

# **Nuclear Innovation Cooperation**

*In the Low-Carbon Perspective*

## **NEA NI2050 Initiative**

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# Grand Challenges and Opportunities for Nuclear Energy

- **Safety and waste** management are **necessary** for nuclear energy, as for the **public confidence**
- Nuclear **needs** to be **competitive** with other energy sources
- Win-Win approaches on **safety AND economics need** to be pursued. Innovation ( = developing and deploying innovative technologies) needs a conducive **regulatory framework** (reducing barriers) **AND costs reduction**. Where possible **harmonisation** is widening the market base.
- The nuclear sector **needs** to use innovative **enabling technologies**
- Nuclear energy **needs** to be **integrated into low-carbon energy mixes**
- Nuclear power **needs** to make the **best use of resources**
- The nuclear sector **needs competent people and support infrastructures**

## WHY NI2050 ???

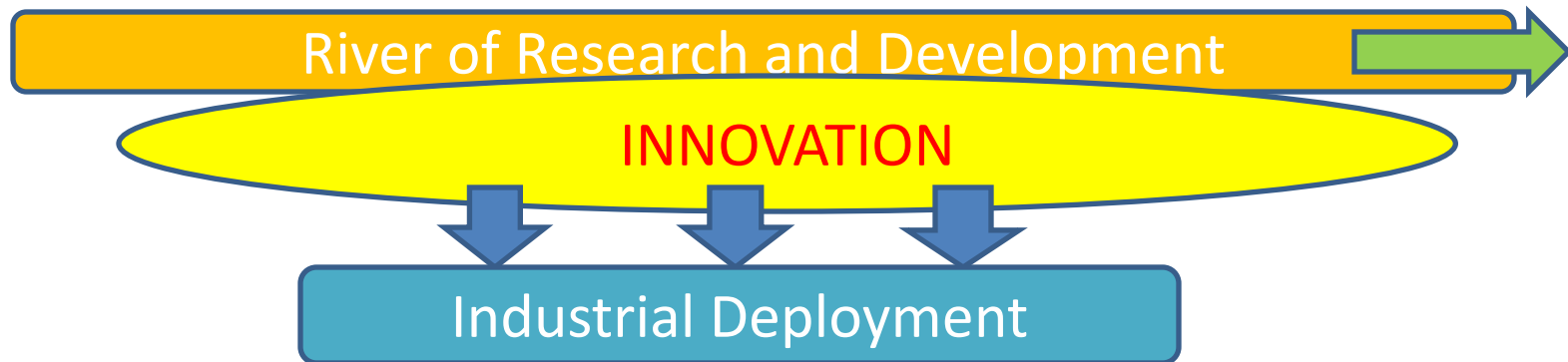
Why is industry and the financial market not innovating and moving ahead with more investments in building new plants and financing the development of the next generation nuclear reactors ???

Double stake:

- **Safety** (and waste): political and regulatory environment
- **Economics**, in particular in liberalized energy markets

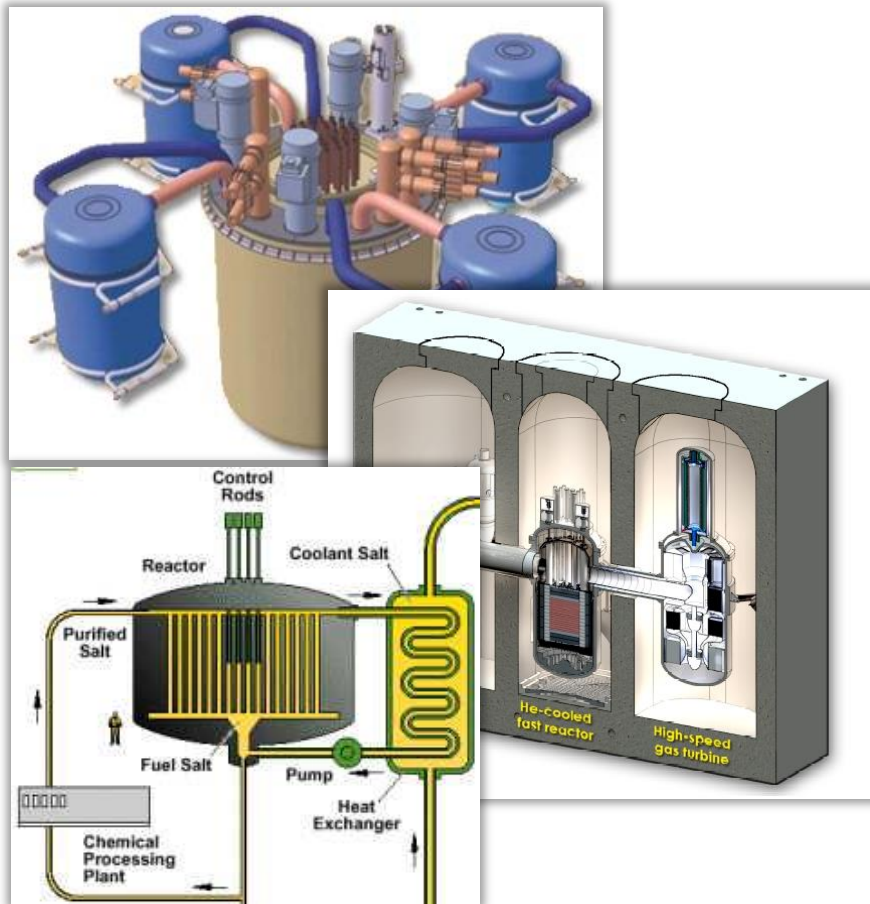
Need to act on these two fronts (**ambition in safety and economics**) for accelerating innovation

Innovation leading to effective industrial deployment of technologies is vital for nuclear research and development



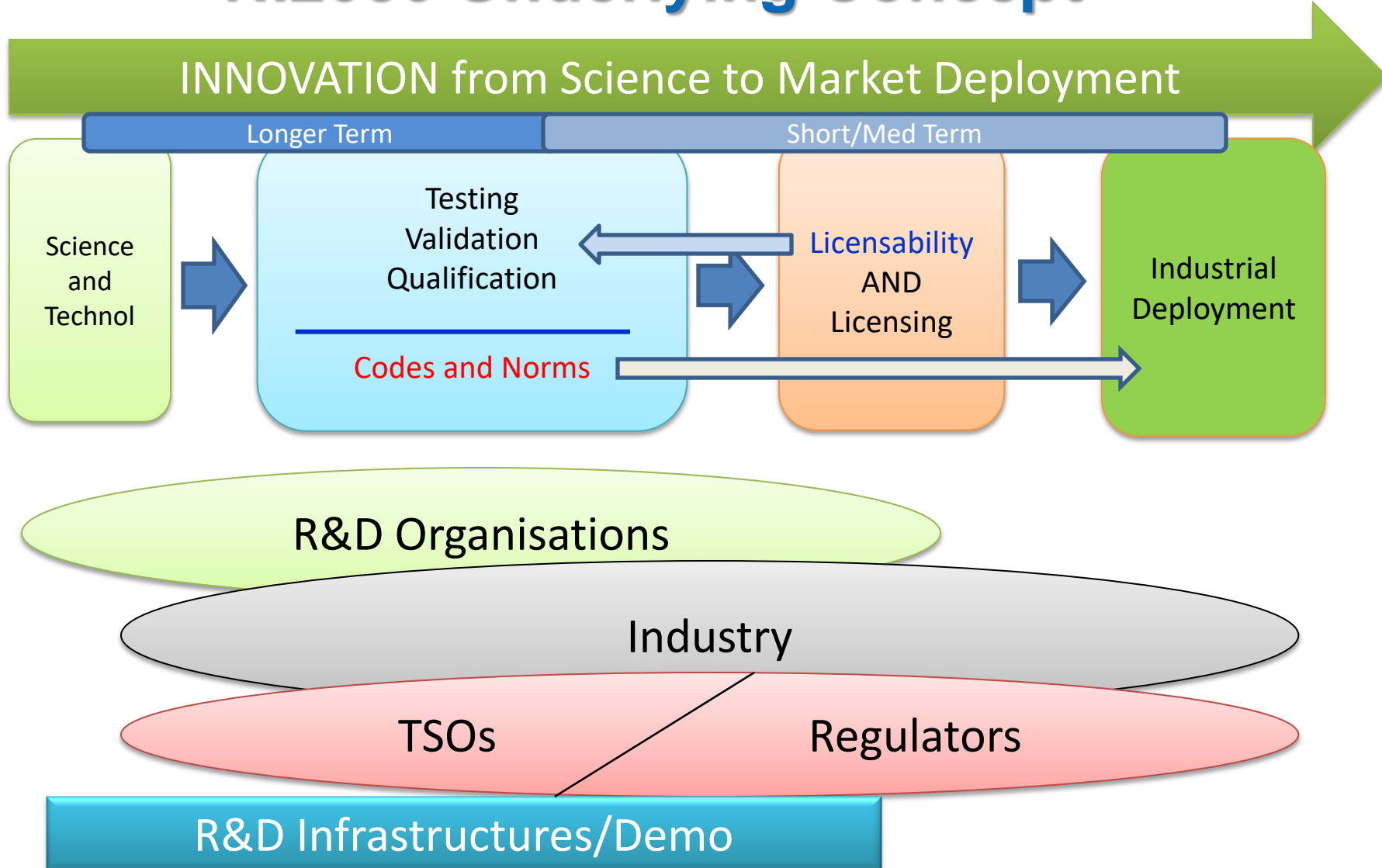
## *Nuclear Innovation 2050*

*Building a cooperative framework enabling innovative fit-for-purpose nuclear fission technologies*



*A NEA incubator  
to accelerate R&D and  
market deployment of  
innovative nuclear  
fission technologies to  
contribute to a  
sustainable energy  
future*

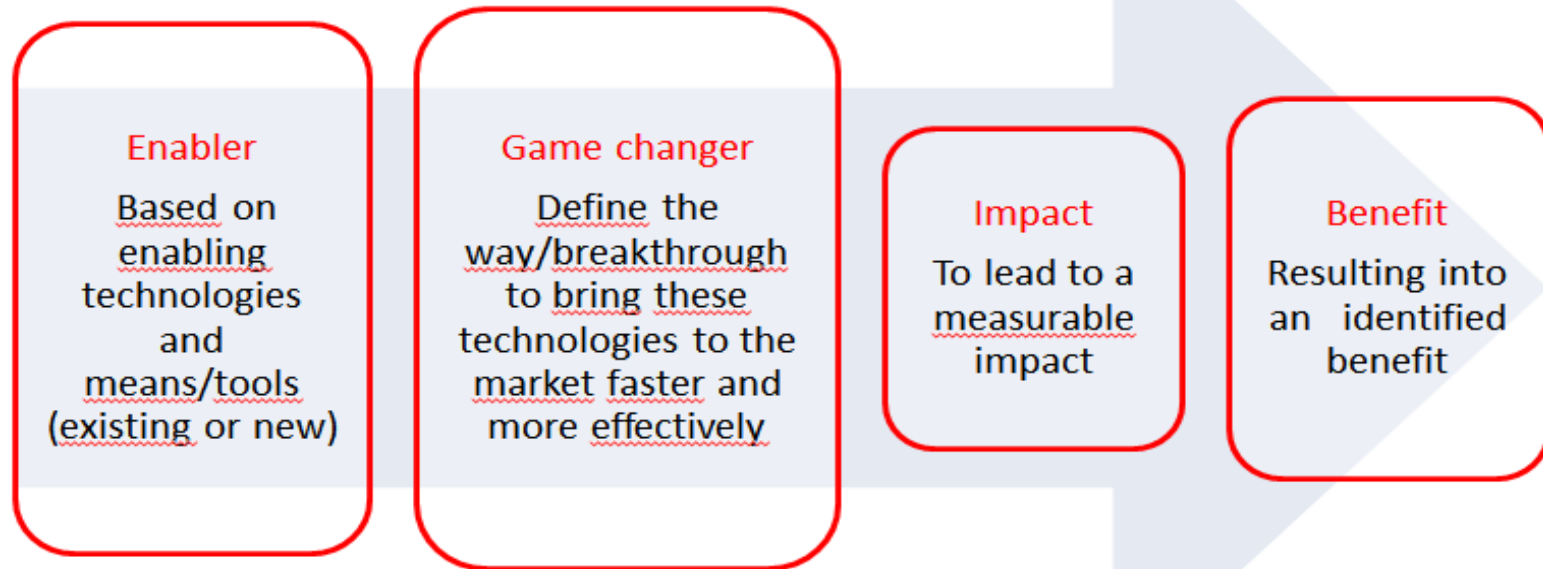
## NI2050 Underlying Concept



## NI2050 as an Incubator

### Challenge

- For a **Topical Area** to tackle a Challenge for the sustainable future of nuclear energy (short/medium or long term):



### Action Plan

- Programme of Actions (projects and infrastructures)** necessary for the game change - for further submission to stakeholders for implementation

## Pilot Example Areas being progressed:

- Accident Tolerant Fuels
- Advanced Fuels
- Advanced Materials
- Cogeneration and Heat Supply
- Safety and Economics of Gen IV
- Advanced Manufacturing and Construction
- Severe Accidents and Passive Systems
- Aging management