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# Ten years of Cooperation between MDEP and CORDEL

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Director General

12-13 September 2017
4th MDEP Conference, UK

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# Context

- **Energy Challenge**
  - The electricity demand forecasted to double by 2050
  - Climate Change
  - energy security
- **Nuclear energy will play a central role**
  - The Harmony Programme (based on IEA 2 degree scenario)

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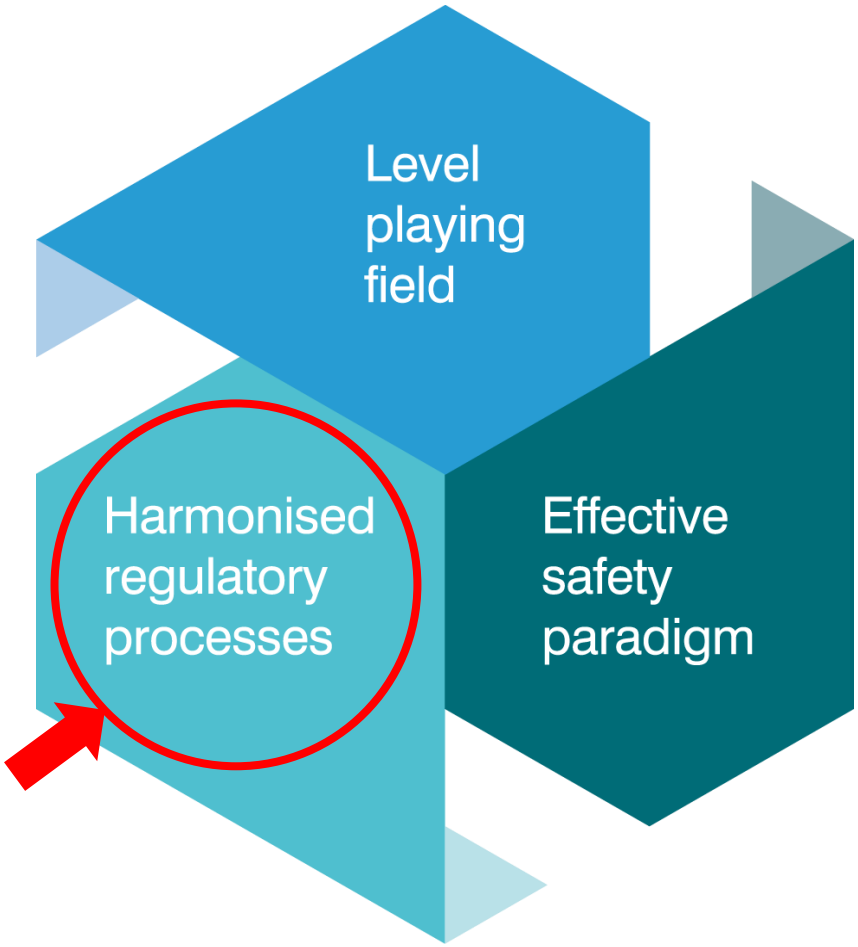
# Harmony goal




1000 gigawatt new nuclear capacity by 2050

25% of electricity supply in 2050

Nuclear energy to deliver reliable, affordable and clean electricity

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# Need for regulatory harmonization

- Enhanced standardisation, harmonisation of codes, standards and regulatory requirements, and the streamlining of regulatory licensing processes are needed to reduce costs and to improve new build planning and performance…[*OECD/NEA, Technology Roadmap – Nuclear Energy,* 2015]

- The need for promoting the harmonization of the licensing process for digital instrumentation and control systems in nuclear power plants was described in *IAEA-TECDOC-1327*, published in 2002. However, no significant steps have been taken since to reach a higher level of international harmonization [*IAEA Nuclear Energy Series, No. NP-T-1.13, 2015*].

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# International initiatives

- **Regulators**
  - MDEP (Multinational Design Evaluation Programme), 2006
- **Industry**
  - WNA's CORDEL (Cooperation in Reactor Design Evaluation and Licensing) Working Group, 2007 → **Industry Counterpart to MDEP**
- **Regional Initiatives**
  - ERDA (European Reactor Design Acceptance), 2011
  - WENRA (Western European Nuclear Regulators Association), 1999
- **International Organizations**
  - OECD/NEA, IAEA, SDOs, etc.

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# CORDEL Working Group

- **Main Objectives** are to promote:
  - International standardization of reactor designs
  - International harmonization of regulatory requirements
  - International design approval/certification

- **Seven Task Forces**
  - Design Change Management [IAEA, WANO]
  - Codes and Standards [MDEP, SDOs]
  - Digital I&C [MDEP, IAEA, IEC]
  - Nuclear Safety Standards [IAEA, ENISS, EUR, WANO]
  - Probabilistic Safety Goals [MDEP, IAEA]
  - Small Modular Reactors [IAEA, NEA/OECD]
  - Licensing & Permitting [MDEP, IAEA, NEA/OECD]

- **Membership**
  - Almost all major vendors and many utilities interested in new build, service companies, etc.

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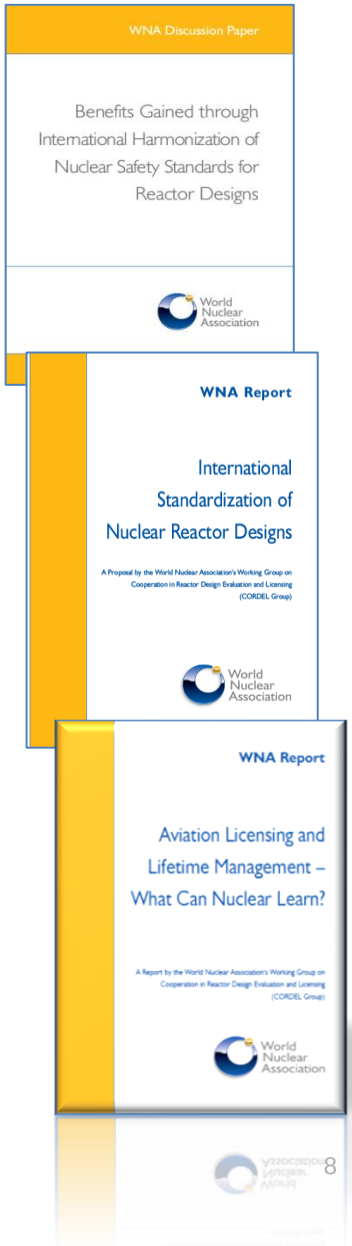
# CORDEL contributions

- **2008: Benefits assessment**, concluding that international standardization will
  - → help deliver large-scale worldwide new build
  - → bring benefits for safety
- **2010: Roadmap for International Standardization of Nuclear Reactor Designs**
  - → proposes a stepwise approach integrating required contributions of all stakeholders
- **2013: Aviation** Licensing and Lifetime Management – What Can Nuclear Learn?



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# CORDEL contributions

- Convergence of codes and standards
  - Non-Linear Analysis Design Rules: Part 1 Code Comparison (02/2017)
  - Certification of NDE Personnel (10/2014)
- Design Change Management
  - Implementation of the Design Authority Within a Nuclear Operating Organization (03/2017)
  - Design Knowledge and Design Change Management in the Operation of Nuclear Fleets (04/2015)
- Digital I&C
  - Safety Classification for I&C Systems in Nuclear Power Plants - Current Status & Difficulties (09/2015)
- Harmonization of Licensing Processes
  - Facilitating International Licensing of Small Modular Reactors (08/2015)
  - Licensing and Project Development of New Nuclear Plants (01/2013)
- Industry view and comments to IAEA Nuclear Safety Standards Committee

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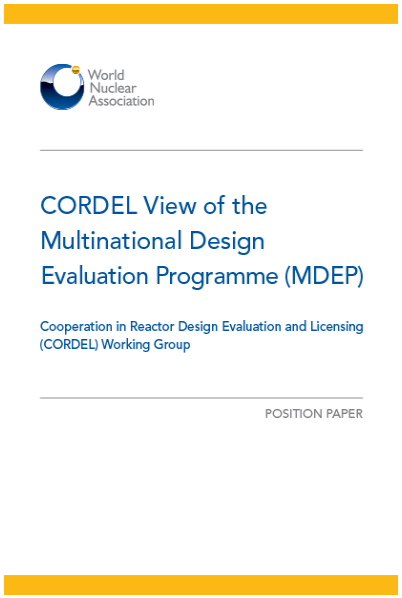
# CORDEL papers to MDEP

- 2014: MDEP requested CORDEL to provide an official industry position about MDEP
- February 2015: CORDEL position paper on MDEP, providing
  - Overall statement on the future of MDEP
  - Recommendations and proposals on MDEP work including collaboration with CORDEL
- August 2015: MDEP positive response
  - Agreeing that interactions with industry are beneficial and should continue
  - To CORDEL seven specific proposals
- June 2016: MDEP second letter stressing on:
  - Coordination
  - Harmonization of codes and standards
  - Design standardization throughout the plant life cycle and cooperation among regulators post-licensing



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# Close cooperation with MDEP

- CORDEL messages provided to the MDEP Policy Group during the MDEP conferences
- Periodic meetings between MDEP Steering Technical Committee and CORDEL Steering Committee
- Mutual participations in MDEP Conferences and WNA Workshops, and other specific meetings
- Close cooperation between CORDEL Task Forces and MDEP Issue-Specific Working Groups
  - CORDEL plays an important role in code harmonization
  - Very good cooperation with MDEP Codes and Standards WG and Digital I&C WG

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# CORDEL Roadmap for international standardization

***Internationalization of "Design Approval Process"***


***With the International "harmonization" of***

- **National licensing process**
- **Safety requirements**
- **Applicable codes and standards**

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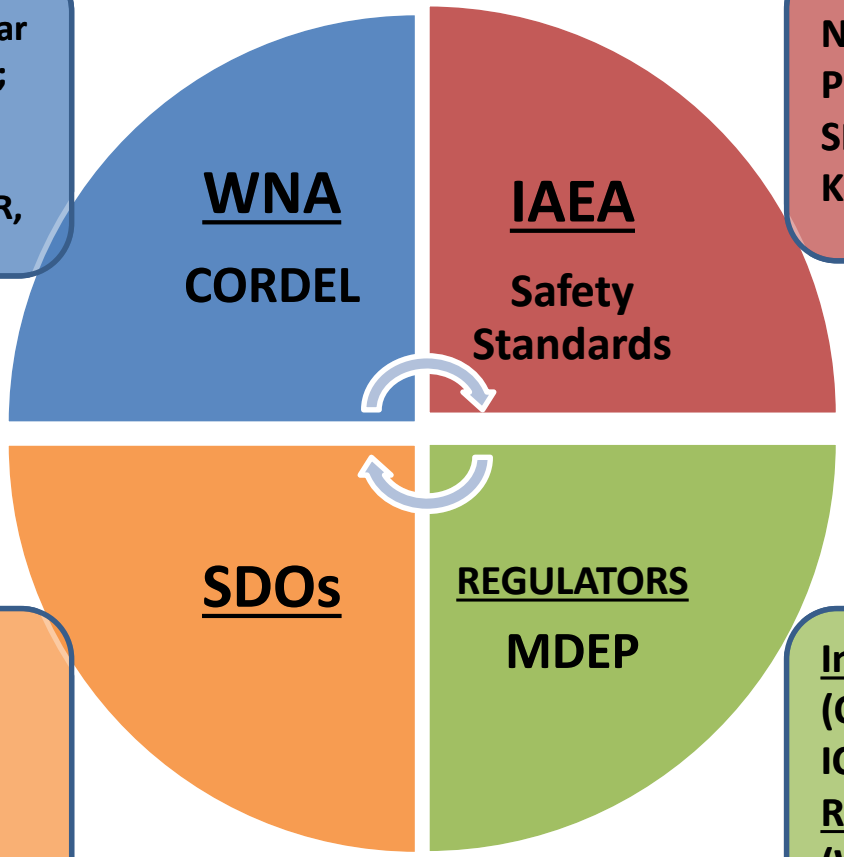
# International Cooperation Framework

**Industry**

**Government**

**International**
**(WNA: Supply Chain, Nuclear Law, Capacity Optimization; WANO)**
**Regional**
**(EPRI, INPO, FORATOM, EUR, ENISS)**




**NUSSC**
**Probabilistic Safety Goals**
**SMRs**
**Knowledge Management**

**ASME, AFCEN, KEPIC, JSME, NIKIET, CSA, IEC, IEEE and ISO**

**International**
**(OECD/NEA, OECD/IEA, ICRP, IAEA, EC)**
**Regional**
**(WENRA, ENSREG)**

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# Concluding remarks

- Harmony nuclear industry's vision for the future of electricity is 25% global electricity in 2050 to be provided by nuclear energy.

- International harmonization of regulatory requirements and standardization of reactor design is crucial for the efficient delivery of nuclear energy and to derive safety benefits.

- Over 10 years CORDEL , representing the world nuclear industry, has developed into an industry strategic counterpart to MDEP.

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# Concluding remarks

- There have been significant successes e.g. in the development of regulatory common positions (MDEP) and demonstration of code equivalence (CORDEL), but there still a very long way to go.

- We call for a step change in the work programme to accelerate the achievement of common objectives.

- CORDEL stands ready to support MDEP in developing a pathway to mutual design acceptance or joint design approvals.

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