Training and skills management for creating value in Nuclear Industry

For a **safe, reliable and competitive nuclear** energy technology

Noël CAMARCAT

Special Advisor, PhD,
Nuclear R&D and International Issues

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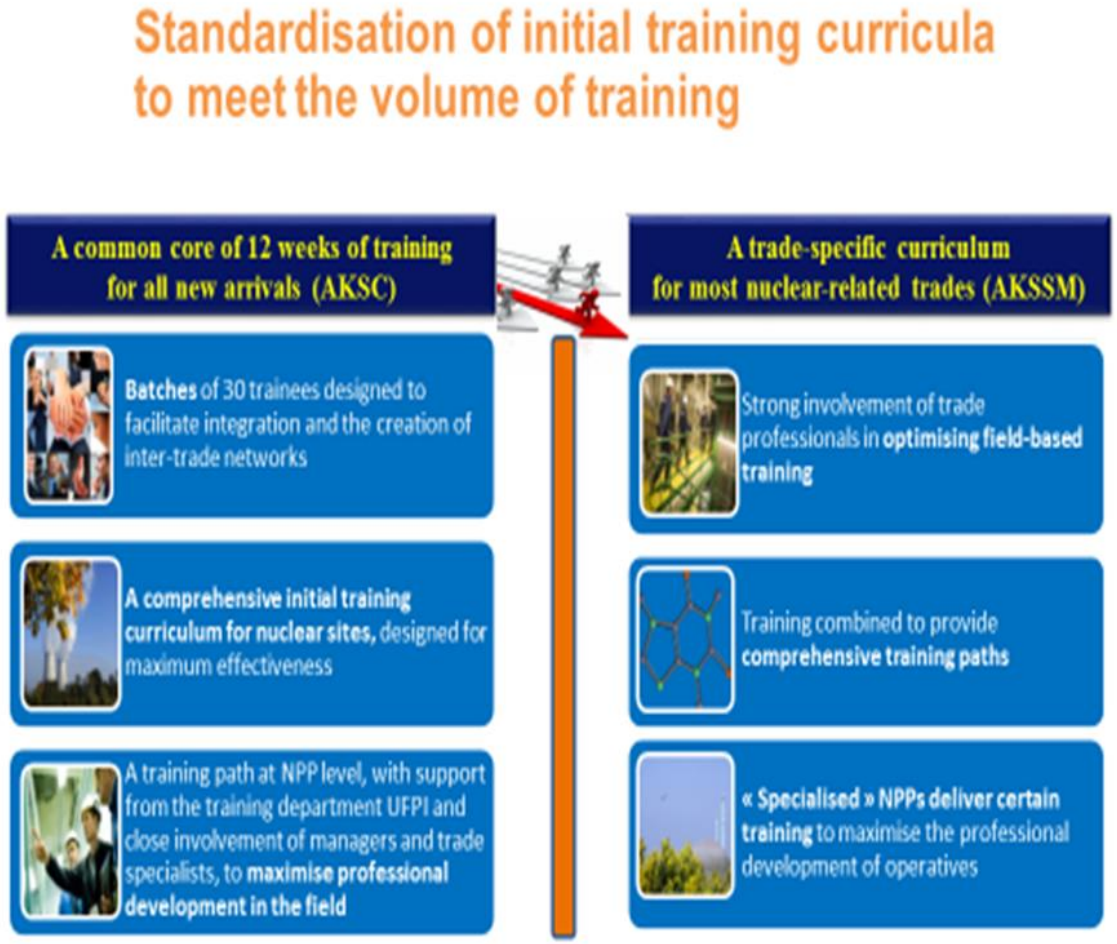
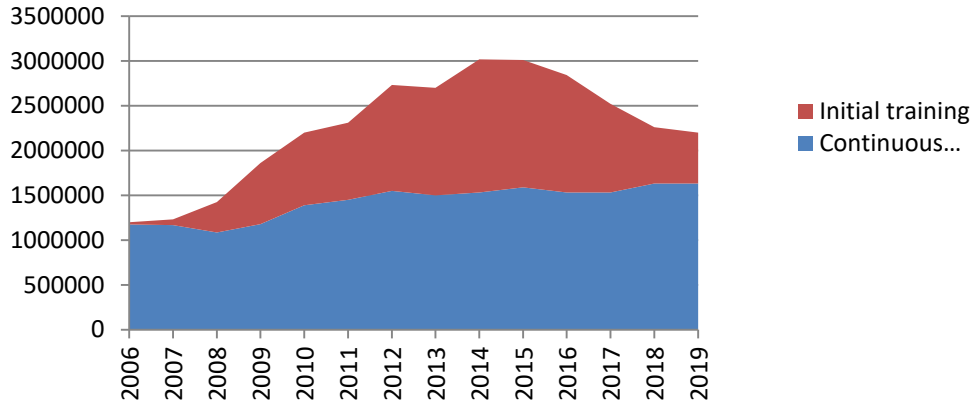
Context of education and training in Nuclear industry

- Nuclear Industry has always needed high qualified personnel .
- After the huge development of Nuclear in Europe in the 80 s , the retired personnel are progressively being replaced by young generation.
- New projects across the world will be developed but at slower pace.
- Current generation optimization and life time extension together with decommissioning and dismantling plants still requires additional high qualified personal . New technologies and industry attractiveness must be promoted.

EDF Training organization and methods



Training volumes for the Nuclear Generation Division from 2006 to 2019



At EDF the retirement of people who started and design the existing fleet required large recruitment of engineers average of 1500 / year in the last 10 years (among 100 / year in R&D) .

Systematic Approach To Training

EDF NUCLEAR ACADEMY

SAFELY DESIGN,BUILD AND OPERATE A NPP

A LARGE INTERNATIONAL TRAINING SERVICE PROVIDER

- Training facilities and tools
- Workshop , training mock-up and multimedia training tools
- Full scale mock up simulator per site
- Carrier courses between R&D , Engineering and Generation
- R&D Courses available on ITECH catalogue , and SFEN MOOC
- EDF can provide expert courses and training through ENPM project

- 2,7 Million training hours per year.
- 8% of annual wage bill dedicated to training
- 725 instructors
- 1500 new EDF employees recruited and trained per year (including 100 new researcher at R&D)
- More than 27000 authorized staff

Contact ENPM@EDF.FR

ITECH technology training institute sur edf.fr

SFEN MOOC avec France University Numerique

Nuclear industry need new skills to foster innovation

- Existing nuclear plant have launched innovative programs to be more competitive.
- Technical areas have and will integrate innovation such as
  - Simulation codes , and digital twins (SG, Containment,)
  - Digital transition to support operation and design ,
  - Data analytics and algorithm
  - New material , Concrete, additive manufacturing processes

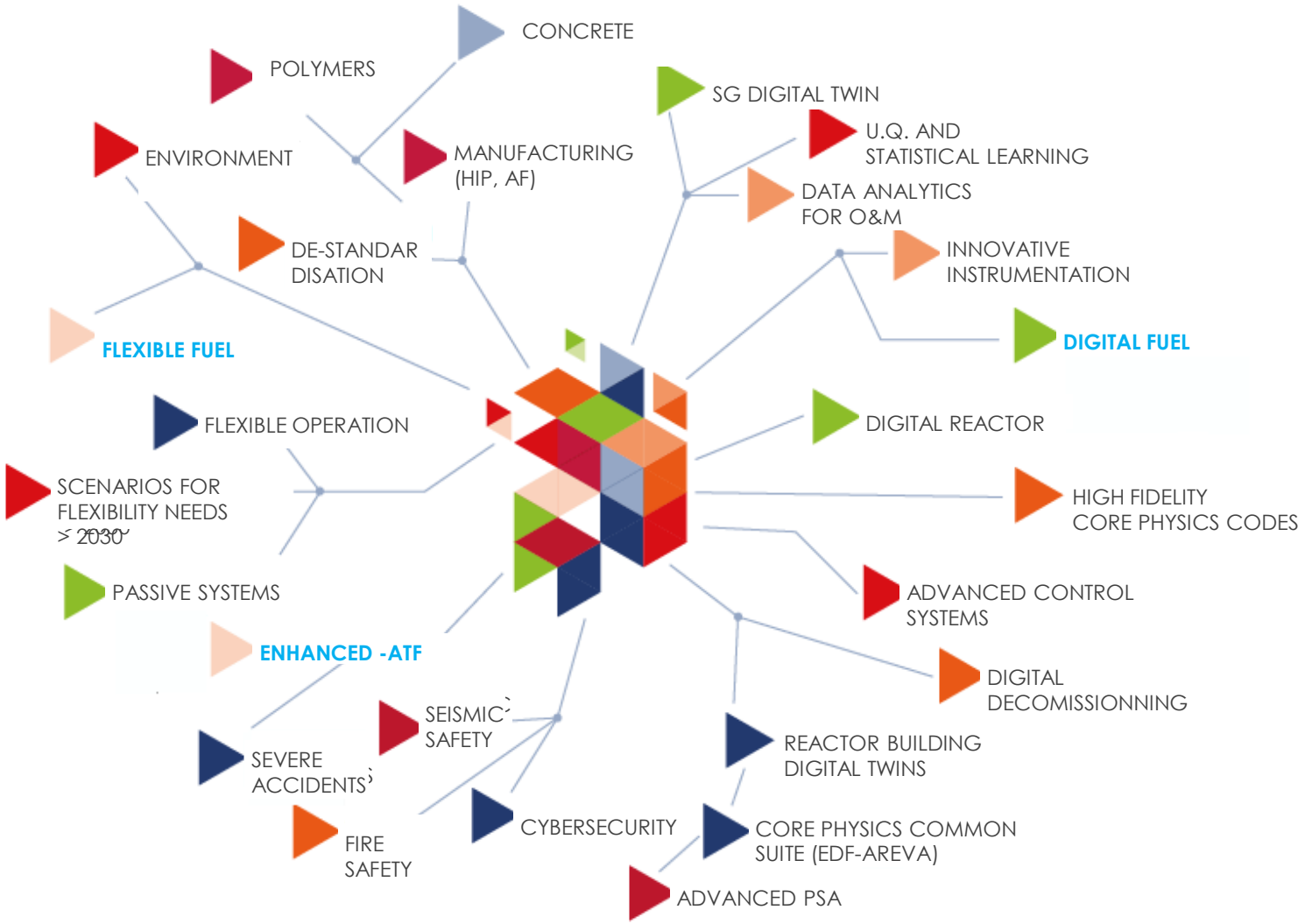
Attracting young generation requires high scientific value, with industry applications

- Connection with academics , SME's Start up and institute Existing nuclear plant have launched innovative programs to be more competitive
- NOIP NUGENIA platform propose collaborative projects and sharing of new ideas .
- Practicing technical and research programs with high TRL for industry application .
- Financial support of EU on collaborative project is needed open multilateral collaboration for EU

INITIATIVES
USINE NUCLÉAIRE
DU FUTUR

Technological bricks for innovation

- **Safety**
- **Digital Transition and Data Analysis for Operation**
- **Scenarios for flexibility needs after 2030**
- **New Material and Fabrication Modes**



Conclusion

Nuclear has a future

Education and Training play a crucial role to attract and motivate young generation.

We all need to work together and get support from public and private stake holders

THANK YOU FOR YOUR ATTENTION

ENEN

The **European Nuclear Education Network**, (**ENEN**) is an international nonprofit organization (aisbl) established under the Belgian law. The main purpose of the ENEN Association is the preservation and the further development of expertise in the nuclear fields by higher education and training in Europe.

The mission of ENEN is the preservation and the further development of expertise in the nuclear fields by higher Education and Training. This objective should be realized through the co-operation between universities, research organisations, regulatory bodies, the industry and any other organisations involved in the application of nuclear science and ionising radiation.

ANNEX

YOUNG GENERATION AWARD

APPLICATION

- The awards shall help successful candidates, to enlarge their network of contacts and further develop international collaboration by working on their research and/or innovation topic with European and international sectorial experts and professionals.
- Three prizes of €5000, €3000 and €2000 will be awarded following the evaluation of applications by an independent jury. The awards shall cover in particular travel and accommodation costs and other minor costs related to the personal project.
- The ranking shall be decided by the jury following project presentations during the forum (5min pitch during the forum).

Award selection jury
- Chair: Satu Helynen (VTT and Vice-President of NUGENIA AISBL)
- Leon Cizelj (JSI, President of ENEN AISBL)
- Walter Ambrosini (Professor PISA University)
- Laurent Billet (EDF R&D Deputy Scientific Director)
- Anastasiya Shapochkina (EDF R&D European Affairs)

13 applications have been received and 8 candidates selected

EDF through NUGENIA supports the European Nuclear Education Network activities

OBJECTIVES:

- Facilitate the emergence of innovation
- Achieve projects with high added value to the community,
- Maintain and develop the needed skills, competences and infrastructures to tackle the up-coming challenges (LTO, new build, dismantling, ….)
- Strengthen the involvement of NUGENIA-bodies in the decision making process
- Support education, training and knowledge management

EURATOM RESEARCH AND TRAINING PROGRAMMES

Research at European level is funded through Euratom Research and Training Programmes.
Fission research actions cover:

- safety of nuclear systems
- safe long-term management of radioactive waste
- development and sustainability of nuclear expertise and excellence in the EU
- risks of low and protracted exposure to ionising radiation, including in medical applications
- research infrastructures and education and training

Since 1994 more than 800 research projects have been funded under the Fourth (1994-1998), Fifth (1998-2002), Sixth (2002-2006) and Seventh (2007–2013) Framework Programmes.

Today, research continues under the current Euratom research and training programme.
On 19 October 2018 the Council adopted regulation extending the Euratom Programme for 2019-2020