

Nuclear Energy Agency Activities on Regulatory Aspects for New Reactors

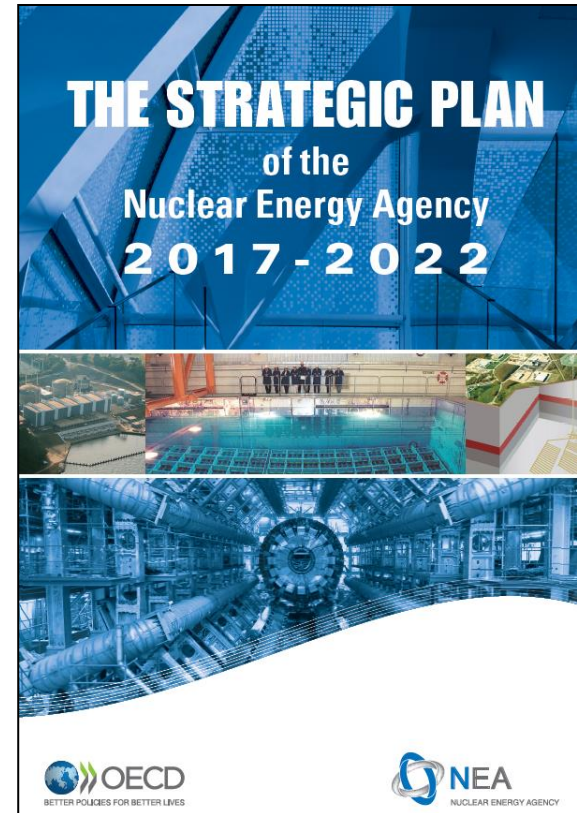


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NI 2050 Advisory panel meeting
9–10 March 2017

NEA Strategic Plan 2017-2022

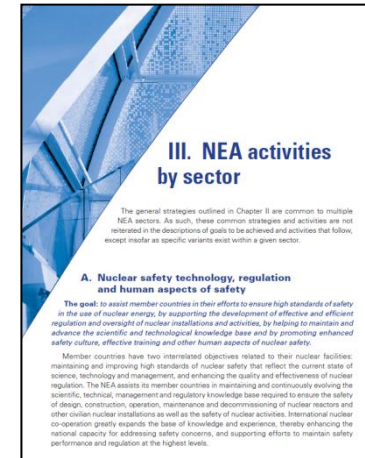
- Intends to guide the NEA to meet the evolving needs of member countries in the application and exploration of nuclear science and technology.
- Sets out the NEA mission statement and general strategies, and describes specific NEA activities, sector by sector.



NEA Strategic Plan 2017-2022

- In the nuclear safety technology, regulation and human aspects of safety sector, the Strategic Plan states that “*the Agency will:*

- *foster the continuous enhancement of the knowledge base of nuclear safety and the safety expertise capability in member countries, through scientific co-operation and the development of joint projects;*
- *address safety issues associated with new technologies and reactor designs”.*



The NEA nuclear safety technology and regulation division

- Objectives of the division:
 - [...].
 - To address safety issues associated with **new technologies and reactor designs**.
 - To help maintain an adequate level of capability and competence necessary to ensure the safety of **existing and future nuclear facilities**.
 - [...].

The NEA nuclear safety technology and regulation division

- Nuclear Safety Expertise and Research:
 - Committee on the Safety of Nuclear Installations (CSNI);
 - Joint Safety Research Projects (NEA provides secretariat support).
- Nuclear Safety Regulation:
 - Committee on Nuclear Regulation Activities (CNRA);
 - Multinational Design Evaluation Programme – MDEP (NEA provides technical secretariat).

The CNRA

Committee on Nuclear Regulatory Activities (CNRA)

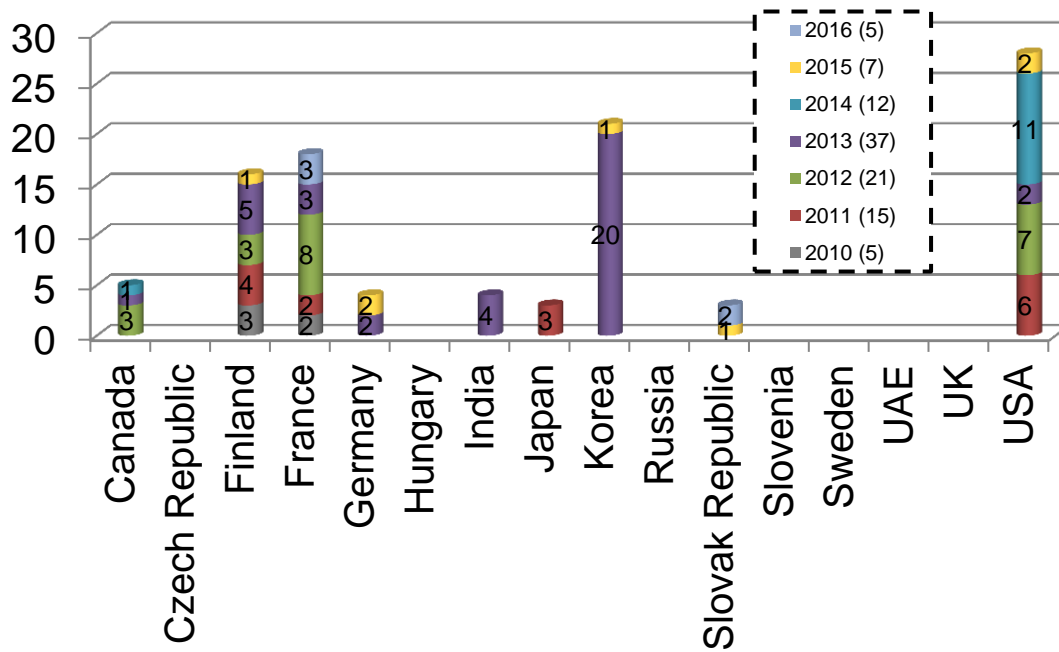


WGRNR

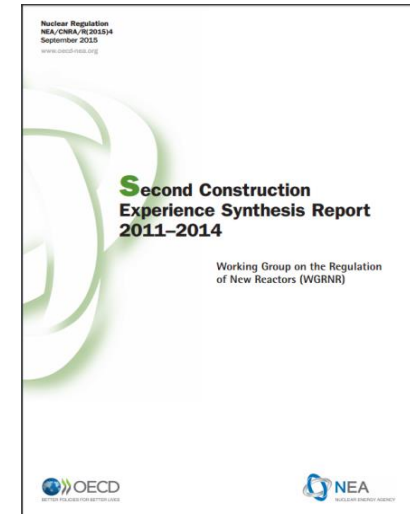
- Implemented in December 2007.
- Chaired by Mr Janne Nevalainen (STUK).
- Constitutes a forum of experts for the licensing of new commercial nuclear power reactors.
- Aims at identifying key new regulatory issues and good practices to solve them.
- Ensures that construction inspection issues and construction experience is shared.

WGRNR

- WGRNR main activities (1/2):
 - Construction experience database:



Total number of events: 102



WGRNR

- WGRNR main activities (2/2):
 - Licensing structure of regulatory body staff and regulatory licensing process: to issue a comprehensive report on:
 - national regulatory structure and licensing processes
 - national technical reviews
 - national oversight during construction



WGRNR

- WGRNR activity is more focused on Gen III and Gen III+ designs.
- WGRNR activity is not related to a given specific design.
- Comprises regulatory bodies of NEA member countries.
- Contacts with industry / research areas are rare.

GSAR

- The Ad-Hoc Group on the Safety of Advanced Reactor (GSAR) was established in 2015 following a December 2014 CNRA and CSNI decisions to address regulatory and safety issues related to Gen IV reactor designs.
- 9 countries : USA, Canada, France, Russia, China, Japan, Korea, Germany and Italy.
- 2 observers : IAEA, EC
- Chaired by Ms Amy Cabbage (US NRC).

GSAR

- Deals with regulatory and research activities in the primary area of advanced reactors.
- Ensures improvements in nuclear safety through appropriate regulation and research for advanced reactors.
- Constitutes a forum of representatives for the licensing of advanced reactors
- Facilitates a cooperative approach to identify key regulatory issues and safety research needs, and promote a common resolution.

GSAR

- GSAR activity is dedicated to the safety aspects of advanced reactors as those nuclear energy systems proposed by GIF.
- GIF representatives were invited to GSAR meeting to discuss the « safety design principles » and « safety design criteria ».

GSAR

- Initially, SFR was selected to conduct a pilot study.
- The group aims at issuing a comprehensive and technical report on some safety related topics of SFR:
 - to increase regulatory knowledge
 - and to identify additional research and development needs.

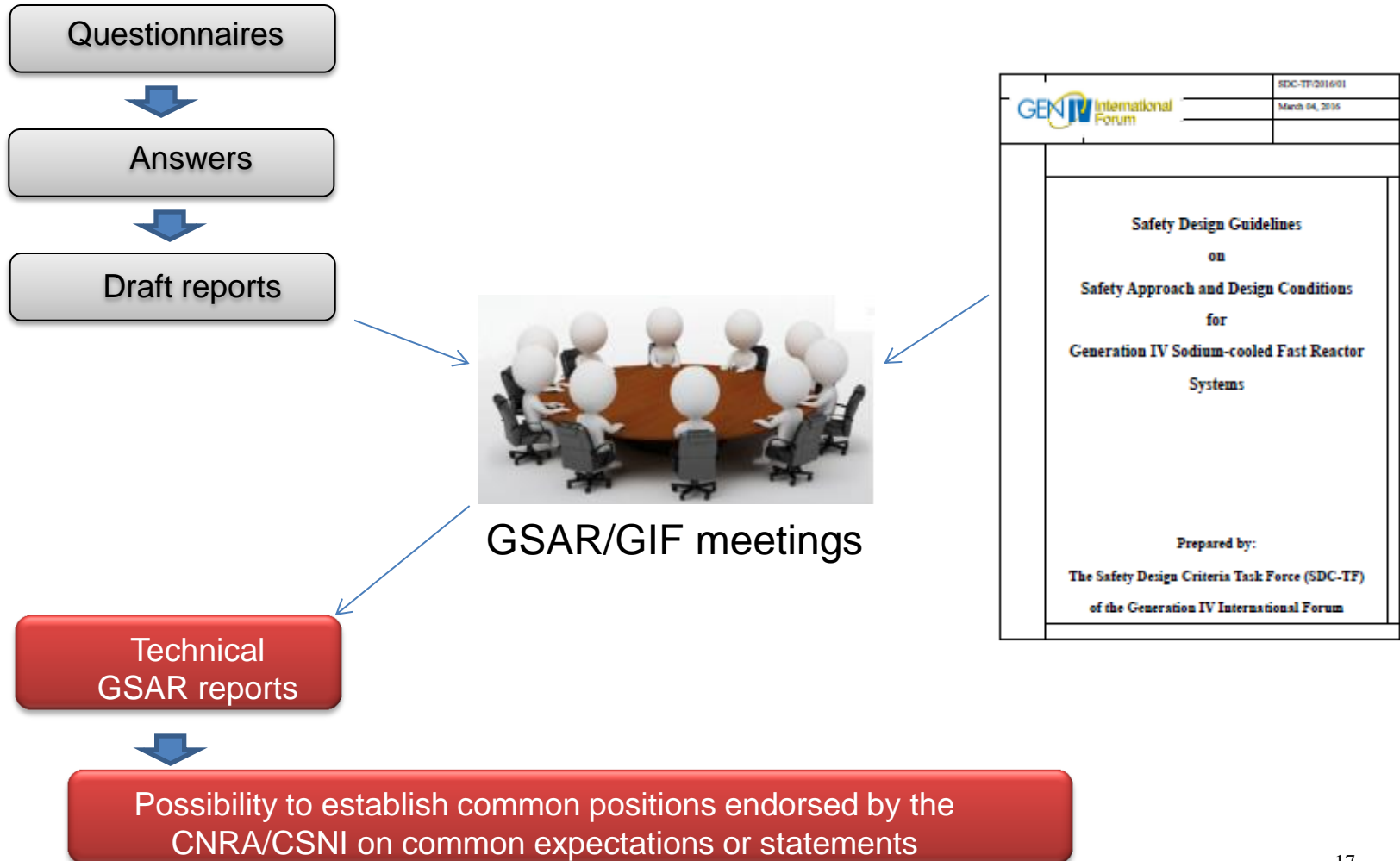
GSAR

- 4 technical areas:
 - Severe accident prevention and mitigation measures (France);
 - Neutronics and criticality safety (Russia);
 - Analytical codes (USA);
 - Fuel qualifications (USA).
- Work is conducted through questionnaires discussed during meetings.

GSAR

- Current status :
 - Report on severe accident prevention and mitigation was drafted.
 - Responses to questionnaire regarding the neutronics and criticality safety issues were discussed.
 - Questionnaire related to the analytical codes and fuel qualifications issues was drafted and circulated.

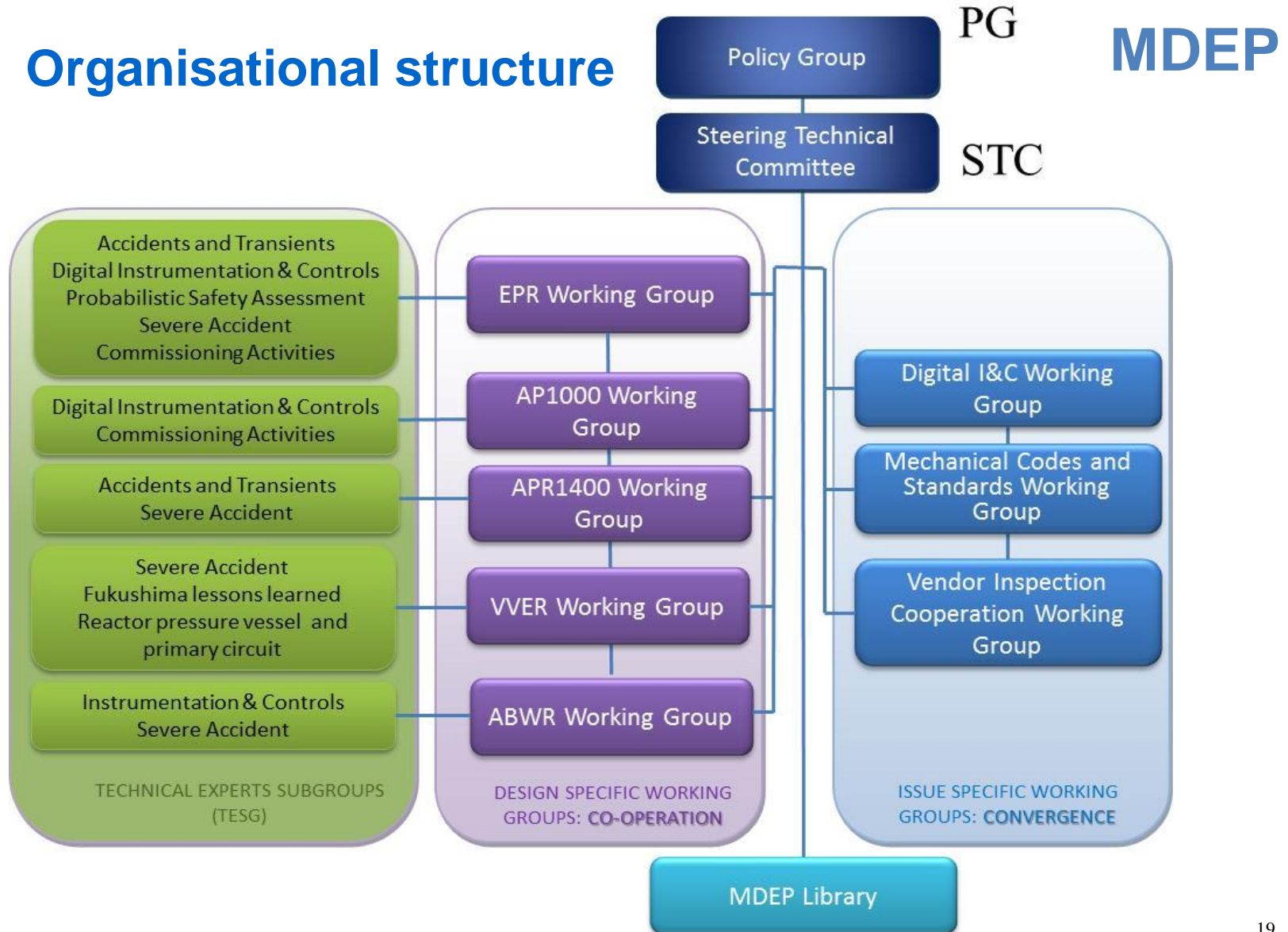
GSAR



MDEP

- A unique multinational initiative undertaken by national regulatory authorities of 15 countries to:
 - Cooperate and share information on safety design reviews of specific designs in order to ensure a greater safety focus on the reviews in each country.
 - Share information about national and international regulatory requirements and practices in order to explore opportunities for possible harmonisation or convergence of such requirements when safety enhancements may be realised.

Organisational structure

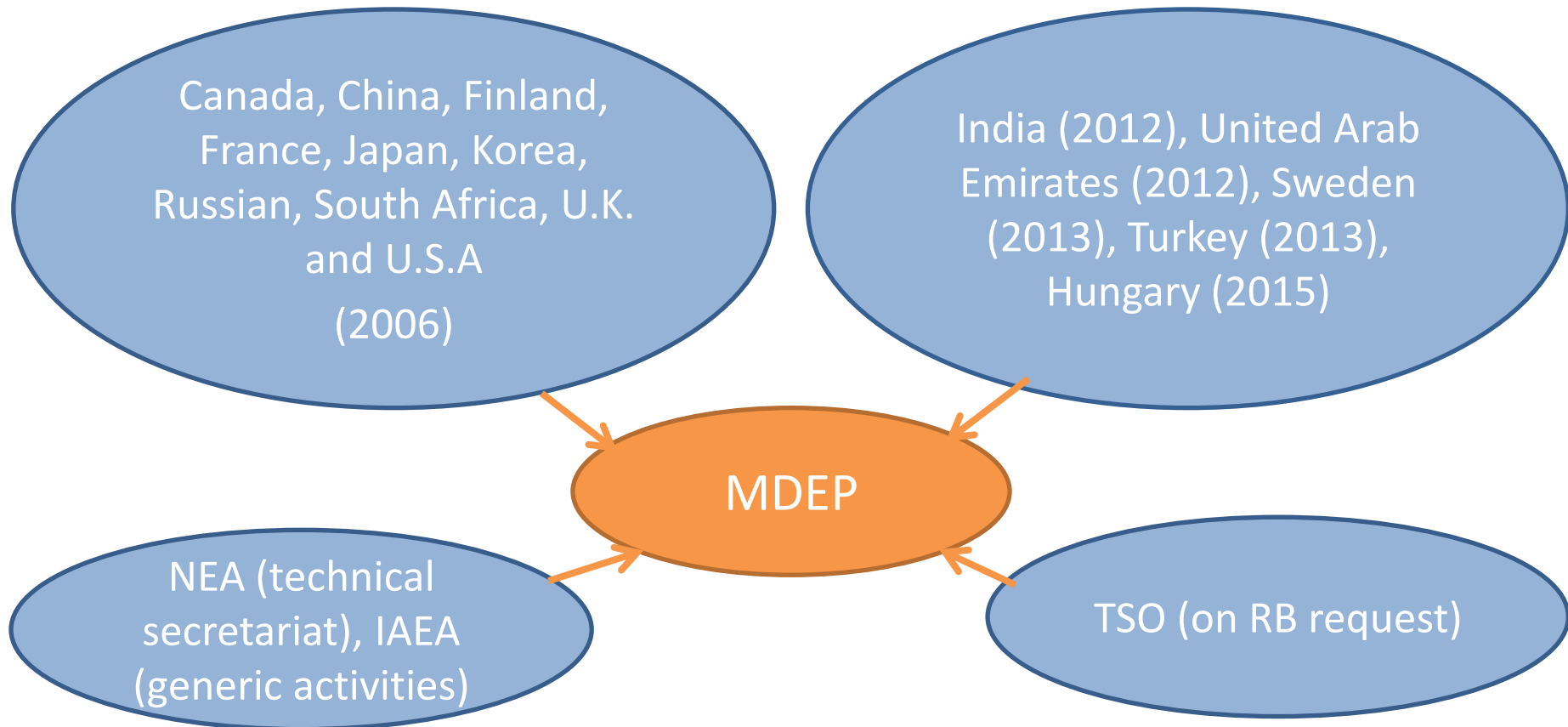


MDEP

- Exchange information on design specific regulatory reviews (licencing, construction, commissioning and operating experience having an impact on new designs).
- Cooperate on cross-cutting generic issues (vendor inspection, Digital I&C, and Codes and standards).
- Identify and understand the differences in regulatory safety review in each country → potential for harmonisation.

MDEP

- Membership:



MDEP

- Common positions (CP):
 - Design-specific positions: common conclusions reached during design review;
 - Generic positions: guidance for regulators, best practices.
- Technical reports (TR).
- MDEP library : for regulators use.

Publicly available on the MDEP website
24 CP
13 TR

Conclusion

- Through different bodies, the division in charge of safety regulation focuses its activity not only on operating installations, but also on new designs.
- The activity on new designs mainly involves regulators.
- The scope is either existing new Gen III or Gen III+ designs (EPR, AP 1000...) or focused on one specific Gen IV design (SFR) in a general regulatory approach.