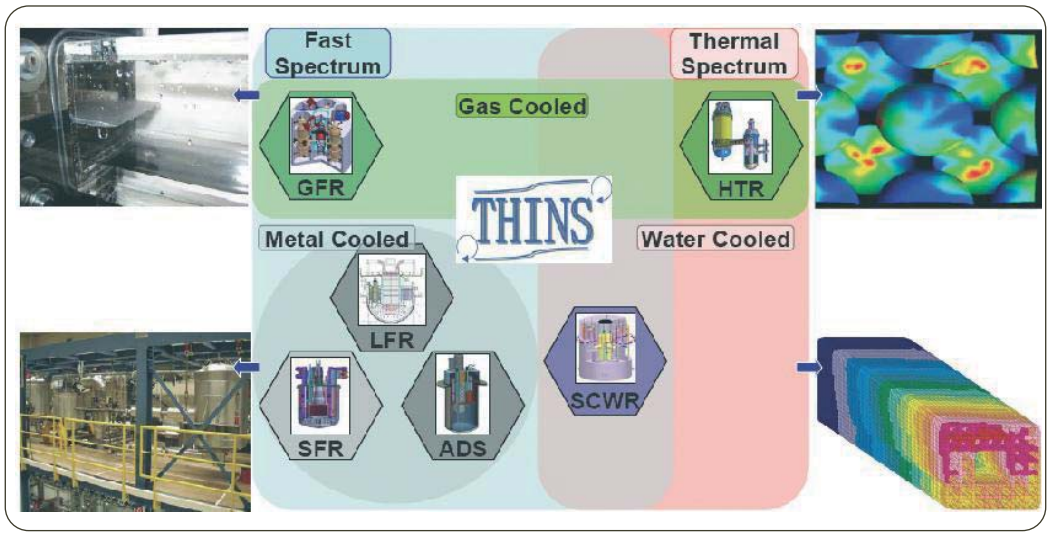
The overall objectives of the THINS project are the development and validation of new physical models, improvement and qualification of numerical analysis tools and their application to innovative nuclear systems. Establishment of experimental and numerical platform is envisaged for the thermal-hydraulic research of innovative nuclear systems in Europe. Optimum usage of the available European resources will be achieved in experimental facilities, numerical tools and research expertise.

The consortium of this project consists of 24 organisations from research institutions, universities, nuclear industries, commercial software developer (provider) and nuclear safety regulatory. The involvement of the nuclear industry, commercial software developer and safety regulatory authority will ensure and facilitate the exploitation of the project results.

Efforts are made to apply the scientific results of this project to education and knowledge-sharing purpose. A large part of the scientific results will have a fundamental relevance in the field of nuclear thermal-hydraulics, nuclear safety and thermal fluid dynamics in general. It is expected that using the results for teaching purposes is highly attractive to strengthen the basis for maintaining and extending know-how in the field. To achieve this purpose, three types of activities will be organized. i.e. (i) Student's workshop aiming at the preparation of PhD students and other involved students for their tasks within the project as well as students from the involved universities; (ii) International workshops, combining courses, PhD thesis and students progress reports, presentations on work package; and (iii) Code user training courses aiming at practical training and exchange of experience in using CFD and system codes.

The expected results of the THINS project are summarized as below:

- New physical models. More reliable models will be developed which are needed in various classes of numerical codes, such as heat transfer and flow mixing in complex fuel assemblies, advanced turbulence models for a large range of Prandtl numbers.
- Advanced simulation methodology. This includes methodology of numerical simulation of liquid metal flow with low Prandtl number, free surface of windowless targets, solid particle transportation in gas flow and mixed convection in large liquid pool.
- Comprehensive data base. Generic experiments will be performed in the THINS project to produce a comprehensive data base for code validation purpose. In addition, direct numerical simulation (DNS) will provide numerical data base, which is of crucial importance for the development of turbulence models.
- Experimental platform. The THINS project will make the optimum usage of the available European experimental facilities and expertise, and establish a European experimental platform. Advanced measurement techniques such as local velocity measurement in liquid metals and high resolution laser measurement techniques for boundary flow conditions, will be further developed and integrated into the platform.
- Numerical platform. More reliable and validated codes will be developed based on advanced physical models and numerical methodology. Coupling of the code solutions at various scales and qualification of coupled code solutions will enlarge the applicability and ensure the simulation reliability of the numerical platform.



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International events

Conference on High Temperature reactor technology HTR 2010 (Prague) -
- 18 – 20 October 2010

Set Plan conference (Brussels)
- 15 – 16 November 2010

Eneri 2010 - Infrastructure for Energy Research (Brussels)
- 29 – 30 November 2010

ICAPP Conference (Nice)
- May 2-5 , 2011

ENS Conference on Nuclear Education and Training (Prague)
- 15 – 18 May 2011

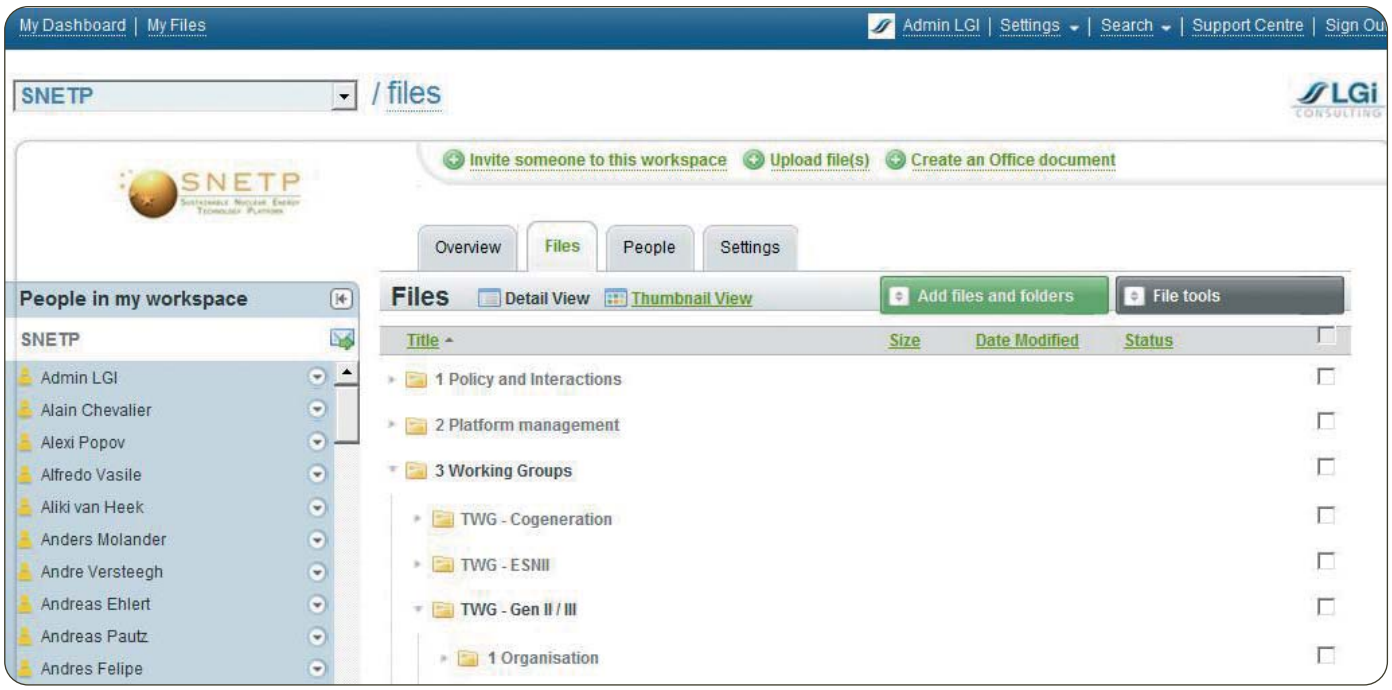
SNETP milestones 2010

- **7 October 2010**
  GEN II III TWG n. 2 (Amsterdam)
- **10 November 2010**
  ESNII Task Force n. 10 (Brussels)
- **20 – 21 January 2011**
  Executive Committee n. 10 (Madrid)
- **30 March 2011**
  Governing Board n. 7 (Rome)
- **November or December 2011**
  General Assembly n. 3 (Warsaw)

SNETP Secretariat news

The latest news on the activities and news of the SNETP Platform are regularly updated on our website www.snetp.eu. Lately were published and are available online Factsheets on Nuclear energy competitiveness and on security of supply. The latest version of the ESNII Concept Paper and the ETKM Report are envisaged to be published before the end of the year.

You can access to the SNETP internal workspace to share information via https://extranet.snetp.eu (structured updated information available on-line – image below)



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